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[Intervention Review]

Home visits during pregnancy and after birth for women with an alcohol or drug problem

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ABSTRACT

Background

One potential method of improving outcome for pregnant or postpartum women with a drug or alcohol problem is with home visits.

Objectives

To determine the effects of home visits during pregnancy and/or after birth for women with a drug or alcohol problem.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 November 2011), CENTRAL (*The Cochrane Library* 2011, Issue 4 of 4), MEDLINE (1966 to 30 November 2011), EMBASE (1980 to 30 November 2011), CINAHL (1982 to 30 November 2011) and PsycINFO (1974 to 30 November 2011) supplemented by searches of citations from previous reviews and trials and contact with experts.

Selection criteria

Studies using random or quasi-random allocation of pregnant or postpartum women with a drug or alcohol problem to home visits. Trials enrolling high-risk women of whom more than 50% were reported to use drugs or alcohol were also eligible.

Data collection and analysis

Review authors performed assessments of trials independently. We performed statistical analyses using fixed-effect and random-effects models where appropriate.

Main results

Seven studies (reporting 803 mother-infant pairs) compared home visits mostly after birth with no home visits. Visitors included community health nurses, paediatric nurses, trained counsellors, paraprofessional advocates, midwives and lay African-American women. Several studies had significant methodological limitations. There was no significant difference in continued illicit drug use (three studies, 384 women; risk ratio (RR) 1.05, 95% confidence interval (CI) 0.89 to 1.24), continued alcohol use (three studies, 379 women; RR 1.18, 95% CI 0.96 to 1.46), failure to enrol in a drug treatment program (two studies, 211 women; RR 0.45, 95% CI 0.10 to 1.94), not breastfeeding at six months (two studies, 260 infants; RR 0.95, 95% CI 0.83 to 1.10), incomplete six-month infant vaccination schedule (two studies, 260 infants; RR 1.09, 95% CI 0.91 to 1.32), the Bayley Mental Development Index (three studies, 199 infants; mean difference 2.89, 95% CI -1.17 to 6.95) or Psychomotor Index (MD 3.14, 95% CI -0.03 to 6.32), child behavioural problems (RR 0.46, 95% CI 0.21 to 1.01), infants not in care of biological mother (two studies, 254 infants; RR 0.83, 95% CI 0.50 to 1.39), non-accidental injury and non-voluntary foster care (two studies, 254 infants; RR 0.16, 95% CI 0.02 to 1.23) or infant death (three studies, 288 infants; RR 0.70, 95% CI 0.12 to 4.16). Individual studies

reported a significant reduction in involvement with child protective services (RR 0.38, 95% CI 0.20 to 0.74) and failure to use postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

Authors' conclusions

There is insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem. Further large, high-quality trials are needed.

PLAIN LANGUAGE SUMMARY**Home visits during pregnancy and after birth for women with an alcohol or drug problem**

Not enough information on home visiting in pregnancy and after the birth for women with an alcohol or drug problem.

Women with an alcohol or drug problem in pregnancy are at increased risk of miscarriage, low birthweight babies, infections and postnatal depression, and the babies of withdrawal symptoms or impaired development. Home visits by individuals, teams of health professionals or trained lay people are aimed at improving health and social outcomes for mothers and babies. The review of seven trials, 803 women, found evidence that home visits after the birth may increase the engagement of these women in drug treatment services and their use of contraception, but there were insufficient data to say if this improved the health of the baby or mother. Further research is needed, with visits starting during pregnancy.

BACKGROUND

Regular use of alcohol and drugs in pregnancy is common, with 12% of pregnant US women reporting recent alcohol use, 3% illicit drug use and 1% illicit drugs other than marijuana (NHSDA 2000). In Australia, 75% of pregnant or breastfeeding women reported using alcohol in the previous 12 months, 18% marijuana and 8% illicit drugs other than marijuana (Higgins 2000). However, these surveys only record the 'regular' use of alcohol or illicit drugs, which is not necessarily at levels where there is evidence of associated harm. Whereas the excessive use of alcohol in pregnancy has been associated with increased risk of miscarriage, a reduction in fetal growth and impaired neurodevelopment (AAP 2000; RCOG 1999), the effects of lower levels of alcohol consumption are controversial, with no conclusive evidence that occasional or light consumption (below 120 g per week) has adverse effects on fetal growth or infant development (RCOG 1999). The focus of this review is on pregnant women who have an alcohol or drug problem, and not those who use alcohol occasionally or lightly.

Drug addiction in pregnant women is associated with detrimental effects to both the mother's and baby's health. Mothers with drug addictions frequently have a history of poor antenatal and postnatal care and tend to be socially disadvantaged (Hulse 1997b). This can result in adverse pregnancy outcomes including spontaneous miscarriage (Lutiger 1991), antepartum haemorrhage and abruption (Hulse 1997a; Hulse 1998b), low birthweight (Hulse 1997b; Hulse 1997c), and possibly neonatal mortality (Hulse 1998a). Those mothers who attend their primary health carer late in pregnancy and who have infrequent antenatal care have worse pregnancy and neonatal outcomes than those who attend early (Hulse 1997c; Hulse 1998a; Hulse 1998b). Women injecting drugs are also at risk of infection including hepatitis C and HIV, with the potential for vertical transmission to the infant (Spencer 1997). Infants born to mothers with a drug use problem, especially those using opiates, may suffer a neonatal abstinence syndrome requiring treatment (Osborn 2005a; Osborn 2005b). They are probably at increased risk for sudden infant death syndrome (Fares 1997; Kandall 1993) and subsequently for reduced developmental goal attainment, either as a result of a direct effect of drug or alcohol use, or as a result of the associated environmental and lifestyle factors associated with their use (Belcher 1999; Eriksson 2000; Faden 2000; Frank 2001; Jacobson 2002; Singer 2002). In some populations, there have been documented increased incidences of child abuse or neglect (Besinger 1999; Nair 1997) and child deaths (Jaudes 1997). Mother-infant attachment and responsiveness is also compromised with postnatal depression and domestic violence further complicating the relationship. Mothers subsequently tend to be reluctant to attend health facilities for education, medical treatment or social support.

Home visits are one way of facilitating pregnant mothers with a drug or alcohol problem linking in with health care. Home visits have been the subject of several previous reviews (Kendrick 2000; Roberts 1996). Home visiting may utilise individuals or teams of health professionals (counsellors, nurses, social workers) or trained lay people with the aim of improving health and social outcomes for mothers and infants. Interventions may include those directed at harmful drug and alcohol use, pregnancy care, health surveillance and promotion, counselling, social support, education, facilitation of mother-infant interaction and promotion of parenting. Potential benefits include earlier and more intensive pregnancy care,

improved pregnancy and neonatal outcomes, reduced drug and alcohol use, better mother-infant interaction and an improved home environment. As a result, home visits have the potential to improve longer-term outcomes resulting in a reduction in domestic violence, child neglect or abuse and subsequent mother-infant separation, improved neurodevelopmental outcomes, better school performance and fewer problems in adolescence and young adulthood (Olds 2002). However, in trials of home visits, separation of mother and infant may be reduced by effective home intervention services but conversely increased by a higher level of surveillance and hence reporting. The potential benefits need to be balanced with the safety of the home visiting team and costs to the community of the services. Concerns have been expressed about the modifying effects of high-level domestic violence on the effectiveness of home visitation (Eckenrode 2000; Gomby 2000). Specific home visiting interventions that may be of benefit include: linking the woman into drug and alcohol services including opiate replacement therapy to reduce illicit and intravenous drug use; pregnancy care including monitoring and treatment of infection; nutritional advice and support; recognition of pregnancy complications including preterm labour; facilitation of appropriate delivery care; support for breastfeeding in the postpartum; monitoring of mother's and infant's health including provision for vaccinations and early childhood health care; and the facilitation of the mother-infant interaction through education or the use of specific interventions designed to improve infant development such as the Carolina Preschool Curriculum and the Hawaii Early Learning Program. Home visiting services may take a non-judgmental and supportive role or a more directive approach in which the goals are to monitor the families' compliance with standards of parenting care and ensure the infant's welfare. This has the potential to impact on the ability of the carers to engage the mother and family, resulting in acceptance or rejection of help offered and potential for further disengagement.

The aim of this review was to determine the effects of home visits during pregnancy and after birth for women with an alcohol or drug problem. Outcomes included all important parent and infant related benefits and harms, and community benefits and costs. As alcohol and drug abuse frequently co-exist, this review focused on both alcohol and drug abuse and examined the evidence for a differential effect of home visits in subgroup analyses.

OBJECTIVES

The primary objective of this review was to determine the effects of home visits commencing during pregnancy and after birth for women with an alcohol or other drug problem. Secondary objectives of this review, if home visits were effective, were to examine the evidence for:

1. timing of intervention: pregnancy (early and late), postpartum, pregnancy and postpartum period;
2. duration of intervention (e.g. less than six months; at least six months);
3. intensity or frequency of intervention (e.g. at least weekly; less than weekly);
4. person/s doing the visit: team or individual social worker, counsellor, nurse, or trained lay worker;
5. content of visits: such as pregnancy care, drug and alcohol interventions, counselling, parent craft, life skills, etc; non-judgemental and supportive versus directive;

6. effect of modifying factors: such as alcohol and/or type of drug use, co-existence of domestic violence or mental illness, partner with drug or alcohol problem, separation of infant from mother.

METHODS

Criteria for considering studies for this review

Types of studies

Studies that compared home visits to no home visits or a different type of home visiting intervention were eligible. Studies that used random or quasi methods of participant allocation, and where the unit of allocation was the individual or a group (cluster-randomised studies) were eligible.

Types of participants

Trials that enrolled pregnant or postpartum women with an alcohol or drug problem. Trials that enrolled high-risk women which reported more than 50% of women used drugs or alcohol were also eligible. Women with an alcohol problem were defined as those who self-reported a problem or women who 'risk drank' on average in excess of 80 g/day or binge drinking (RCOG 1999). Women with a drug problem included those using illicit drugs or women abusing prescribed drugs. We did not include studies that did not report risk of drug and/or alcohol use.

Types of interventions

Home visits that commenced during pregnancy and/or after birth by teams or individuals consisting of doctors (obstetricians, general practitioners or paediatricians), nurses (midwives, drug and alcohol workers or early childhood nurses), social workers, counsellors or trained lay people. Studies were eligible irrespective of duration of home visiting. We included studies that detailed timing of visits, frequency of visits, the type of home visitors, the interventions and co-interventions. Home visits may have included outreach visits to non-healthcare facilities. Trials that had no home visits or which had a different method of home visits in the control group were eligible but analysed separately. Trials may have had standard care where an intervention was given for both the treatment and control groups.

Types of outcome measures

Some outcomes will only apply to some groups of participants (e.g. opiate addicts) or some comparisons (e.g. only trials of antenatal interventions).

Drug and alcohol related outcomes

1. Continued alcohol or drug misuse in pregnancy and/or after birth
2. Not stabilised on methadone if opiate dependent
3. Maternal acquisition of HIV or hepatitis B or C
4. Neonatal abstinence syndrome
5. Enrolled and retained in drug treatment program

Pregnancy and puerperium outcomes

1. Not attending consistent or regular antenatal care before term gestation
2. Placental abruption or antepartum haemorrhage
3. Perinatal mortality (stillbirth or neonatal death)

4. Delivery of a low birthweight infant (less than the 3rd percentile according to population data)
5. Premature delivery (less than 37 weeks' gestation), very premature delivery (less than 32 weeks' gestation)
6. Urgent or emergency caesarean section for fetal distress or abruption

Infant/child outcomes

1. Neonatal mortality
2. Established feeding regimen (e.g. established sole breastfeeding)
3. Excess weight loss (e.g. greater than 10% birthweight)
4. Neonatal encephalopathy or cerebral injury
5. Admitted to nursery
6. Vertical transmission of HIV, hepatitis B or C
7. Child immunisations incomplete
8. Failure to keep scheduled clinic appointments
9. Accident and emergency visits
10. Hospital admissions
11. Disability (cerebral palsy, sensorineural impairment or significant developmental delay)
12. Standardised intelligence or developmental quotient
13. Measures of school success including the need for special educational classes and retention in grade; competence in reading, writing, mathematics and general knowledge; self, parent, and teacher reported behavioural measures; self-esteem and career aspiration; truancy; school completion
14. Long-term outcomes including teenage pregnancy, unemployment, criminal behaviour, welfare assistance, suicide

Psychosocial outcomes

1. Infant not discharged in care of mother (foster, kinship or other care)
2. Infant failure to thrive, abuse, neglect, or removal from parents for these reasons
3. Infant injury - accidental or non-accidental
4. Continued domestic violence
5. Reported to child protection agency
6. No stable support person for mother e.g. partner/father of infant/sibling/parent/friend
7. Improved management of financial affairs
8. No continued links with healthcare providers e.g. early childhood health, hospital, medical practitioner
9. Unsafe home environment
10. Low self-confidence and/or self-esteem
11. Improved social circumstances
12. Subsequent unplanned pregnancy
13. Continued educational enrolment for adolescent mothers
14. Costs including those for provision of health care, social services, educational interventions and surveillance or monitoring. Cost savings may include those relating to improved health outcomes, reduced need for social and protective services and special education or placement out of mother's care.

Search methods for identification of studies

Electronic searches

We searched CENTRAL (*The Cochrane Library* 2011, Issue 4 of 4), MEDLINE (1966 to 30 November 2011), EMBASE (1980 to 30 November 2011), CINAHL (1982 to 30 November 2011) and PsycINFO (1974 to 30 November 2011) using the search strategies detailed in [Appendix 1](#).

In addition, we contacted the Trials Search Co-ordinator to update the search of the Cochrane Pregnancy and Childbirth Group's Trials Register (30 November 2011).

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

1. quarterly 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 and MEDLINE, 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.

For details of the additional searching carried out for the previous version of the review, see [Appendix 2](#).

Searching other resources

We searched the citations from previous reviews and retrieved studies for additional trials. We approached expert informants to find unpublished trials or trials in progress.

We did not apply any language restrictions.

Data collection and analysis

Selection of studies

Two review authors independently assessed for inclusion all the potential studies we identified as a result of the search strategy. We planned to resolve any disagreement through discussion or, if required, we planned to consult an arbiter.

