

Health Development Agency

Ante- and post-natal home-visiting
programmes: a review of reviews

Evidence briefing

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Foreword

In 1999 the white paper, *Saving Lives: Our Healthier Nation*, was published (Department of Health, 1999). It signalled that the Health Development Agency (HDA) would be established and that it would have, as one of its roles, building the evidence base in public health with a special focus on reducing inequalities in health. In April 2001 the Department of Health published its *Research and Development Strategy*. The strategy identified the task for the HDA as 'maintaining an up-to-date map of the evidence base of public health and health improvement, advising on the setting of standards in the light of evidence for public health and health promotion practice, and effective and authoritative dissemination of evidence to practitioners' (Department of Health, 2001). To translate this into reality the HDA has developed a number of ways of taking a systematic approach to compiling the evidence, identifying gaps and making the evidence base accessible. The publication of this, one in a series of evidence briefings, marks a significant milestone in that activity.

This evidence briefing is a review of reviews about the effectiveness of ante- and post-natal home-visiting programmes for improving child and maternal outcomes. The necessity for reviewing reviews, or tertiary-level research, stems from the proliferation over the last decade or more of systematic and other types of review in medicine and public health. The HDA has published other evidence briefings that deal with alcohol misuse, teenage pregnancy and parenthood, HIV prevention, obesity, prevention of low birth weight, breastfeeding, accidental injuries in children and older people, and health impact assessment. Other briefings will include the promotion of physical activity, the prevention of sexually transmitted infections, drug use prevention, smoking cessation, depression in older people, and good mental health.

Taken together these briefings will provide a comprehensive synthesis of the evidence drawn from systematic and other

kinds of reviews. They will all be available on the HDA's website (www.hda.nhs.uk/evidence) and the electronic versions will be updated on a regular basis as new evidence becomes available.

The first editions of the briefings have been based on evidence drawn from systematic and other kinds of reviews. This means that the type of evidence that does not traditionally find its way into reviews has not been considered in detail for these briefings. In future publications it is planned to extend the coverage of evidence beyond reviews to other methodologies and other types of study, where these are available.

The construction of the evidence base has involved collaboration with a number of partners who have interests and expertise in practical and methodological matters concerning the drawing together of evidence and its dissemination. In particular the HDA would like to acknowledge the following: the Centre for Reviews and Dissemination, University of York; the EPPI-Centre at the Institute of Education, University of London; Health Evidence Bulletins Wales; the ESRC UK Centre for Evidence Based Policy and Practice at Queen Mary College, University of London and its nodes at the City University London and the MRC Public Health Sciences Unit at the University of Glasgow; members of the Cochrane and Campbell collaborations; the United Kingdom and Ireland Public Health Evidence Group and the members of the Public Health Evidence Steering Group. This latter organisation acts as the overall guide for the evidence-building project of the HDA. The cooperation of colleagues in these institutions and organisations has been of significant help in the general work in preparing the framework for how we assess the evidence. The HDA is, however, responsible for the presentation and organisation of the material in the briefings.

We would like to express our gratitude to the social support in pregnancy reference group: Professor Helen Roberts (City University), Professor Mary Renfrew (University of Leeds), Sam Mason (Department for Education and Skills, Sure Start Unit), and Professor Nicholas Spencer (University of Warwick). We would also like to thank HDA colleagues who assisted in organising literature searches.

Every effort has been made to be as accurate and up-to-date as possible in the preparation of this briefing. However, we would be very pleased to hear from readers who would like to comment on the content or on any matters relating to the accuracy of the briefing. We will make every effort to correct any matters of fact in subsequent editions. Comments can be made by using our website www.hda.nhs.uk/evidence

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Department of Health (1999). *Saving Lives: Our Healthier Nation*. London: Stationery Office.

Department of Health (2001). *A Research Development Strategy for Public Health*. London: Department of Health.

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Summary

Visiting pregnant women and new mothers at home has become an increasingly important activity for public health nursing in many countries. In the US, for instance, the number of home-visiting programmes for parents of young children has grown substantially, with large numbers of children enrolled in such schemes (Olds et al., 2000.) This reflects a growing recognition of the importance of the early years of life in determining adult health and in preventing a range of adverse child health outcomes that may be associated with social disadvantage. These include outcomes such as child accidents and injuries (which display a steep social gradient in the UK), and child abuse and maltreatment. However, the emphasis in many home-visiting programmes has also been to promote positive aspects of 'family wellness', including the cognitive and intellectual development of children, parenting skills and support, positive maternal mental health and use of other health services.

What is home visiting?

Home visiting is not a single or uniform intervention – it is a mechanism for the delivery of a variety of interventions directed at different outcomes. Home-visiting programmes are diverse in their goals, target recipients, mode and timing of their delivery and their theory and content. They may provide parent training/education, psycho-social support to parents, infant stimulation, and infant and maternal health surveillance. The programmes may be provided by nurses, midwives or lay people within different professional bases. Home visiting may vary in when it begins, how long it lasts and how many times within this period it occurs. A programme may be provided to all families with a new baby, to families in disadvantaged circumstances, to parents or children with particular problems, or parents of children defined as 'at risk'.

In the UK, midwives visit all women ante-natally and at home up to 28 days after the birth. Health visitors also visit all women in the period after the birth as part of routine child health surveillance checks. In the US, by contrast, no universal home-visiting programme exists but it may be a targeted initiative provided in different ways with different underlying models.

In the current UK policy context the effectiveness or otherwise of home-visiting programmes has become an increasingly salient question. There are a number of policy drivers behind this. The most important has been the key policy priority of reducing health inequalities and, within this, the focus on children given in the *Independent Inquiry into Inequalities in Health Report* (Acheson, 1998). In the report, home visiting is identified as an important and promising intervention for tackling health inequalities from an inter-generational perspective, with a recommendation for:

'...the further development of the role and capacity of health visitors to provide social and emotional support to expectant parents, and parents with young children.' (Acheson, 1998, p76)

Home visiting by health visitors is now a key delivery mechanism for the Sure Start programme, which builds on these policy drivers in delivering a multi-component support strategy for families of 0-4 year olds in certain deprived communities. More recently, Sure Start has offered the potential for an extended public health role for midwives, to include more intensive home visiting to women in disadvantaged areas during the post-natal period.

The green paper *Every Child Matters* (