Data extraction and management

We designed a form to extract data. For eligible studies, two review authors extracted the data using the agreed form. We resolved discrepancies through discussion or, if required, we planned to consult an arbiter. We entered data into Review Manager software ([RevMan 2011](#)) and checked for accuracy.

When information regarding any of the above was unclear, we contacted authors of the original reports to provide further details. Additional information was provided by [Bartu 2006](#).

Assessment of risk of bias in included studies

Two review authors independently assessed risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)) - see sections 8.5a, 8.5.b and 8.5.c. We resolved any disagreement by discussion or by involving an arbiter. For the update 2011, DO assessed risk of bias which was cross checked by CT.

(1) Random 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); or
- unclear risk of bias.

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

We described for each included study the method used to conceal allocation to interventions prior to assignment and assessed 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.

(3.1) Blinding of participants and personnel (checking for possible performance bias)

We described for each included study the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We considered that studies were at low risk of bias if they were blinded, or if we judged that the lack of blinding would be unlikely to affect 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 participants;
- low, high or unclear risk of bias for personnel.

(3.2) Blinding of outcome assessment (checking for possible detection bias)

We described for each included study the methods used, if any, to blind outcome assessors from knowledge of which intervention a participant received. We assessed blinding separately for different outcomes or classes of outcomes.

We assessed methods used to blind outcome assessment as:

- low, high or unclear risk of bias.

(4) Incomplete outcome data (checking for possible attrition bias due to the amount, nature and handling of incomplete outcome data)

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 and 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 is reported, or can be supplied by the trial authors, we re-included missing data in the analyses which we undertook.

We assessed methods as:

- low risk of bias (e.g. no missing outcome data (less than 10%); 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; or more than 10% postrandomisation losses);
- unclear risk of bias.

(5) Selective reporting (checking for 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 is clear that all of the study's pre-specified outcomes and all expected outcomes of interest to the review have been reported);
- high risk of bias (where not all the study's pre-specified outcomes have been reported; one or more reported primary outcomes were not pre-specified; outcomes of interest are reported incompletely and so cannot be used; study fails to include results of a key outcome that would have been expected to have been reported);
- unclear risk of bias.

(6) Other bias (checking for bias due to problems not covered by (1) to (5) above)

We described for each included study any important 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 (see table 8.5c in the Handbook)

We made explicit judgements about whether studies were at high risk of bias, according to the criteria given in the *Handbook* (Higgins

2011). With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we consider it is likely to impact on the findings. We explored the impact of the level of bias through undertaking sensitivity analyses - see 'Sensitivity analysis'.

Measures of treatment effect

Dichotomous data

For dichotomous data, we presented results as summary risk ratio with 95% confidence intervals.

Continuous data

For continuous data, we used the mean difference if outcomes were measured in the same way between trials. We used the standardised mean difference to combine trials that measure the same outcome, but use different methods.

Unit of analysis issues

Cluster-randomised trials

We planned to include cluster-randomised trials in the analyses along with individually randomised trials. We planned to adjust their standard errors using the methods described in the *Handbook* (Section 16.3.4 or 16.3.6) using an estimate of the intracluster correlation co-efficient (ICC) derived from the trial (if possible), from a similar trial or from a study of a similar population. If we used ICCs from other sources, we planned to report this and conduct sensitivity analyses to investigate the effect of variation in the ICC. If we identified both cluster-randomised trials and individually-randomised trials, we planned to synthesise the relevant information. We considered it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and we considered the choice of randomisation unit to be unlikely.

We planned to acknowledge heterogeneity in the randomisation unit and perform a sensitivity analysis to investigate the effects of the randomisation unit.

Crossover trials

Crossover trials were not eligible.

Other unit of analysis issues

The unit of analysis was the mother for maternal outcomes and infant for infant outcomes.

Dealing with missing data

For included studies, we noted levels of attrition. We explored the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using sensitivity analysis (i.e. excluding studies with more than 10% post randomisation losses).

For all outcomes, we carried out analyses, as far as possible, on an intention-to-treat basis, i.e. we attempted to include all participants randomised to each group in the analyses, and all participants 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 are known to be missing.

Assessment of heterogeneity

We assessed statistical heterogeneity in each meta-analysis using the T^2 , I^2 and Chi^2 statistics. We regarded heterogeneity as substantial if I^2 was greater than 30% and either T^2 is greater than zero, or there is a low P value (less than 0.10) in the Chi^2 test for heterogeneity.

Assessment of reporting biases

We planned to investigate reporting biases (such as publication bias) using funnel plots. We planned to assess funnel plot asymmetry visually and, if there were 10 or more studies in the meta-analysis, to use formal tests for funnel plot asymmetry. For continuous outcomes we planned to use the test proposed by Egger 1997, and for dichotomous outcomes we planned to use the test proposed by Harbord 2006. If we detected asymmetry in any of these tests or by a visual assessment, we planned to perform exploratory analyses to investigate it.

Data synthesis

We carried out statistical analysis using the Review Manager software (RevMan 2011). We used fixed-effect meta-analysis for combining data where it was reasonable to assume that studies were estimating the same underlying treatment effect: i.e. where trials were examining the same intervention, and we judged the trials' populations and methods to be sufficiently similar. If there was clinical heterogeneity sufficient to expect that the underlying treatment effects differ between trials, or if we detected substantial statistical heterogeneity, we planned to use random-effects meta-analysis to produce an overall summary if we considered an average treatment effect across trials clinically meaningful. We planned to treat the random-effects summary as the average range of possible treatment effects and we planned to discuss the clinical implications of treatment effects differing between trials. If the average treatment effect was not clinically meaningful we planned not to combine trials.

If we used random-effects analyses, we have presented the results as the average treatment effect with 95% confidence intervals, and the estimates of T^2 and I^2 .

Subgroup analysis and investigation of heterogeneity

If we identified substantial heterogeneity, we investigated preforming separate subgroup analyses and sensitivity analyses. We considered whether an overall summary was meaningful, and if it was, used random-effects analysis to produce it.

We planned to carry out the following subgroup analyses:

1. timing of intervention: pregnancy (early and late), postpartum, pregnancy and postpartum period; duration of intervention (e.g. less than six months; at least six months);
2. intensity or frequency of intervention (e.g. at least weekly; less than weekly);
3. person/s doing the visit: team or individual social worker, counsellor, nurse, or trained lay worker; content of visits: such as pregnancy care, drug and alcohol interventions, counselling, parent craft, life skills, etc;
4. non-judgemental and supportive versus directive;

5. effect of modifying factors: such as alcohol and/or type of drug use, co-existence of domestic violence or mental illness, partner with drug or alcohol problem, separation of infant from mother.

We used all outcomes in the separate subgroup analysis.

Sensitivity analysis

We performed sensitivity analysis including only studies of good methodology, defined as those studies using adequate randomisation and allocation concealment and greater than 90% follow-up of participants.

For analysis of cluster-randomised controlled trials, we planned to acknowledge heterogeneity in the randomisation unit and perform a sensitivity analysis to investigate the effects of the randomisation unit. We planned sensitivity analysis to explore the effects of any assumptions made such as the value of the ICC used for cluster-randomised trials.

We used sensitivity analysis to explore the effects of fixed-effect or random-effects analyses for outcomes with statistical heterogeneity.

RESULTS

Description of studies

Results of the search

For the 2011 update, we found an additional eligible study (Bartu 2006), resulting in a total of seven studies of home visits that enrolled a total of 950 mother-infant pairs (Black 1994; Butz 1998; Dakof 2003; Grant 1996; Quinlivan 2000; Schuler 2000) meeting the inclusion criteria (see Characteristics of included studies table). Outcomes for 803 mother-infant pairs were reported.

Included studies

Types of participants

All studies were relatively small. Bartu 2006 enrolled 154 women using illicit drugs during pregnancy and randomised mother-infant pairs after delivery; Black 1994 enrolled 60 women-infant pairs; Butz 1998 204 women-infant pairs; Dakof 2003 103 women-infant pairs; Grant 1996 66 women-infant pairs; Quinlivan 2000 136 women-infant pairs with one withdrawing consent and Schuler 2000 enrolled 227 women-infant pairs.

All studies enrolled pregnant (Bartu 2006; Black 1994; Quinlivan 2000) or postpartum (Butz 1998; Dakof 2003; Grant 1996; Schuler 2000) women. Five studies (Bartu 2006; Black 1994; Butz 1998; Grant 1996; Schuler 2000) enrolled women on the basis of self-reported drug and/or alcohol use. Bartu 2006 enrolled illicit drug using women at 35 to 36 weeks' gestation. Butz 1998 enrolled mothers who had, or whose baby had, a positive toxicology result. Dakof 2003 enrolled women referred by the Department of Children and Families with a positive toxicology result for the mother or baby. Quinlivan 2000 enrolled teenagers attending a teenage pregnancy clinic. The enrolled women were generally at high psychosocial risk and had a high rate of alcohol and drug use (greater than 50%). Schuler 2000 enrolled women with a positive urine toxicology result at birth. Four studies (Black 1994; Butz 1998; Dakof 2003; Schuler 2000) enrolled women of largely African-American origin.

Interventions

Timing, duration and intensity

All studies were of predominately postpartum home visits. Only one study ([Black 1994](#)) provided any antenatal home visits, and then only two visits for two weeks before delivery. The other studies ([Bartu 2006](#); [Butz 1998](#); [Dakof 2003](#); [Grant 1996](#); [Quinlivan 2000](#); [Schuler 2000](#)) commenced home visiting in the postpartum period. Four studies ([Black 1994](#); [Butz 1998](#); [Grant 1996](#); [Schuler 2000](#)) continued home visits beyond six months. Four studies ([Black 1994](#); [Dakof 2003](#); [Grant 1996](#); [Schuler 2000](#)) scheduled visits at least weekly for at least some of the home visiting period. See below for details.

Home visitors and interventions

[Bartu 2006](#) used research midwives for after birth home visits at weeks one, two and four, then monthly until six months postpartum. Each visit lasted from one to two hours. Any difficulties encountered by the mother were addressed at each visit. Content of visits included assessment of mother and infant well being, parent craft, stress management, relaxation techniques, addressing major issues, and providing immunisation and Pap smear information, and links to community services. Control group received a telephone contact at two months and a home visit at six months.

[Black 1994](#) used two part-time community health nurses to provide one-hour home visits from two weeks prepartum biweekly to 18 months postpartum. An armed escort was provided for the visits. The visits lasted one hour. The nurses formed an alliance with the clients, addressed personal, family and environmental needs and facilitated mother-infant interaction. They provided information and advocacy, and performed developmental interventions using the Carolina Preschool Curriculum and Hawaii Early Learning Program. The control group received no home visits. Both groups attended a primary healthcare multidisciplinary team dedicated to treatment of infants born to substance abusing and/or HIV infected mothers.

[Butz 1998](#) used paediatric nurse specialists to provide 16 postpartum home visits from birth to 18 months. They provided emotional support, modelled positive parent-child interactions, provided health monitoring of infant and parent education, parental skills training, performed developmental interventions using Hawaii Early Learning Program and Carolina Preschool Curriculum. They were supervised by a paediatric nurse practitioner. The control group received no home visits. A description of standard care was not reported.

[Dakof 2003](#) used trained 'black' specialists with prior experience in drug treatment services to perform the 'Engaging Mums' program, an in-home program designed to facilitate enrolment and retention in drug abuse treatment. Intervention contacts included one to four individual, family or case management sessions per week of varying lengths (20 minutes to one hour). The goal was to enrol the mother in intervention services within eight weeks. The control group received community services as usual. Minimum intervention in control included in-home psychosocial evaluation, referral to a drug treatment program, follow-up phone call within a day of scheduled initial treatment appointment and drug treatment program if entered into.

[Grant 1996](#) used paraprofessional advocates with many similar life experiences to perform weekly home visits after birth for six weeks, then twice monthly or more to three years. A paraprofessional is a non-certificated staff member working under the supervision of a trained and certified professional. They linked clients with health care, parenting classes, therapeutic child care and substance abuse treatment programs. The clients were not required to obtain drug/alcohol treatment. No specific developmental intervention was performed, but development was assessed in the intervention group at four months, two and three years with discussion of progress with parents. The control group had access to community social and health services but no home visits or advocacy. The control children were evaluated at three years only.

[Quinlivan 2000](#) used a nurse midwife to perform structured home visits at one and two weeks, one, two, four and six months postpartum. Visits lasted one to four hours. Obstetrician phone advice was available. Interventions included lactation and mother craft education and advice, general and obstetric health surveillance, contraception and child health advice, information on drug and alcohol use and services provided, education on parenting skills and appointments for vaccinations confirmed. The control group had no structured home visits by midwives. All participants were provided with routine postnatal support, counselling and information services including standard domiciliary home-visiting services.

[Schuler 2000](#) used lay African-American women home visitors to provide the Infant Health and Development Program, comprising a home-based intervention in the first year, child attendance at a child-development centre and parent group meetings from the second year. Home visits were weekly from birth to six months, then biweekly to 18 months. Home visits had the goal of increasing maternal empowerment and enhancing mother's ability to manage self-identified problems using existing services and supports. A developmental intervention was incorporated using the child component of Hawaii Early Learning Program. The control group received short monthly home-tracking visits by one African-American lay home visitor. They had an average of 7.7 visits per client with mean time 18.5 minutes. All mothers were given information on drug treatment programs but participation was not mandatory. Mothers were paid for the evaluation visit and given tokens to get home.

Outcomes

For all outcomes reported see [Characteristics of included studies](#) table. Stated primary outcome(s) of the included studies were: [Bartu 2006](#) - duration of breastfeeding and immunisation rates. [Black 1994](#) - promotion of positive behaviours and attitudes among drug using women and development in their children using the HOME score ([Bradley 1977](#)) at 30 months, the Bayley Scales of Infant Development at 6, 12 and 18 months, the Child Abuse Potential Index (CAPI) and Parent Stress Index at 18 months; [Butz 1998](#) - Child Behaviour Checklist at 36 months; [Dakof 2003](#) - enrolment in drug treatment program and four weeks and 90-day retention in drug treatment program; [Grant 1996](#) - Bayley Scales of Infant Development at three years; [Quinlivan 2000](#) - adverse neonatal outcomes, knowledge about contraception, vaccination schedules and breastfeeding; and [Schuler 2000](#) - observed mother-infant interaction using the CAPI and videotaped observations, and performed the Bayley Scales of Infant Development at 18 months. The Bayley Mental Development Index (MDI) and Psychomotor

Development Index (PDI) were reported subgrouped according to the pattern of maternal ongoing drug use but did not report that these analyses were prespecified. Therefore, this review reports the meta-analysis of these subgroups (i.e. all infants randomised).

Excluded studies

For the 2011 update, we excluded an additional 10 studies or reports of studies, making a total of 46 excluded studies (see [Characteristics of excluded studies](#) table). The majority of the studies excluded were due to either a low prevalence of substance use problems in the studied population, or drug and/or alcohol use was not reported, and/or an inappropriate study design.

Risk of bias in included studies

Two studies ([Dakof 2003](#); [Quinlivan 2000](#)) reported adequate allocation concealment and randomisation procedures and had less than 10% losses post-randomisation. The other studies had substantial methodological limitations, particularly with large losses to follow-up. [Bartu 2006](#) did not number envelopes so allocation concealment was unclear, and there were baseline differences for risk factors between study groups. No study was able to be blinded due to the nature of the intervention. For methodological details of individual studies, see the [Characteristics of included studies](#) table.

Allocation

Three studies reported adequate sequence generation and allocation concealment ([Butz 1998](#); [Dakof 2003](#); [Quinlivan 2000](#)). [Bartu 2006](#) reported enrolling women, then allocating them using shuffled opaque sealed unnumbered envelopes, with the women selecting the envelope from one of at least six. This was considered an unclear risk method of allocation concealment. Two studies ([Black 1994](#); [Schuler 2000](#)) did not report method of sequence generation. Therefore, these studies also had unclear allocation concealment. [Grant 1996](#) reported inadequate sequence generation (used 'alternation') so allocation concealment was also considered high risk.

Blinding

Intervention: none of the studies reported blinding of intervention and this is unlikely given the intervention performed.

Measurement: this was reported by three studies for some of the outcomes. [Black 1994](#) reported blinding of measurement of the Bayley Scales of Infant Development, [Butz 1998](#) reported blinding of the Child Behavioural Checklist and Parental Stress Index, and [Schuler 2000](#) reported blinding of the videotaped observations of mother-child interaction. Other outcome measures in these studies are not reported as blinded.

[Bartu 2006](#) reported outcome measurement was not blinded. Three studies ([Dakof 2003](#); [Grant 1996](#); [Quinlivan 2000](#)) did not report blinding of outcome measurement.

Incomplete outcome data

Three studies ([Bartu 2006](#); [Dakof 2003](#); [Quinlivan 2000](#)) had less than 10% losses post randomisation. [Bartu 2006](#) reported 9.5% post-randomisation losses of survivors. [Dakof 2003](#) reported no losses to follow-up. [Quinlivan 2000](#) reported only one (0.7%) mother-infant pair who withdrew from study post randomisation. A

further 11 (8%) infants had adverse neonatal outcomes and did not contribute to knowledge outcomes.

Reported post randomisation losses for other studies were: [Black 1994](#) 28%, [Butz 1998](#) 43% for self-reported drug and alcohol use data and 51% for behavioural outcomes, [Grant 1996](#) 27%, and [Schuler 2000](#) 25% at six months and 54% at 18 months.

Selective reporting

We were not able to obtain any of the trial protocols. Four studies had clear and specific prespecified outcomes and so appear to be free of selective reporting ([Bartu 2006](#); [Butz 1998](#); [Dakof 2003](#); [Quinlivan 2000](#)).

Three studies did not have clear and specific prespecified outcomes and so are at risk of selective reporting ([Black 1994](#); [Grant 1996](#); [Schuler 2000](#)). [Grant 1996](#) reported multiple endpoints so is at risk of reporting bias.

Other potential sources of bias

[Bartu 2006](#) had baseline differences in demographic characteristics between study groups. [Black 1994](#) reported slight differences between groups for baseline characteristics (not statistically significant), multiple subgroup analyses for individual components of CAPI and HOME assessments. [Butz 1998](#) reported significant demographic differences between group post randomisation (and after losses), and multiple subgroup analyses of CBCL and PSI scores. [Grant 1996](#) reported multiple subgroups so is at risk of reporting bias. Reporting was insufficient to determine other potential sources of bias for three studies ([Black 1994](#); [Grant 1996](#); [Schuler 2000](#)).

Two studies had no apparent other bias related issues ([Dakof 2003](#); [Quinlivan 2000](#)). No interim analyses reported were reported by any study.

Effects of interventions

01 Home visits versus no home visits during pregnancy or after delivery (overall analysis and subgroups by timing of intervention)

All studies

Seven studies (863 women) compared home visits with no home visits of women with a drug or alcohol problem. However, the greatest number of studies and women or babies contributing to meta-analysis for any individual outcome was three studies reporting outcomes for 379 individuals.

No eligible study provided home visits during pregnancy only. Six studies ([Bartu 2006](#); [Butz 1998](#); [Dakof 2003](#); [Grant 1996](#); [Quinlivan 2000](#); [Schuler 2000](#)) compared home visits after delivery with no home visits. One study ([Black 1994](#)) provided home visits both during and after pregnancy. However, as only two antenatal visits were provided by a community health nurse for two weeks prior to delivery, this cannot be considered a significant antenatal intervention. Given that all studies provided home visits almost exclusively after delivery, subgroup analyses by timing of intervention are not reported separately.

Drug and alcohol related outcomes

Four studies reported continued illicit drug or alcohol use, for which data from three studies (Bartu 2006; Butz 1998; Schuler 2000) could be extracted for meta-analysis. Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference for continued illicit drug use (fixed-effect (FE) risk ratio (RR) 1.05, 95% confidence interval (CI) 0.89 to 1.24). There was substantial ($I^2 = 64\%$) but not statistically significant heterogeneity between studies ($P = 0.06$). Meta-analysis of three studies found no significant difference in continued alcohol use (FE RR 1.18, 95% CI 0.96 to 1.46). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (odds ratio 0.23, 95% CI 0.05 to 1.07 (author's analysis)). No study reported failure of stabilisation on methadone if opiate dependent or risk of maternal acquisition of HIV or hepatitis B or C post enrolment. No study provided a significant antenatal intervention so risk of neonatal abstinence syndrome is not reported. Two studies (Dakof 2003; Schuler 2000) reported failure to enrol in drug treatment programs, but with substantial ($I^2 = 92\%$) and significant heterogeneity ($P = 0.0005$). The random-effects (RE) model was therefore used to calculate the summary risk ratio (RE RR 0.45, 95% CI 0.10, 1.94). Three studies reported failure of retention in a treatment program (Bartu 2006; Black 1994; Dakof 2003). Dakof 2003 reported a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25). Meta-analysis of three studies (Bartu 2006; Black 1994; Dakof 2003) found no significant difference in failure of retention in a treatment program at latest time measured (FE RR 0.92, 95% CI 0.69 to 1.23). Other studies (Butz 1998; Grant 1996; Schuler 2000) did not report failure of retention in treatment or non-compliance with treatment in group of assignment.

Pregnancy and puerperium outcomes

As no study provided a significant antenatal intervention, we have not reported the risk of adverse pregnancy and delivery outcomes.

Infant/child outcomes

As all studies were of predominantly after birth interventions, the risk of adverse neonatal outcomes is not reported. Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breastfeeding up to six months (FE RR 0.95, 95% CI 0.83 to 1.10). No studies reported the risk of vertical transmission of HIV, hepatitis B or C. Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66).

Three studies (Black 1994; Grant 1996; Schuler 2000) used the Bayley Scales of Infant Development to assess infant development. Grant 1996 reported no significant difference in incidence of cognitive delay at three years using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45), but an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00, 10.59; risk difference (RD) 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in cognitive development (Bayley MDI: FE mean difference (MD) 2.89, 95% CI -1.17 to 6.95) or psychomotor development (Bayley PDI: FE MD 3.14,

95% CI -0.03 to 6.32). No study reported measures of school success including the need for special educational classes, retention in grade, competence in reading, writing, mathematics and general knowledge. Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). Butz 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). No study reported self-esteem, career aspiration, truancy or school completion. Long-term outcomes including teenage pregnancy, unemployment, not married, criminal behaviour, welfare assistance and suicide were not reported.

Psychosocial outcomes

One study (Bartu 2006) reported no significant difference in maternal depression screen test positive: EPDS ≥ 12 at six months (RR 1.22, 95% CI 0.63 to 2.38).

Two studies (Butz 1998; Quinlivan 2000) reported the risk of children not being in the care of their biological mother, with no significant difference (FE RR 0.83, 95% CI 0.50 to 1.39). There was substantial ($I^2 = 63\%$) but not statistically significant ($P = 0.1$) heterogeneity between studies. Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group having this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). No study reported risk of domestic violence. Schuler 2000 reported a significant reduction in use of child protection services (RR 0.38, 95% CI 0.20 to 0.74). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82). Longer-term outcomes were not reported.

01 Subgroups according to timing of intervention

See above.

02 Subgroups according to duration of intervention

Home visits less than six months

One study (Dakof 2003) provided less than six months of home visits. Dakof 2003 reported a significant reduction in failure to enrol in a drug treatment program (RR 0.22, 95% CI 0.10 to 0.48) and a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84), but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25).

Home visits prolonged at least six months

Six studies (Bartu 2006; Black 1994; Butz 1998; Grant 1996; Quinlivan 2000; Schuler 2000) provided prolonged home visits for periods of at least six months.

Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference for continued illicit drug use (FE RR 1.05, 95% CI 0.89 to 1.24). There was substantial ($I^2 = 64\%$) but not

statistically significant heterogeneity between studies ($P = 0.06$). Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference in continued alcohol use (FE RR 1.18, 95% CI 0.96 to 1.46). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (odds ratio 0.23, 95% CI 0.05 to 1.07 (author's analysis)). Schuler 2000 reported no significant difference in failure to enrol in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). Meta-analysis of two studies (Bartu 2006; Black 1994) found substantial ($I^2 = 75\%$) and statistically significant ($P = 0.05$) heterogeneity between studies. Random-effects model found no significant difference in failure of retention in a treatment program at latest time measured (RE RR 0.91, 95% CI 0.24 to 3.36). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breastfeeding up to six months (FE RR 0.95, 95% CI 0.83 to 1.10). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Grant 1996 reported no significant difference in incidence of cognitive delay at three years using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45) but an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in Bayley MDI (FE MD 2.89, 95% CI -1.17 to 6.95) or Bayley PDI (FE MD 3.14, 95% CI -0.03 to 6.32). Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). Butz 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Bartu 2006 reported no significant difference in maternal depression screen test positive: EPDS ≥ 12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in risk of infant not in care of biological mother (FE RR 0.83, 95% CI 0.50 to 1.39). There was substantial ($I^2 = 63\%$) but not statistically significant ($P = 0.1$) heterogeneity between studies. Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group having this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). Schuler 2000 reported a significant reduction in use of child protection services (RR 0.38, 95% CI 0.20 to 0.74). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

03 Subgroups according to frequency of intervention

Home visits at least weekly

Four studies (Black 1994; Dakof 2003; Grant 1996; Schuler 2000) provided home visits at least weekly. Schuler 2000 reported no significant difference for continued illicit drug use (RR 1.20, 95% CI 0.79 to 1.85) and continued alcohol use (RR 1.01, 95% CI 0.75

to 1.35). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). Meta-analysis of two studies (Dakof 2003; Schuler 2000) found considerable ($I^2 = 92\%$) and statistically significant ($P = 0.0005$) heterogeneity between studies reporting failure to enrol in a drug treatment program. Random-effects meta-analysis found no significant reduction in failure to enrol in a drug treatment program (RE RR 0.45, 95% CI 0.10 to 1.94). Dakof 2003 reported a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25). Black 1994 reported no significant difference in failure of retention in program at six months (RR 1.66, 95% CI 0.71 to 3.89) and no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Grant 1996 reported at three years no significant difference in incidence of cognitive delay using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45), and an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in Bayley MDI (FE MD 2.89, 95% CI -1.17 to 6.95) or Bayley PDI (FE MD 3.14, 95% CI -0.03 to 6.32). Schuler 2000 reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46).

Home visits less than weekly

Three studies (Bartu 2006; Butz 1998; Quinlivan 2000) provided home visits less often than weekly. Meta-analysis of two studies (Bartu 2006; Butz 1998) found considerable ($I^2 = 80\%$) and statistically significant ($P = 0.02$) heterogeneity. Random-effects analysis found no significant difference for continued illicit drug use (RE RR 0.99, 95% CI 0.66 to 1.47). Meta-analysis of two studies (Bartu 2006; Butz 1998) found no significant difference in continued alcohol use (FE RR 1.33, 95% CI 0.99 to 1.79). Bartu 2006 reported no significant difference in failure of retention in program at six months (RR 0.45, 95% CI 0.17 to 1.25). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breastfeeding at six months (FE RR 0.95, 95% CI 0.83 to 1.10). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Bartu 2006 reported no significant difference in maternal depression screen test positive: EPDS ≥ 12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01) but no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in risk of children not being in the care of their biological mother (FE RR 0.83, 95% CI 0.50 to 1.39). Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant

death (FE RR 0.70, 95% CI 0.12 to 4.16). [Quinlivan 2000](#) reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

04 Subgroups according to home visitor

Home visits by nurse

Four studies ([Bartu 2006](#); [Black 1994](#); [Butz 1998](#); [Quinlivan 2000](#)) used nurses to provide home visits. Meta-analysis of two studies ([Bartu 2006](#); [Butz 1998](#)) found considerable ($I^2 = 80\%$) and statistically significant ($P = 0.02$) heterogeneity between studies for continued illicit drug use. Random-effects meta-analysis found no significant difference in continued illicit drug use (RE RR 0.99, 95% CI 0.66 to 1.47). Meta-analysis of two studies ([Bartu 2006](#); [Butz 1998](#)) found no significant difference in continued alcohol use (FE RR 1.33, 95% CI 0.99 to 1.79). [Black 1994](#) reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). Meta-analysis of two studies ([Bartu 2006](#); [Black 1994](#)) reporting failure of retention in program to six months found considerable ($I^2 = 73\%$) and statistically significant heterogeneity ($P = 0.05$) between studies. Random-effects meta-analysis found no significant difference in failure of retention in program to six months (RE RR 0.89, 95% CI 0.25 to 3.20). Meta-analysis of two studies ([Bartu 2006](#); [Quinlivan 2000](#)) found no significant difference in failure to breastfeed at six months (FE RR 0.95, 95% CI 0.83 to 1.10) and no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). [Black 1994](#) reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). [Bartu 2006](#) reported no significant difference in maternal depression screen test positive: EPDS ≥ 12 at six months (RR 1.22, 95% CI 0.63 to 2.38). [Black 1994](#) reported no significant difference in the Bayley MDI (MD -1.80, 95% CI -11.36 to 7.76) or the Bayley PDI (MD 0.70, 95% CI -17.75 to 19.15) at 18 months. [Butz 1998](#) reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). [Butz 1998](#) also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Meta-analysis of two studies ([Butz 1998](#); [Quinlivan 2000](#)) found no significant difference in rate of children not in the care of their biological mother (FE RR 0.83, 95% CI 0.50 to 1.39). [Quinlivan 2000](#) reported child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). Meta-analysis of two studies ([Bartu 2006](#); [Quinlivan 2000](#)) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). [Black 1994](#) reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22). [Black 1994](#) reported no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). [Quinlivan 2000](#) reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

Home visits by trained social worker

No study reported using trained social workers to provide home visits.

Home visits by trained counsellors

[Dakof 2003](#) provided a manualised home-based, goal-orientated program administered by trained 'black' specialists with prior experience in drug treatment services. [Dakof 2003](#) reported a significant reduction in failure to enrol in a drug treatment program (RR 0.22, 95% CI 0.10 to 0.48) and a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25).

Home visits by trained lay worker

Two studies ([Grant 1996](#); [Schuler 2000](#)) reported home visits by trained lay workers. [Schuler 2000](#) reported no significant difference for continued illicit drug use (RR 1.20, 95% CI 0.79 to 1.85), continued alcohol use (RR 1.01, 95% CI 0.75 to 1.35) or failure to enrol in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). [Grant 1996](#) reported at three years no significant difference in incidence of cognitive delay using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45), and an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of two studies ([Grant 1996](#); [Schuler 2000](#)) found no significant differences in cognitive development (Bayley MDI: FE MD 3.92, 95% CI -0.56 to 8.41) or psychomotor development (Bayley PDI: FE MD 3.22, 95% CI -0.01 to 6.44). [Schuler 2000](#) reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74).

Home visits by a multidisciplinary team

No study reported using a multidisciplinary team to provide home visits.

05 Studies providing a developmental intervention

Three studies ([Black 1994](#); [Butz 1998](#); [Schuler 2000](#)) provided a developmental intervention as a component of the home visiting program. All three studies used the Carolina Preschool Curriculum and Hawaii Early Learning Program. Meta-analysis of two studies ([Butz 1998](#); [Schuler 2000](#)) found no significant difference in continued illicit drug use (FE RR 0.95, 95% CI 0.75 to 1.20) and continued alcohol use (FE RR 1.08, 95% CI 0.83 to 1.41). [Black 1994](#) reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). [Schuler 2000](#) reported no significant reduction in failure to enrol in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). [Black 1994](#) reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Meta-analysis of two studies ([Black 1994](#); [Schuler 2000](#)) found no significant difference in cognitive development (Bayley MDI: FE MD 3.13, 95% CI -1.46 to 7.72) but a significant improvement in psychomotor development (Bayley PDI: FE MD 4.14, 95% CI 0.79 to 7.50). [Butz 1998](#) reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). [Butz 1998](#) also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). [Butz 1998](#) reported no significant difference in rates of children not in the care of their biological mother (RR 1.04, 95% CI 0.61 to 1.77). [Schuler 2000](#) reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74). [Black 1994](#) reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.73, 95% CI -1.35 to -0.11) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22). [Black 1994](#) reported

no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46).

06 Studies of good methodology

Three studies (Bartu 2006; Dakof 2003; Quinlivan 2000) reported adequate allocation concealment and randomisation procedures and had less than 10% losses post randomisation. However, Bartu 2006 reported significant imbalances between groups after randomisation making it at high risk of bias. Dakof 2003 reported a significant reduction in failure to enrol in a drug treatment program (RR 0.22, 95% CI 0.10 to 0.48) and a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25). Quinlivan 2000 reported no significant difference in not breastfeeding at six months (RR 1.00, 95% CI 0.81 to 1.23); incomplete vaccination schedule at six months (RR 1.07, 95% CI 0.58 to 1.96); children not being in the care of their biological mother (RR 0.18, 95% CI 0.02 to 1.47); child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome; a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01); no significant difference in infant death (RR 0.55, 95% CI 0.05 to 5.88); and a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

Other prespecified subgroup analyses

Content of visits

No study provided pregnancy care at home. No study provided specific home-based drug and alcohol interventions although three studies (Dakof 2003; Grant 1996; Quinlivan 2000) reported linking clients to out of home drug and alcohol treatment services. It is not possible to differentiate home-based interventions which were non-judgemental and supportive versus directive in nature.

Effect of modifying factors

Six of the seven studies enrolled women on the basis of drug and/or alcohol use, with Quinlivan 2000 enrolling adolescent pregnant women with a high rate of drug and/or alcohol use. Quinlivan 2000 reported breastfeeding with no significant difference in failure to breast feed at six months (RR 1.00, 95% CI 0.81 to 1.23); no significant difference in risk of incomplete vaccination schedule at six months (RR 1.07, 95% CI 0.58 to 1.96) and no significant difference in the risk of children not being in the care of their biological mother (RR 0.18, 95% CI 0.02 to 1.47). Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome, a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01) and a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

Only one study (Schuler 2000) provided outcomes in group of assignment according to women's patterns or drug and/or alcohol use. Schuler 2000 reported developmental outcomes of infants in a post hoc analysis of subgroups based on maternal ongoing drug use. For infants of mothers with no ongoing drug use, there was a statistically significant increase in the Bayley MDI associated with home visits (mean difference (MD) 13.00, 95% CI 3.39 to 22.61), but not for those with ongoing drug use (MD 0.80, 95% CI -5.44 to 7.04).

Overall there was no clear difference between the intervention groups in Bayley MDI (MD 4.42, 95% CI -0.82 to 9.65). There was a statistically significant increase in the Bayley PDI (MD 4.21, 95% CI 0.83 to 7.59) in the trial overall, although the difference did not achieve statistical significance in either subgroup. No study provided outcomes in group of assignment according to the co-existence of domestic violence or mental illness, partner with drug or alcohol problem, or those women separated from their infants.

DISCUSSION

Summary of main results

The conclusions of this review are substantially affected by the methodological quality of many of the included studies especially those with large losses to follow-up, the wide spectrum of home visitors and interventions provided, the lack of studies providing an antenatal intervention with the goal of improving pregnancy outcomes and the lack of consistency of findings between studies. Of the studies with fewer methodological concerns, Dakof 2003 demonstrated that a short-term, intense intervention by trained counsellors in postpartum women with a drug problem can increase the number of women attending drug and alcohol services. However, the effects of this intervention were not maintained over a longer period of time and longer-term childhood and psychosocial outcomes were not reported. Bartu 2006 did not demonstrate any health benefits to mother or infant from eight home visits over six months by a midwife. Quinlivan 2000 reported that a less intense program of postnatal home visitation by midwives for postpartum adolescents with a high rate of drug and/or alcohol use resulted in a reduction in the combined rate of reported non-accidental injury and non-voluntary foster care which was of borderline significance, as well as a reduction in women not using postpartum contraception.

No study provided a significant antenatal intervention, so effects on pregnancy outcomes including antepartum haemorrhage, placental abruption, premature delivery, intrauterine growth restriction and perinatal mortality could not be ascertained. These adverse outcomes of drug and alcohol use in pregnancy have been well documented in the literature and studies are needed of antenatal interventions to address these issues.

This review failed to find evidence that home visits reduced continuing drug or alcohol use. Potential reasons for this include that many studies did not report ongoing risk of drug or alcohol use, and that no study incorporated drug and alcohol interventions as part of the home visiting intervention. In addition, it is possible that increased engagement or surveillance in the intervention group may increase the quantity of detected drug use.

Relatively few studies reported other maternal outcomes. Of those that did, Bartu 2006 reported no significant difference in screen positive women for depression at six months and Quinlivan 2000 reported a significant reduction in women not using postpartum contraception.

Most studies failed to report actual child abuse or neglect, non-accidental injury, accidents and hospitalisations, reports to community services and non-voluntary foster care. Of those that did, meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in risk of children not being in the care of their biological mother. Quinlivan 2000 reported non-accidental

injury with only one infant in the control group having this reported outcome. No study reported domestic violence. [Schuler 2000](#), however, reported a significant reduction in use of child protection services. Meta-analysis of two studies ([Bartu 2006](#); [Quinlivan 2000](#)) found no significant difference in infant death. Although numbers are small, it should be noted that in these two trials reporting outcomes for 288 infants there were five infant deaths equating to an infant mortality rate of 17 per 1000. The majority of these deaths are reported as Sudden Infant Death Syndrome, although criteria for diagnosis were not reported.

Three studies ([Black 1994](#); [Butz 1998](#); [Schuler 2000](#)) incorporated developmental interventions as part of the home visiting program, all using the Carolina Preschool Curriculum and Hawaii Early Learning Program. Effects on longer-term development were inconsistent, with [Black 1994](#) reporting no difference in the Bayley MDI or PDI at 18 months and [Schuler 2000](#) reporting significant improvements in the Bayley PDI for infants receiving intervention. A post hoc subgroup analysis by [Schuler 2000](#) according to pattern of maternal drug use should be treated with caution. In this analysis, [Schuler 2000](#) reported that the greatest effect of home visiting on development was seen in infants of mothers with no ongoing drug use. [Grant 1996](#) used paraprofessional home visitors but did not provide a specific developmental intervention and also failed to demonstrate any improvement in developmental outcomes. All the studies that reported developmental outcomes had substantial losses to follow-up limiting the validity of any findings. Longer-term cognitive outcomes especially at school age and school achievements have not been reported. Other potentially beneficial outcomes reported included the following: [Schuler 2000](#) reported a reduction in the involvement of child protection services in those families receiving home visits by an African-American lay home visitor, although it is unclear whether this is a result of an effect of the home visits or the increased surveillance in the control group who received weekly tracking visits; [Black 1994](#) reported a reduction in the Child Abuse Potential Inventory score, although not actual child abuse, and the child domain of the Parenting Stress Index in families receiving home visits by a part-time community health nurse experienced with women and children, and with drug using families.

In summary, this systematic review found trials that examined the effects of predominantly postnatal home visits of women with substantial drug use problems. A variety of different visitors were used including midwives, community health nurses, paediatric nurses, trained counsellors and trained lay workers. Interventions varied, although three trials performed a developmental intervention incorporating the Carolina Preschool Curriculum and Hawaii Early Learning Program. There was no consistent evidence that this developmental intervention had a significant effect on the infants' mental or psychomotor development. Four of the seven trials had substantial losses to follow-up that limit any conclusions from them. Some benefits to home visits were reported, including increased enrolment in and attendance for drug and alcohol treatment services from an intense program of trained counsellor home visits, improved contraception use and a trend to a reduction in non-voluntary foster care or non-accidental injury from a postnatal midwife home visiting program.

Trials are required that provide antenatal home visits, provide a flexible approach to home visits using a multidisciplinary team so as to meet individual clients differing needs, focus on stabilising

drug use and reducing or eliminating alcohol abuse in pregnancy and postpartum, provide continuity of care throughout pregnancy and postpartum, and continue until the infant is ready for a preschool intervention. The goals of interventions should be to engage the pregnant woman in early and frequent antenatal care so as to reduce the risk of adverse pregnancy outcomes, reduce or eliminate drug and alcohol use, meet the families' psychosocial needs including housing, financial, mental health and legal advocacy, and to stimulate an appropriate and safe environment for the infant's growth and development.

Overall completeness and applicability of evidence

There are substantial design limitations to the studies that limit the generalisability of this review. No study provided a significant antenatal intervention. Given that women who attended their health facility late in pregnancy and who have little antenatal care have worse pregnancy outcomes, antenatal home visits have the potential to improve women's attendance at their health facility and pregnancy care of women with a drug or alcohol problem. Although all studies used home visitors experienced with clients using drugs and/or alcohol, only one study ([Dakof 2003](#)) provided a specific drug and alcohol home intervention which had the goal of linking women with a drug problem to out of home care. This study demonstrated that a short-term intense intervention by a trained counsellor could increase the number of women attending drug and alcohol services, although the effects were not maintained to three months. Other studies used existing out of home drug and alcohol services and no study demonstrated a reduction in drug or alcohol use from a home visiting intervention. No study used a trained social worker to provide home visits. Given the myriad of psychosocial problems of drug or alcohol using women including homelessness, unemployment, low income and domestic violence, the use of a trained social worker has the potential to address issues of housing, transport to care, social services support and advocacy that could have substantial impacts on the lives of pregnant women with a drug or alcohol problem. No study provided a home intervention by a multidisciplinary team. Given that different clients have different needs and that many clients will not adequately attend hospital or centre-based care, it may be that using a specific home visitor (e.g. midwife or paediatric nurse) will not address many clients' needs. Trials of more dynamic models of home visits incorporating case management are needed.

The only studies to provide midwifery home visiting during the first six months provided a low intensity of home visits. [Bartu 2006](#) and [Quinlivan 2000](#) reported eight postpartum home visits by a midwife in the first six months. Given that studies ([Olds 2007](#)) that reported beneficial outcomes from nurse home visiting to high psychosocial risk families provided a mean of seven home visits (range: 0 to 18) during pregnancy (same mean number of prenatal visits for groups one and two) and 26 home visits (range: 0 to 71) during the first two years postpartum, the intensity and duration of the intervention in these studies may have been insufficient to demonstrate an effect.

Studies used heterogeneous interventions limiting the ability of this review to detect clinically important differences in effects of specific interventions.

Relatively few studies reported any individual outcome reducing the ability of this review to detect clinically important differences in effect of interventions.

The studies in this review are substantially underpowered. The infant death rate was 17 per 1000 reported in two of the studies in this review suggesting that substantially larger studies are needed to detect even a relatively large proportional reduction.

Quality of the evidence

There are substantial methodological limitations to the studies incorporated in this review. Three studies did not report the method of treatment allocation. No study blinded intervention to caregivers or participants given the nature of the intervention. Two studies had adequate randomisation and allocation concealment with < 10% post randomisation losses (Dakof 2003; Quinlivan 2000). Bartu 2006 was judged to be at high risk of bias due to unclear allocation concealment and imbalances post randomisation.

Few outcome measurements were performed blind to treatment allocation. Of those that were, Black 1994 reported blinding of measurement of the Bayley Scales of Infant Development and found no significant effect, Butz 1998 reported blinding of the Child Behavioural Checklist and Parental Stress Index and reported a significant reduction in the Parental Stress Index, and Schuler 2000 blinded videotaped observations of mother-child interaction and reported no significant differences in mother-infant interaction at 18 months. Studies that reported trends to reduction in combined non-accidental injury or children not in care of the biological mother (Quinlivan 2000) and a significant reduction in involvement of child protective services (Schuler 2000) did not report blinding the monitoring of the control groups. Four of the studies reported losses to follow-up that have the potential to substantially bias the reported results.

Several meta-analyses had substantial heterogeneity including those reporting continued illicit drug use, failure to enrol in drug treatment services, psychomotor development and infant not in care of biological mother. There are multiple potential sources of heterogeneity including differences in duration and intensity of home visiting, differences in type of home visitor, differences in type of intervention, and differences in study quality. In general, positive findings have not been reproducibly reported.

In addition, this review does not have adequate power for reliable conclusions. None of the studies were large, several of the bigger studies lost large numbers of participants, and no outcome is reported by more than three of the seven studies.

Potential biases in the review process

This review searched extensively for published and unpublished literature, reproducibly assessed eligibility, study quality and extracted data by independent reviewers, and contacted study authors where possible to clarify methodology or obtain missing data. This review combined studies that probably enrolled similar populations of women although there may be substantial cultural differences. The settings of the interventions are also likely to vary with different levels of infrastructure, different organisation and integration of services and differences in the provision of drug health services, obstetric and early childhood services.

Agreements and disagreements with other studies or reviews

This review focuses on the evidence of home visits in pregnant women and women after birth with a drug or alcohol problem.

Many of these women will be at high psychosocial risk for other reasons as well. There are a substantial number of trials of home visits for women at high psychosocial risk, either not enrolling women with a drug and/or alcohol problem or not reporting incidences of use of drugs or alcohol. Home visits for socially disadvantaged women is the planned focus of a pending Cochrane systematic review (MacDonald 2008). Trials have suggested benefits to home visits for both infant and maternal health and welfare, particularly where the home visitor was a well-trained nurse, the visits were frequent and the focus was on building a trusting relationship and coaching maternal-infant interaction (see reviews: MacDonald 2008; Kearney 2000; Kendrick 2000; McNaughton 2004; Persily 2003; Roberts 1996). Home violence attenuated the effectiveness of the home visits (Eckenrode 2000). The effect of lay home visitors is not as clear (Persily 2003). This review found that although several of the trials use well-trained nurses and provided relatively frequent and prolonged visiting, they focused on postnatal interventions. In addition, although one trial focused on enrolling in drug treatment services, all drug treatment services were out of home. The trials have not demonstrated an improvement in rates of stabilisation on therapy or reductions in illicit drug or alcohol use. Although some potential benefits were reported, particularly in terms of enrolment in out of home drug treatment services, child behavioural problems, parenting stress and the use of postpartum contraception, the reported effects of the home visits in women with a drug or alcohol problem do not appear to be substantial or consistent across studies.

This review did not find a significant effect on infant mortality, although it is substantially underpowered to do so. There are some data that suggest the possibility that trained nurse home visitors may reduce infant mortality (Olds 2004a; Olds 2007).

AUTHORS' CONCLUSIONS

Implications for practice

Home visits for women who are pregnant or have recently given birth have been advocated in the hope that they might improve outcome. Whilst there is promising evidence that a brief intensive intervention by trained counsellors may encourage women to attend drug and alcohol treatment services for a few weeks, there is no clear evidence of longer term or more substantive benefit. There is insufficient evidence at present to recommend the routine use of home visits, any particular model of home visits or any specific home interventions in women with a drug or alcohol problem.

Implications for research

Further large, high-quality trials are needed and the women's views on home visiting need to be assessed. Trials particularly needed include those incorporating antenatal home visits with the goal of encouraging pregnant women with a drug or alcohol problem to access early and frequent antenatal care, stabilise drug use, reduce or eliminate alcohol use in pregnancy and remain engaged with services during their child's first years of life. Trials should consider providing flexible care that meets clients needs potentially through the use of case management and multidisciplinary teams including workers trained in drug and alcohol treatment, social workers, midwives and early childhood nurses. Trials should measure important pregnancy, infant and psychosocial outcomes including perinatal mortality, premature delivery, intrauterine

growth restriction, use of non-voluntary foster care, childhood accidents, hospitalisations, abuse and neglect, infant deaths and cognitive development at least up to school age. Women's views should be assessed and outcomes measured beyond the end of the intervention.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Bartu 2006

Methods	Single centre, randomised controlled trial.
Participants	152 women using illicit drugs, English speaking, recruited at 35-40 weeks' gestation. Randomised after delivery. Excluded families: very preterm delivery, adolescent mother, in jail, fetal death in utero, relocation outside metropolitan area.
Interventions	Home visiting group (n = 76): received home visits by a research midwife at weeks 1, 2 and 4r, then monthly until 6 months postpartum. Each visit lasted from 1 to 2 h. Any difficulties encountered by the mother were addressed at each visit. Content of visits included assessment of mother and infant well being, parent craft, stress management, relaxation techniques, addressed major issues, immunisation and Pap smear information, links to community services provided. The control group (n = 76): had a telephone contact at 2 months and a home visit at 6 months.
Outcomes	The home visit group 2 and 6 month data were collected at the scheduled home visits. The CG group 2-month data were collected via a telephone call and the 6-month data were collected by face-to-face interview. The primary outcomes were duration of breastfeeding, and immunisation rates. Secondary outcomes were retention in the study and reduction in drug use. Drug use was self report.
Notes	Anne Bartu provided additional data about patient allocation and continued illicit drug use.

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Bartu 2006 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was conducted using opaque sealed envelopes in blocks of 12. Shuffled to achieve random order.
Allocation concealment (selection bias)	Unclear risk	Enrolled then allocated to intervention from opaque sealed envelope. The women chose 1 envelope from a group of at least 6 opaque sealed envelopes. Envelopes not numbered.
Blinding (performance bias and detection bias) Intervention	High risk	Women aware of allocation.
Blinding (performance bias and detection bias) All outcomes	High risk	Data collection performed by home visiting midwives.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Home visit group 4/76 (5%) lost, 1 SIDS death; control group 9/76 (12%) lost, 1 withdrawn, 1 SIDS death. Data for continuing illicit drug use not available for 5/76 treatment and 11/76 control mothers. Total losses = 9.5% survivors.
Selective reporting (reporting bias)	Low risk	Clear prespecified primary and secondary outcomes.
Other bias	High risk	Some baseline differences in group characteristics including prepregnancy expenditure on drugs ($P = 0.03$), naltrexone implants after pregnancy ($P = 0.05$), partner illicit drug use (75 vs 59%, $P = 0.09$), and currently attending psychiatrist (30 vs 16%, $P = 0.03$). No interim analysis reported.

Black 1994

Methods	Randomised controlled trial.
Participants	Inclusion criteria: large metropolitan teaching hospital in Baltimore, primarily single, African-American, low-income, inner city, multiparous, polydrug users with incomplete schooling. Maternal cocaine or heroin use in pregnancy obtained from questionnaire. Enrolled prenatally. Exclusion criteria: non-compliance with recruiting procedures.
Interventions	Treatment group ($n = 31$): 2 part-time community health nurses experienced with women and children, and with drug-abusing families provided 1 hour visits, home visitation pre and postpartum, armed escort. Biweekly home visits extending to 18 months. 2 visits before birth. Caseload per nurse was 31 families. Formed alliance, addressed personal, family and environmental needs and facilitated child-parent interaction. Provided information and advocacy for parents, incorporated the Carolina preschool curriculum and Hawaii Early Learning Program. Control group ($n = 29$): no home visits. Co-interventions: both groups attended primary health care multidisciplinary clinic dedicated to treatment of infants born to substance abusing mothers and/or HIV infected. 9 clinic visits scheduled up to 18 months, given transportation costs and compensation for evaluation visits.
Outcomes	Reported primary outcome(s): promotion of positive behaviours and attitudes among drug using women and development in their children.

Black 1994 (Continued)

Other outcomes: HOME score at 30 months, Bayley Scales of Infant Development at 6, 12 and 18 months, Child Abuse Potential Index, Parent Stress Index at 18 months, compliance with paediatric health visits and self reported drug and/or alcohol use.

Notes Trial of predominantly postpartum home visits up to 18 months by trained community health nurses for drug using women.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Prepartum method not reported.
Allocation concealment (selection bias)	Unclear risk	Method not reported.
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	Low risk	Bayley Scales performed blind to group of allocation. Unclear for other outcomes.
Incomplete outcome data (attrition bias) All outcomes	High risk	17/60 = 28%. Losses: 11/31 treatment group; 6/29 control group.
Selective reporting (reporting bias)	Unclear risk	Unclear prespecified outcomes.
Other bias	Unclear risk	Slight differences between groups for baseline characteristics (not statistically significant). No interim analysis reported. Multiple subgroup analyses for individual components of CAPI and HOME assessments.

Butz 1998

Methods	Randomised controlled trial.
Participants	Inclusion criteria: delivery at 1 of 2 urban hospitals, maternal age 19-40 years, maternal use of opiates and/or cocaine in pregnancy (self reported or positive toxicology of maternal urine in labour or infant urine). Exclusion criteria: adolescent and older mothers, infants < 35 weeks' gestation, admitted to NICU > 24 hours, discharged directly to foster care, born to mothers with major psychiatric diagnosis.
Interventions	Treatment group (n = 108): 16 community paediatric nurse specialist home visits from birth to 18 months. Provided emotional support, modelled positive parent-child interactions, provided health monitoring of infant and parent education, parental skills training, used Hawaii Early Learning Profile and Carolina Preschool Curriculum. Supervised by Pediatric nurse practitioner. Control group (n = 96): no home visits (standard care including outpatient follow up). Description of standard care not given. Co-interventions: none reported.
Outcomes	Reported primary outcome(s): Child Behaviour Checklist at 36 months. Other outcomes: self reported continued postnatal drug and alcohol use, caregiver status at 36 months, reporting of incidents of child abuse or neglect, losses to follow up, Child Behaviour Checklist,

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Butz 1998 (Continued)

Parenting Stress Index at 2 and 3 years. "Child behavior and parenting stress self-report measures were read aloud to all caregivers."

Notes Trial of postnatal home visits to 18 months by trained community paediatric health nurses for drug using mothers.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated, envelopes used.
Allocation concealment (selection bias)	Low risk	
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	Low risk	Yes for Child Behaviour Checklist and Parental Stress Index. Unclear for other outcomes.
Incomplete outcome data (attrition bias) All outcomes	High risk	87/204 lost to 36 month follow-up, with 104/204 (51%) mother-infant pairs with incomplete data at follow-up. 117 mother-infant pairs available for drug use and caregiver outcomes, and 100 for all outcomes. Losses: 59/108 treatment group; 58/96 control group.
Selective reporting (reporting bias)	Low risk	Prespecified primary outcomes.
Other bias	High risk	Imbalances between groups post randomisation (after losses). Multiple subgroup analyses of CBCL and PSI scores.

Dakof 2003

Methods	Randomised controlled trial.
Participants	'Black' mothers (95% African-American) referred after childbirth by hospital or from Department of Children and Families after a child abuse/neglect report. Inclusion criteria: 'black', female, ≥ 18 years old, toxicology of mother or infant positive for cocaine. Exclusion criteria: none reported.
Interventions	Treatment Group: Engaging Mums Program (n = 51): a manualised home based goal orientated program administered by trained 'black' specialists with prior experience in drug treatment services available 24 hours per day. Intervention contacts included 1 to 4 individual, family or case management sessions per week of varying lengths (20 mins to 1 hour). The goal was to enrol the mother in intervention services within 8 weeks. Control group (n = 52): community services as usual. Minimum intervention in control included in-home psychosocial evaluation, referral to a drug treatment program, follow-up phone call within a day of scheduled initial treatment appointment and drug treatment program if entered into. Co-interventions: all had been reported to the State Child Welfare Department prior to study and had a psychosocial evaluation, drug treatment referral and a follow-up call within a day of initial drug treatment visit.

Dakof 2003 (Continued)

Outcomes	Primary outcomes: enrolment in treatment program, 4 weeks and 90-day retention in treatment.
Notes	Trial of postnatal and childhood short-term home-based intervention program administered by trained counsellors with aim of engagement and retention in drug abuse treatment program.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Postpartum, used an "urn randomisation procedure" which included variables modality of treatment referred to, age, HIV status and extent of child welfare system sanctions.
Allocation concealment (selection bias)	Low risk	
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not reported.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	None reported.
Selective reporting (reporting bias)	Low risk	Clear prespecified outcomes.
Other bias	Low risk	No interim analysis reported.

Grant 1996

Methods	Quasi-randomised controlled trial.
Participants	Hospital referred first day postpartum. Inclusion criteria: singleton birth, self report of heavy drug and/or alcohol use in pregnancy. Recruited within 1 month of delivery. Not successfully engaged with community services. Minimal or no prenatal care.
Interventions	Home visit group (n = 35): The Seattle Birth to 3 years Program - a 3-year home visiting advocacy program by paraprofessional advocates with many similar life experiences. Weekly home visits for 6 weeks, then twice monthly or more to 3 years. Linked clients with health care, parenting classes, therapeutic child care and substance abuse treatment programs. Clients not required to obtain drug/alcohol treatment. No specific developmental intervention, but developmental assessment performed in intervention group at 4 months, 2 and 3 years with discussion of progress with parents. Control group (n = 31): access to community social and health services but no home visits or advocacy. Children evaluated at 3 years only.
Outcomes	Primary outcomes: Bayley Scales of Infant Development at 3 years. Other outcomes: growth in height, weight and head circumference at 3 years.
Notes	Trial of postnatal paraprofessional home visits in drug using women. Hospital clients allocated treatment or control. However, community clients all enrolled to treatment so this group excluded analysis.

Grant 1996 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Prepartum, allocated "every 3rd woman to control".
Allocation concealment (selection bias)	High risk	Allocated "every 3rd woman to control".
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	High risk	Not reported for short term outcomes. Reported that 3-year assessment performed with knowledge of drug use.
Incomplete outcome data (attrition bias) All outcomes	High risk	18/66 = 27%. Losses: 12/35 hospital treatment group; 6/31 control group.
Selective reporting (reporting bias)	Unclear risk	Unclear primary outcomes.
Other bias	Unclear risk	No interim analysis reported. Multiple endpoints reported, multiple subgroup analyses.

Quinlivan 2000

Methods	Randomised controlled trial
Participants	Teenagers attending first antenatal clinic appointment at an Australian public care teenage pregnancy clinic. Inclusion criteria: < 18 years, ability to speak English, intention to continue with pregnancy. Exclusion criteria: lived over 150 km from hospital or known fetal abnormality. Rates of alcohol use up to beginning of pregnancy were 79% in home visit group and 69% in control group. Rates of illicit drug use at beginning of pregnancy were 61% in home visit group and 51% in control group.
Interventions	Home visits group (n = 65): structured postnatal home visits by nurse midwife at 1 and 2 weeks, 1, 2, 4 and 6 months. Visits lasted 1-4 hours. Obstetrician phone advice available. Interventions included lactation and mothercraft education and advice, general and obstetric health surveillance, contraception and child health advice, provided information on drug and alcohol use and services, education on parenting skills and confirmed appointments for vaccinations. Control group (n = 71): no structured home visits by midwives. Co-interventions: all participants provided routine postnatal support, counselling and information services including standard domiciliary home-visit services.
Outcomes	Primary outcomes: adverse neonatal outcomes, knowledge about contraception, vaccination schedules and breastfeeding. Other outcomes: non-voluntary foster care (up to 12 months), breastfeeding rates, contraception usage, and completed vaccination schedules.
Notes	Neonatal deaths at 13 and 17 days and 4 months not documented as having received home visits. Trial of postnatal home visits by nurse midwives in adolescent women with high rate of drug and/or alcohol use.

Quinlivan 2000 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated, envelopes used.
Allocation concealment (selection bias)	Low risk	
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not reported.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Losses: home visit group 3/65 and control group 9/71 for knowledge outcomes; neonatal and foster care outcomes reported for these infants. Only 1/65 in home visit group withdrew consent and outcome unknown.
Selective reporting (reporting bias)	Low risk	Clear prespecified outcomes.
Other bias	Low risk	No interim analysis reported.

Schuler 2000

Methods	Randomised controlled trial.
Participants	Inclusion criteria: teaching hospital Baltimore, largely African-American women, with positive urine toxicology at birth or history of recent drug use. Enrolled postpartum. Exclusion criteria: infants not discharged in care of biological mother, infants with serious developmental or congenital problems requiring special services.
Interventions	Treatment group (n = 114): Infant Health and Development Program comprising of a home-based intervention in first year, child attendance at a child-development centre and parent group meetings from the 2nd year. Weekly home visits from birth to 6 months, then biweekly to 18 months by lay African American women. Home visits had goal of increasing maternal empowerment and enhancing mother's ability to manage self-identified problems using existing services and supports. Child component included Hawaii Early Learning Program. Control group (n = 113): short monthly home-tracking visits by 1 African-American lay home visitor. Average of 7.7 visits per client with mean time 18.5 minutes. Co-interventions: all mothers given information on drug treatment programs but participation not mandatory. Mothers paid for evaluation visit and given tokens to get home.
Outcomes	Reported primary outcome(s): at 18 months observed mother-infant interaction using Child Abuse Potential Inventory and observed mother child interaction using videotaped observations. Bayley Scales of Infant Development at 18 months. Other outcomes: continued self reported drug and alcohol use. Data for infant deaths, foster care and withdrawal from program not reported in group of assignment. Data for 6-7 year follow up not reported in group of assignment.

Schuler 2000 (Continued)

Notes Trial of postnatal home visits by lay African-American women in women with a positive drug screen at delivery.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	2 weeks postpartum, method not reported.
Allocation concealment (selection bias)	Unclear risk	Method not reported.
Blinding (performance bias and detection bias) Intervention	High risk	Not possible.
Blinding (performance bias and detection bias) All outcomes	Low risk	Research assistants who were unaware of the intervention status of the mothers and infants conducted all evaluation visits in a hospital clinic.
Incomplete outcome data (attrition bias) All outcomes	High risk	258 enrolled, 227 randomised at 2 weeks, 53/227 lost after 2 week visit, 174 (77%) seen at 18 months but outcomes reported for 131 (58%). Bayley Scales at 18 months reported for 108/227 (48%). Losses for Bayley Scales at 18 months: 60/114 treatment group; 59/113 control group.
Selective reporting (reporting bias)	Unclear risk	Broad prespecified outcomes.
Other bias	Unclear risk	No interim analysis reported.

CAP: Child Abuse Potential Index

CG: control group

NICU: neonatal intensive care unit

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Ammerman 2004	Observational study of breastfeeding. Drug and alcohol use rates not reported.
Armstrong 1999	Randomised study of postnatal child health nurse and social work home visitation in high-risk families including those using drugs or alcohol. Prevalence of drug and/or alcohol use not reported.
Barnes-Boyd 1995	Non-random control study of postpartum nurse home visiting for high-risk mothers. Prevalence of drug and alcohol problems not reported.
Barnes-Boyd 1996	Non-random control study of postpartum nurse home visiting for high-risk mothers. Prevalence of drug and alcohol problems not reported.
Belizan 1995	Enrolled high-risk women with 30% incidence of daily alcohol drinking.
Black 1995	Randomised study of community based lay home visiting of families with infants with non-organic failure to thrive.

Study	Reason for exclusion
Black 1997	Randomised trial of home-based videotape intervention in adolescent mothers.
Black 2001	Report of a nested randomised trial, part of a larger trial in adolescent mothers, of a home-based lay worker and videotape intervention.
Brayden 1993	Trial of hospital based intensive care for high-risk women (low-income and screening questionnaire). Prevalence of drug and alcohol use not reported.
Brooten 2001	Enrolled pregnant women at high obstetric (not social) risk. Not women with a drug or alcohol problem.
Brumfield 1996	Trial of early postpartum hospital discharge. Substance using women excluded.
Burry 1999	Non-random study of foster parent training.
Carroll 1995	Random study of enhanced hospital based prenatal care, relapse prevention groups, urine toxicology and therapeutic child care in substance using pregnant women. Not a study of home visits.
Chang 1992	Non-random assignment to enhanced hospital-based prenatal care, relapse prevention groups, urine toxicology and therapeutic child care during visits in substance using pregnant women.
Chang 1999	Randomised trial of brief intervention for alcohol use in pregnancy conducted in hospital setting.
Chang 2006	Randomised trial of brief intervention for alcohol use in pregnancy conducted in hospital setting.
Duggan 2000	Randomised trial of extended postnatal home visitation by paraprofessional people to high-risk families. Maternal substance use documented for 19-23%.
Fleming 2008	RCT of brief alcohol intervention in pregnant women. No home visits performed.
French 1998	Trial of postpartum in-hospital teaching of infant comforting and interacting techniques to substance abusing mothers.
Giles 1989	Non-random study of a hospital outpatient methadone program.
Graham 1992	Did not report rates of drug or alcohol use. Enrolled antenatally on basis of being high-risk including low family function rating and at least 1 stressful life event (not specified as drug or alcohol related).
Hankin 2003	RCT of brief alcohol intervention in pregnant women. Home visits not reported. Published as abstract only.
Johnson 1993	Randomised trial of lay mother home visitation in first time mothers.
King 2001	Randomised trial of a single home visit incorporating an injury prevention package in families with children < 8 years age.
Kitzman 1997	Randomised trial of antenatal and postpartum nurse home visitation to high-risk pregnant women. Low rate of reported drug or alcohol use in population.
Koniak-Griffin 2000	Randomised trial of nurse home visitation during pregnancy and early postpartum in adolescent women. Women with a chemical dependency excluded. Low rates of alcohol and marijuana use at baseline.

Study	Reason for exclusion
Marcenko 1994	Randomised trial of antenatal and postpartum home visiting by a team (nurse, indigenous home visitor and social worker) for high psychosocial risk women. Reported incidence of drug use 15% in last month.
Morrell 2000	Randomised trial of midwifery support worker home visitation for postpartum women. Incidence of drug and alcohol use not reported.
Mullins 2004	Randomised trial of motivational interviewing - both groups received home visits.
Oettgen 2004	Non randomised study of home visits combined with a paediatric mobile clinic.
Olds 1986	Randomised trial of antenatal and postnatal nurse home visitation in high psychosocial risk women. Not selected on basis of drug or alcohol use.
Olds 2002	Randomised trial of antenatal and postpartum paraprofessional versus nurse home visitation versus control in women. Rate of reported drug or alcohol use approximately 20%.
Olds 2004a	Randomised trial of antenatal and postnatal nurse home visitation in high psychosocial risk women. Drug or alcohol use reported approximately 4%.
Olds 2004b	Randomised trial of antenatal and postnatal nurse home visitation in high psychosocial risk women. Not selected on basis of drug or alcohol use. Reported drug or alcohol use 5-9%.
Roman 2007	Randomised controlled trial of 2 different high-risk pregnancy support services both arms of which included home visiting. Current illicit drug and alcohol use 3.8 to 8.3%. Note: > 50% reported past use of illicit drugs.
Schuster 1998	Randomised trial of case manager (degrees in social sciences) home visiting for low-income mothers and infants. Prevalence of drug and alcohol use not reported.
Seitz 2004	Randomised trial of home visits by trained volunteers to young women between 15-24 years with no history of substance use.
Strantz 1995	Randomised trial of intensive day treatment versus traditional outpatient treatment for postpartum women. No home visitation.
Sundfaer 2001	Observational study.
Super 1990	Enrolled socially disadvantaged infants in Columbia. Rates of drug and alcohol use not reported.
Sweeney 2000	Non-random study of outpatient substance abuse treatment for pregnant women.
Taylor 1997	Randomised controlled trial individualised versus group well child care in high-risk families. Home visit only a component of outcome measurement.
Teague 1995	Trial of continuous treatment teams of patients with a dual diagnosis. Community-based services a component of the treatment team approach. Not a study of home visits.
van Amerongen 1996	Observational study.
Walkup 2009	Randomised trial of paraprofessional home visiting in pregnant African-Indian women - 13% incidence drug or alcohol use.

DATA AND ANALYSES

Comparison 1. Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Continued illicit drug use	3	384	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.89, 1.24]
1.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 Intervention after delivery only	3	384	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.89, 1.24]
1.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Continued alcohol use	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
2.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 Intervention after delivery only	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
2.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Failure to enrol in drug treatment program	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Intervention after delivery only	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Failure to remain in drug treatment at 4 weeks	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.2 Intervention after delivery only	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Failure to remain in drug treatment at 90 days	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.1 Intervention during pregnancy only	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
5.2 Intervention after delivery only	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Failure of retention in program at latest time measured	3	315	Risk Ratio (M-H, Fixed, 95% CI)	0.92 [0.69, 1.23]
6.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 Intervention after delivery only	2	255	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.60, 1.10]
6.3 Intervention both during pregnancy and after delivery	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.72 [0.73, 4.04]
7 Not breastfeeding at 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 Intervention after delivery only	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Incomplete infant vaccination schedule at latest time measured	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
8.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Intervention after delivery only	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
8.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Failure to keep scheduled appointments (infant primary care)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 Intervention after delivery only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Intervention both during pregnancy and after delivery	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
10 Significant cognitive delay (Bayley MDI >= 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.1 Intervention during pregnancy only	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
10.2 Intervention after delivery only	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Intervention after delivery only	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Cognitive development (Bayley MDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
12.1 Intervention during pregnancy only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.2 Intervention after delivery only	2	156	Mean Difference (IV, Fixed, 95% CI)	3.92 [-0.56, 8.41]
12.3 Intervention both during pregnancy and after delivery	1	43	Mean Difference (IV, Fixed, 95% CI)	-1.80 [-11.36, 7.76]
13 Psychomotor development (Bayley PDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]
13.1 Intervention during pregnancy only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.2 Intervention after delivery only	2	156	Mean Difference (IV, Fixed, 95% CI)	3.22 [-0.01, 6.44]
13.3 Intervention both during pregnancy and after delivery	1	43	Mean Difference (IV, Fixed, 95% CI)	0.70 [-17.75, 19.15]
14 Behavioural problems	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 Intervention after delivery only	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Child Behaviour Checklist total score	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.1 Intervention during pregnancy only	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
15.2 Intervention after delivery only	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.3 Intervention both during pregnancy and after delivery	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
16 EPDS $\geq$ 12 at 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.2 Intervention after delivery only	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17 Infant not in care of biological mother	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Intervention after delivery only	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Child abuse or neglect: non-accidental injury	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
18.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.2 Intervention after delivery only	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
18.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19 Non-accidental injury and non-voluntary foster care	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Intervention after delivery only	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Involvement with child protective services	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.1 Intervention during pregnancy only	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
20.2 Intervention after delivery only	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Infant death	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Intervention after delivery only	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Child abuse potential inventory (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.1 Intervention during pregnancy only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.2 Intervention after delivery only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.3 Intervention both during pregnancy and after delivery	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
23 Child domain of parenting stress index at 18 months (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
23.1 Intervention during pregnancy only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.2 Intervention after delivery only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.3 Intervention both during pregnancy and after delivery	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
24 HOME score	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.1 Intervention during pregnancy only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.2 Intervention after delivery only	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.3 Intervention both during pregnancy and after delivery	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
25 No use of postpartum contraception	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]
25.1 Intervention during pregnancy only	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.2 Intervention after delivery only	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
25.3 Intervention both during pregnancy and after delivery	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26 Cognitive development (Bayley MDI) at latest time measured	1	108	Mean Difference (IV, Fixed, 95% CI)	4.42 [-0.82, 9.65]
26.1 Infants of mothers with no ongoing drug use (intervention after birth only)	1	36	Mean Difference (IV, Fixed, 95% CI)	13.0 [3.39, 22.61]
26.2 Infants of mothers with ongoing drug use (intervention after birth only)	1	72	Mean Difference (IV, Fixed, 95% CI)	0.80 [-5.44, 7.04]
27 Infant death	1	1000	Risk Ratio (M-H, Fixed, 95% CI)	0.13 [0.02, 1.00]

Analysis 1.1. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 1 Continued illicit drug use.

Analysis 1.2. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 2 Continued alcohol use.

Analysis 1.3. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 3 Failure to enrol in drug treatment program.

Analysis 1.4. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 4 Failure to remain in drug treatment at 4 weeks.

Analysis 1.5. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 5 Failure to remain in drug treatment at 90 days.

Analysis 1.6. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 6 Failure of retention in program at latest time measured.

Analysis 1.7. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 7 Not breastfeeding at 6 months.

Analysis 1.8. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 8 Incomplete infant vaccination schedule at latest time measured.

Analysis 1.9. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 9 Failure to keep scheduled appointments (infant primary care).

Analysis 1.10. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 10 Significant cognitive delay (Bayley MDI $\geq$ 2sd below population mean).

Analysis 1.11. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean).

Analysis 1.12. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 12 Cognitive development (Bayley MDI) at latest time measured.

Analysis 1.13. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 13 Psychomotor development (Bayley PDI) at latest time measured.

Analysis 1.14. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 14 Behavioural problems.

Analysis 1.15. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 15 Child Behaviour Checklist total score.

Analysis 1.16. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 16 EPDS ≥ 12 at 6 months.

Analysis 1.17. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 17 Infant not in care of biological mother.

Analysis 1.18. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 18 Child abuse or neglect: non-accidental injury.

Analysis 1.19. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 19 Non-accidental injury and non-voluntary foster care.

Analysis 1.20. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 20 Involvement with child protective services.

Analysis 1.21. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 21 Infant death.

Analysis 1.22. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 22 Child abuse potential inventory (z score).

Analysis 1.23. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 23 Child domain of parenting stress index at 18 months (z score).

Analysis 1.24. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 24 HOME score.

Analysis 1.25. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 25 No use of postpartum contraception.

Analysis 1.26. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 26 Cognitive development (Bayley MDI) at latest time measured.

Analysis 1.27. Comparison 1 Home visits versus no home visits during pregnancy or after delivery (subgroups by timing of intervention), Outcome 27 Infant death.

Comparison 2. Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Continued illicit drug use	3	384	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.89, 1.24]
1.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 Intervention ≥ 6 months	3	384	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.89, 1.24]
2 Continued alcohol use	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
2.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 Intervention ≥ 6 months	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
3 Failure to enrol in drug treatment program	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.1 Intervention < 6 months	1	103	Risk Ratio (M-H, Random, 95% CI)	0.22 [0.10, 0.48]
3.2 Intervention ≥ 6 months	1	108	Risk Ratio (M-H, Random, 95% CI)	0.84 [0.63, 1.12]
4 Failure to remain in drug treatment at 4 weeks	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.1 Intervention < 6 months	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.2 Intervention ≥ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Failure to remain in drug treatment at 90 days	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.1 Intervention < 6 months	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.2 Intervention ≥ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Failure of retention in program at latest time measured	3	315	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.54, 1.62]
6.1 Intervention < 6 months	1	103	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.69, 1.25]
6.2 Intervention ≥ 6 months	2	212	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.24, 3.36]
7 Not breastfeeding at 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 Intervention ≥ 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
8 Incomplete infant vaccination schedule at latest time measured	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Intervention ≥ 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
9 Failure to keep scheduled appointments (infant primary care)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 Intervention ≥ 6 months	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
10 Significant cognitive delay (Bayley MDI ≥ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 Intervention ≥ 6 months	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
11 Significant psychomotor delay (Bayley PDI ≥ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Intervention ≥ 6 months	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
12 Cognitive development (Bayley MDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
12.1 Intervention < 6 months	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.2 Intervention ≥ 6 months	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
13 Psychomotor development (Bayley PDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]
13.1 Intervention < 6 months	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.2 Intervention ≥ 6 months	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]
14 Behavioural problems	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 Intervention ≥ 6 months	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
15 Child Behaviour Checklist total score	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.1 Intervention < 6 months	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
15.2 Intervention $\geq$ 6 months	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
16 EPDS $\geq$ 12 at 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.2 Intervention $\geq$ 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
17 Infant not in care of biological mother	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Intervention $\geq$ 6 months	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
18 Child abuse or neglect: non-accidental injury	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
18.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.2 Intervention $\geq$ 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
19 Non-accidental injury and non-voluntary foster care	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Intervention $\geq$ 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
20 Involvement with child protective services	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.2 Intervention $\geq$ 6 months	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
21 Infant death	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.1 Intervention $<$ 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Intervention $\geq$ 6 months	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
22 Child abuse potential inventory (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.1 Intervention $<$ 6 months	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.2 Intervention $\geq$ 6 months	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
23 Child domain of parenting stress index at 18 months (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
23.1 Intervention < 6 months	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.2 Intervention ≥ 6 months	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
24 HOME score	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.1 Intervention < 6 months	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.2 Intervention ≥ 6 months	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
25 No use of postpartum contraception	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]
25.1 Intervention < 6 months	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.2 Intervention ≥ 6 months	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]

Analysis 2.1. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 1 Continued illicit drug use.

Analysis 2.2. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 2 Continued alcohol use.

Analysis 2.3. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 3 Failure to enrol in drug treatment program.

Analysis 2.4. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 4 Failure to remain in drug treatment at 4 weeks.

Analysis 2.5. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 5 Failure to remain in drug treatment at 90 days.

Analysis 2.6. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 6 Failure of retention in program at latest time measured.

Analysis 2.7. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 7 Not breastfeeding at 6 months.

Analysis 2.8. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 8 Incomplete infant vaccination schedule at latest time measured.

Analysis 2.9. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 9 Failure to keep scheduled appointments (infant primary care).

Analysis 2.10. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 10 Significant cognitive delay (Bayley MDI $\geq$ 2sd below population mean).

Analysis 2.11. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean).

Analysis 2.12. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 12 Cognitive development (Bayley MDI) at latest time measured.

Analysis 2.13. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 13 Psychomotor development (Bayley PDI) at latest time measured.

Analysis 2.14. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 14 Behavioural problems.

Analysis 2.15. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 15 Child Behaviour Checklist total score.

Analysis 2.16. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 16 EPDS ≥ 12 at 6 months.

Analysis 2.17. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 17 Infant not in care of biological mother.

Analysis 2.18. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 18 Child abuse or neglect: non-accidental injury.

Analysis 2.19. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 19 Non-accidental injury and non-voluntary foster care.

Analysis 2.20. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 20 Involvement with child protective services.

Analysis 2.21. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 21 Infant death.

Analysis 2.22. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 22 Child abuse potential inventory (z score).

Analysis 2.23. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 23 Child domain of parenting stress index at 18 months (z score).

Analysis 2.24. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 24 HOME score.

Analysis 2.25. Comparison 2 Home visits versus no home visits during pregnancy or after delivery (subgroups by duration of intervention), Outcome 25 No use of postpartum contraception.

Comparison 3. Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Continued illicit drug use	3	384	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.78, 1.38]
1.1 Intervention at least weekly	1	131	Risk Ratio (M-H, Random, 95% CI)	1.20 [0.79, 1.85]
1.2 Intervention < weekly	2	253	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.66, 1.47]
2 Continued alcohol use	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
2.1 Intervention at least weekly	1	131	Risk Ratio (M-H, Fixed, 95% CI)	1.01 [0.75, 1.35]
2.2 Intervention < weekly	2	248	Risk Ratio (M-H, Fixed, 95% CI)	1.33 [0.99, 1.79]
3 Failure to enrol in drug treatment program	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.1 Intervention at least weekly	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.2 Intervention < weekly	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Failure to remain in drug treatment at 4 weeks	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.1 Intervention at least weekly	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Failure to remain in drug treatment at 90 days	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.1 Intervention at least weekly	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Failure of retention in program at 6 months	2	211	Risk Ratio (M-H, Fixed, 95% CI)	0.89 [0.48, 1.66]
6.1 Intervention at least weekly	1	59	Risk Ratio (M-H, Fixed, 95% CI)	1.66 [0.71, 3.89]
6.2 Intervention < weekly	1	152	Risk Ratio (M-H, Fixed, 95% CI)	0.45 [0.17, 1.25]
7 Not breastfeeding at 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.1 Intervention at least weekly	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
7.2 Intervention < weekly	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
8 Incomplete infant vaccination schedule at latest time measured	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
8.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Intervention < weekly	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
9 Failure to keep scheduled appointments (infant primary care)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.1 Intervention at least weekly	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Significant cognitive delay (Bayley MDI $\geq$ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.1 Intervention at least weekly	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.1 Intervention at least weekly	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Cognitive development (Bayley MDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
12.1 Intervention at least weekly	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
12.2 Intervention < weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Psychomotor development (Bayley PDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]
13.1 Intervention at least weekly	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
13.2 Intervention < weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Behavioural problems	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 Intervention < weekly	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
15 Child Behaviour Checklist total score	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.1 Intervention at least weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.2 Intervention < weekly	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
16 EPDS ≥ 12 at 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.2 Intervention < weekly	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
17 Infant not in care of biological mother	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Intervention < weekly	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
18 Child abuse or neglect: non-accidental injury	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
18.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.2 Intervention < weekly	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
19 Non-accidental injury and non-voluntary foster care	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Intervention < weekly	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
20 Involvement with child protective services	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.1 Intervention at least weekly	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
20.2 Intervention < weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Infant death	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Intervention < weekly	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
22 Child abuse potential inventory (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.1 Intervention at least weekly	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.2 Intervention < weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Child domain of parenting stress index at 18 months (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
23.1 Intervention at least weekly	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
23.2 Intervention < weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24 HOME score	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.1 Intervention at least weekly	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.2 Intervention < weekly	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 No use of postpartum contraception	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]
25.1 Intervention at least weekly	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.2 Intervention < weekly	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]

Analysis 3.1. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 1 Continued illicit drug use.

Analysis 3.2. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 2 Continued alcohol use.

Analysis 3.3. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 3 Failure to enrol in drug treatment program.

Analysis 3.4. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 4 Failure to remain in drug treatment at 4 weeks.

Analysis 3.5. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 5 Failure to remain in drug treatment at 90 days.

Analysis 3.6. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 6 Failure of retention in program at 6 months.

Analysis 3.7. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 7 Not breastfeeding at 6 months.

Analysis 3.8. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 8 Incomplete infant vaccination schedule at latest time measured.

Analysis 3.9. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 9 Failure to keep scheduled appointments (infant primary care).

Analysis 3.10. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 10 Significant cognitive delay (Bayley MDI ≥ 2sd below population mean).

Analysis 3.11. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean).

Analysis 3.12. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 12 Cognitive development (Bayley MDI) at latest time measured.

Analysis 3.13. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 13 Psychomotor development (Bayley PDI) at latest time measured.

Analysis 3.14. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 14 Behavioural problems.

Analysis 3.15. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 15 Child Behaviour Checklist total score.

Analysis 3.16. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 16 EPDS ≥ 12 at 6 months.

Analysis 3.17. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 17 Infant not in care of biological mother.

Analysis 3.18. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 18 Child abuse or neglect: non-accidental injury.

Analysis 3.19. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 19 Non-accidental injury and non-voluntary foster care.

Analysis 3.20. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 20 Involvement with child protective services.

Analysis 3.21. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 21 Infant death.

Analysis 3.22. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 22 Child abuse potential inventory (z score).

Analysis 3.23. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 23 Child domain of parenting stress index at 18 months (z score).

Analysis 3.24. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 24 HOME score.

Analysis 3.25. Comparison 3 Home visits versus no home visits during pregnancy or after delivery (subgroups by frequency of intervention), Outcome 25 No use of postpartum contraception.

Comparison 4. Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Continued illicit drug use	3	384	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.78, 1.38]
1.1 Intervention by nurse	2	253	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.66, 1.47]
1.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.4 Intervention by trained lay worker	1	131	Risk Ratio (M-H, Random, 95% CI)	1.20 [0.79, 1.85]
1.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Continued alcohol use	3	379	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.96, 1.46]
2.1 Intervention by nurse	2	248	Risk Ratio (M-H, Fixed, 95% CI)	1.33 [0.99, 1.79]
2.2 Intervention by trained social worker	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
2.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.4 Intervention by trained lay worker	1	131	Risk Ratio (M-H, Fixed, 95% CI)	1.01 [0.75, 1.35]
2.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Failure to enrol in drug treatment program	2	211	Risk Ratio (M-H, Random, 95% CI)	0.45 [0.10, 1.94]
3.1 Intervention by nurse	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.3 Intervention by trained counsellor	1	103	Risk Ratio (M-H, Random, 95% CI)	0.22 [0.10, 0.48]
3.4 Intervention by trained lay worker	1	108	Risk Ratio (M-H, Random, 95% CI)	0.84 [0.63, 1.12]
3.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Failure to remain in drug treatment at 4 weeks	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.1 Intervention by nurse	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 Intervention by trained counsellor	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
4.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Failure to remain in drug treatment at 90 days	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
5.1 Intervention by nurse	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 Intervention by trained counsellor	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Failure of retention in program at 6 months	2	211	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.25, 3.20]
6.1 Intervention by nurse	2	211	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.25, 3.20]
6.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Not breastfeeding at 6 months	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.1 Intervention by nurse	2	260	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.83, 1.10]
7.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Incomplete infant vaccination schedule at latest time measured	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
8.1 Intervention by nurse	2	260	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.91, 1.32]
8.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.4 Intervention by trained lay worker	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
8.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Failure to keep scheduled appointments (infant primary care)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.1 Intervention by nurse	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
9.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Significant cognitive delay (Bayley MDI $\geq$ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.1 Intervention by nurse	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.4 Intervention by trained lay worker	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.36 [0.41, 4.45]
10.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]
11.1 Intervention by nurse	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.4 Intervention by trained lay worker	1	48	Risk Ratio (M-H, Fixed, 95% CI)	3.26 [1.00, 10.59]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Cognitive development (Bayley MDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	2.89 [-1.17, 6.95]
12.1 Intervention by nurse	1	43	Mean Difference (IV, Fixed, 95% CI)	-1.80 [-11.36, 7.76]
12.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.3 Intervention by trained counsellor	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.4 Intervention by trained lay worker	2	156	Mean Difference (IV, Fixed, 95% CI)	3.92 [-0.56, 8.41]
12.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Psychomotor development (Bayley PDI) at latest time measured	3	199	Mean Difference (IV, Fixed, 95% CI)	3.14 [-0.03, 6.32]
13.1 Intervention by nurse	1	43	Mean Difference (IV, Fixed, 95% CI)	0.70 [-17.75, 19.15]
13.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 Intervention by trained counsellor	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.4 Intervention by trained lay worker	2	156	Mean Difference (IV, Fixed, 95% CI)	3.22 [-0.01, 6.44]
13.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Behavioural problems	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.1 Intervention by nurse	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
14.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.5 Intervention by multidisciplinary team	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
15 Child Behaviour Checklist total score	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.1 Intervention by nurse	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
15.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.3 Intervention by trained counsellor	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.4 Intervention by trained lay worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
16 EPDS ≥ 12 at 6 months	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.1 Intervention by nurse	1	136	Risk Ratio (M-H, Fixed, 95% CI)	1.22 [0.63, 2.38]
16.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17 Infant not in care of biological mother	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.1 Intervention by nurse	2	253	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.50, 1.39]
17.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Child abuse or neglect: non-accidental injury	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
18.1 Intervention by nurse	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
18.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19 Non-accidental injury and non-voluntary foster care	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.1 Intervention by nurse	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
19.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Involvement with child protective services	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.1 Intervention by nurse	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.4 Intervention by trained lay worker	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
20.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Infant death	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.1 Intervention by nurse	2	288	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.12, 4.16]
21.2 Intervention by trained social worker	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
21.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Child abuse potential inventory (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.1 Intervention by nurse	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.90 [-1.61, -0.19]
22.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.3 Intervention by trained counsellor	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.4 Intervention by trained lay worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Child domain of parenting stress index at 18 months (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
23.1 Intervention by nurse	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
23.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.3 Intervention by trained counsellor	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.4 Intervention by trained lay worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24 HOME score	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.1 Intervention by nurse	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]
24.2 Intervention by trained social worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.3 Intervention by trained counsellor	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
24.4 Intervention by trained lay worker	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.5 Intervention by multidisciplinary team	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 No use of postpartum contraception	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]
25.1 Intervention by nurse	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]
25.2 Intervention by trained social worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.3 Intervention by trained counsellor	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.4 Intervention by trained lay worker	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.5 Intervention by multidisciplinary team	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 4.1. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 1 Continued illicit drug use.

Analysis 4.2. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 2 Continued alcohol use.

Analysis 4.3. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 3 Failure to enrol in drug treatment program.

Analysis 4.4. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 4 Failure to remain in drug treatment at 4 weeks.

Analysis 4.5. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 5 Failure to remain in drug treatment at 90 days.

Analysis 4.6. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 6 Failure of retention in program at 6 months.

Analysis 4.7. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 7 Not breastfeeding at 6 months.

Analysis 4.8. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 8 Incomplete infant vaccination schedule at latest time measured.

Analysis 4.9. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 9 Failure to keep scheduled appointments (infant primary care).

Analysis 4.10. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 10 Significant cognitive delay (Bayley MDI $\geq$ 2sd below population mean).

Analysis 4.11. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 11 Significant psychomotor delay (Bayley PDI $\geq$ 2sd below population mean).

Analysis 4.12. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 12 Cognitive development (Bayley MDI) at latest time measured.

Study or subgroup	Home visits		Control		Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
	N	Mean(SD)	N	Mean(SD)			
Test for subgroup differences: Chi²=1.13, df=1 (P=0.29), I²=11.39%							
					-100-50050100		Favours treatment Favours control

Analysis 4.13. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 13 Psychomotor development (Bayley PDI) at latest time measured.

Study or subgroup	Home visits		Control		Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
	N	Mean(SD)	N	Mean(SD)			
4.13.1 Intervention by nurse							
Black 1994	20	100.7 (40.7)	23	100 (11.5)		2.96%	0.7[-17.75,19.15]
Subtotal ***	20		23			2.96%	0.7[-17.75,19.15]
Heterogeneity: Not applicable							
Test for overall effect: Z=0.07(P=0.94)							
4.13.2 Intervention by trained social worker							
Subtotal ***	0		0				Not estimable
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
4.13.3 Intervention by trained counsellor							
Subtotal ***	0		0				Not estimable
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
4.13.4 Intervention by trained lay worker							
Grant 1996	23	77.8 (19)	25	83.4 (15.7)		10.28%	-5.6[-15.51,4.31]
Schuler 2000	54	101.7 (9.5)	54	97.4 (8.6)		86.76%	4.26[0.85,7.67]
Subtotal ***	77		79			97.04%	3.22[-0.01,6.44]
Heterogeneity: Tau²=0; Chi²=3.4, df=1(P=0.07); I²=70.6%							
Test for overall effect: Z=1.95(P=0.05)							
4.13.5 Intervention by multidisciplinary team							
Subtotal ***	0		0				Not estimable
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total ***	97		102			100%	3.14[-0.03,6.32]
Heterogeneity: Tau²=0; Chi²=3.47, df=2(P=0.18); I²=42.38%							
Test for overall effect: Z=1.94(P=0.05)							
Test for subgroup differences: Chi²=0.07, df=1 (P=0.79), I²=0%							
					-100 -50 0 50 100		
					Favours treatment	Favours control	

Analysis 4.14. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 14 Behavioural problems.

Analysis 4.15. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 15 Child Behaviour Checklist total score.

Analysis 4.16. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 16 EPDS ≥ 12 at 6 months.

Analysis 4.17. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 17 Infant not in care of biological mother.

Analysis 4.18. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 18 Child abuse or neglect: non-accidental injury.

Analysis 4.19. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 19 Non-accidental injury and non-voluntary foster care.

Analysis 4.20. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 20 Involvement with child protective services.

Analysis 4.21. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 21 Infant death.

Analysis 4.22. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 22 Child abuse potential inventory (z score).

Analysis 4.23. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 23 Child domain of parenting stress index at 18 months (z score).

Analysis 4.24. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 24 HOME score.

Study or subgroup	Home visits		Control		Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI			
	N	Mean(SD)	N	Mean(SD)						
Heterogeneity: Not applicable										
Test for overall effect: Z=1.93(P=0.05)										
Test for subgroup differences: Not applicable										
				Favours treatment	-10	-5	0	5	10	Favours control

Analysis 4.25. Comparison 4 Home visits versus no home visits during pregnancy or after delivery (subgroups by home visitor), Outcome 25 No use of postpartum contraception.

Study or subgroup	Home visits n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
4.25.1 Intervention by nurse					
Quinlivan 2000	9/62	22/62		100%	0.41[0.2,0.82]
Subtotal (95% CI)	62	62		100%	0.41[0.2,0.82]
Total events: 9 (Home visits), 22 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.54(P=0.01)					
4.25.2 Intervention by trained social worker					
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Home visits), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.25.3 Intervention by trained counsellor					
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Home visits), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.25.4 Intervention by trained lay worker					
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Home visits), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.25.5 Intervention by multidisciplinary team					
Subtotal (95% CI)	0	0			Not estimable
Total events: 0 (Home visits), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	62	62		100%	0.41[0.2,0.82]
Total events: 9 (Home visits), 22 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.54(P=0.01)					
Test for subgroup differences: Not applicable					
			0.1 0.2 0.5 1 2 5 10		
Favours treatment				Favours control	

Comparison 5. Home visits for pregnant substance or alcohol using women (studies with a developmental intervention)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Continued illicit drug use	2	248	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.75, 1.20]
2 Continued alcohol use	2	248	Risk Ratio (M-H, Fixed, 95% CI)	1.08 [0.83, 1.41]
3 Failure to enrol in drug treatment program	1	108	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.63, 1.12]
4 Failure of retention in program at latest time measured	1	59	Risk Ratio (M-H, Fixed, 95% CI)	1.66 [0.71, 3.89]
5 Failure to keep scheduled appointments (infant primary care)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.42, 1.66]
6 Cognitive development at latest time measured (Bayley MDI)	2	151	Mean Difference (IV, Fixed, 95% CI)	3.13 [-1.46, 7.72]
7 Psychomotor development at latest time measured (Bayley PDI)	2	151	Mean Difference (IV, Fixed, 95% CI)	4.14 [0.79, 7.50]
8 Behavioural problems	1	100	Risk Ratio (M-H, Fixed, 95% CI)	0.46 [0.21, 1.01]
9 Child Behaviour Checklist total score	1	100	Mean Difference (IV, Fixed, 95% CI)	-3.10 [-7.26, 1.06]
10 Infant not in care of biological mother	1	117	Risk Ratio (M-H, Fixed, 95% CI)	1.04 [0.61, 1.77]
11 Involvement with child protective services	1	171	Risk Ratio (M-H, Fixed, 95% CI)	0.38 [0.20, 0.74]
12 Child abuse potential inventory (z score)	1	43	Std. Mean Difference (IV, Fixed, 95% CI)	-0.73 [-1.35, -0.11]
13 Child domain of parenting stress index at 18 months (z score)	1	43	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-0.78, -0.22]
14 HOME score	1	43	Mean Difference (IV, Fixed, 95% CI)	3.70 [-0.06, 7.46]

Analysis 5.1. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 1 Continued illicit drug use.

Analysis 5.2. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 2 Continued alcohol use.

Analysis 5.3. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 3 Failure to enrol in drug treatment program.

Analysis 5.4. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 4 Failure of retention in program at latest time measured.

Analysis 5.5. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 5 Failure to keep scheduled appointments (infant primary care).

Analysis 5.6. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 6 Cognitive development at latest time measured (Bayley MDI).

Analysis 5.7. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 7 Psychomotor development at latest time measured (Bayley PDI).

Analysis 5.8. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 8 Behavioural problems.

Analysis 5.9. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 9 Child Behaviour Checklist total score.

Analysis 5.10. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 10 Infant not in care of biological mother.

Analysis 5.11. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 11 Involvement with child protective services.

Analysis 5.12. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 12 Child abuse potential inventory (z score).

Analysis 5.13. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 13 Child domain of parenting stress index at 18 months (z score).

Analysis 5.14. Comparison 5 Home visits for pregnant substance or alcohol using women (studies with a developmental intervention), Outcome 14 HOME score.

Comparison 6. Home visits for pregnant substance or alcohol using women (studies of good methodology)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to enrol in drug treatment program	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.22 [0.10, 0.48]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2 Failure to remain in drug treatment	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 At 4 weeks	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.54 [0.35, 0.84]
2.2 At 90 days	1	103	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.69, 1.25]
3 Not breastfeeding at 6 months	1	124	Risk Ratio (M-H, Fixed, 95% CI)	1.0 [0.81, 1.23]
4 Incomplete infant vaccination schedule at latest time measured	1	124	Risk Ratio (M-H, Fixed, 95% CI)	1.07 [0.58, 1.96]
5 Infant not in care of biological mother	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.18 [0.02, 1.47]
6 Child abuse or neglect: non-accidental injury	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.02, 8.77]
7 Non-accidental injury and non-voluntary foster care	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.16 [0.02, 1.23]
8 Infant death	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.55 [0.05, 5.88]
9 No use of postpartum contraception	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.20, 0.82]

Analysis 6.1. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 1 Failure to enrol in drug treatment program.

Analysis 6.2. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 2 Failure to remain in drug treatment.

Analysis 6.3. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 3 Not breastfeeding at 6 months.

Analysis 6.4. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 4 Incomplete infant vaccination schedule at latest time measured.

Analysis 6.5. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 5 Infant not in care of biological mother.

Analysis 6.6. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 6 Child abuse or neglect: non-accidental injury.

Analysis 6.7. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 7 Non-accidental injury and non-voluntary foster care.

Analysis 6.8. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 8 Infant death.

Analysis 6.9. Comparison 6 Home visits for pregnant substance or alcohol using women (studies of good methodology), Outcome 9 No use of postpartum contraception.

APPENDICES

Appendix 1. Additional search strategies used in 2011 update

Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2011, Issue 4 of 4) (search run by authors)

#1 INFANT*

#2 PREGNANCY*

#3 NEWBORN

#4 DRUG

#5 ALCOHOL

#6 HOME

#7 VISIT*

#8 (#1 OR #2 OR #3)

#9 (#4 OR #5)

#10 (#6 OR #7)

#11 (#8 AND #9 AND #10)

#12 (#11 AND random*)

MEDLINE using Ovid interface (1966 to 30 November 2011); EMBASE using OVID interface (1980 to 30 November 2011); CINAHL via EBSCO (1982 to November 2011); and PsycINFO using OVID interface (1974 to 30 November 2011).

#1 INFANT

#2 PREGNANCY

#3 NEWBORN

#4 DRUG

#5 ALCOHOL

#6 HOME

#7 VISIT*

#8 (#1 OR #2 OR #3)

#9 (#4 OR #5)

#10 (#6 OR #7)

#11 (#8 AND #9 AND #10)

#12 (#11 AND random*)

Appendix 2. Search strategies used in previous version

Cochrane Central Register of Controlled Trials (*The Cochrane Library* 2004, Issue 2) (search run by authors)

#1 INFANT*:ME

#2 PREGNANCY*:ME

#3 SUBSTANCE-RELATED-DISORDERS*:ME

#4 HOME-CARE-SERVICES*:ME

#5 (HOME near VISIT*)

#6 (#1 or #2)

#7 (#4 or #5)

#8 (#3 and #6 and #7)

This was adapted by the authors to search MEDLINE (1966 to April 2004), EMBASE (1980 to week 16, 2004), CINAHL (1982 to April 2004) and PsycINFO (1974 to April 2004).

WHAT'S NEW

Date	Event	Description
30 November 2011	New citation required but conclusions have not changed	Review updated.
30 November 2011	New search has been performed	Search updated. One new trial included (Bartu 2006).

HISTORY

Protocol first published: Issue 4, 2003

Review first published: Issue 4, 2005

Date	Event	Description
11 June 2009	Amended	Search updated. Ten new reports added to Studies awaiting classification.
12 May 2008	Amended	Converted to new review format.

CONTRIBUTIONS OF AUTHORS

In the 2011 update the search was updated by the Pregnancy and Childbirth Group's Trials Search co-ordinator and D Osborn (DO). DO and C Turnbull (CT) assessed trial eligibility, performed critical appraisal and extracted data. DO updated the text of the review and CT checked all changes.

DECLARATIONS OF INTEREST

None known.

INDEX TERMS

Medical Subject Headings (MeSH)

*House Calls [statistics & numerical data]; *Postnatal Care; *Pregnancy Complications; *Prenatal Care; *Substance-Related Disorders; Alcohol-Related Disorders; Postpartum Period; Pregnancy Outcome; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Infant, Newborn; Pregnancy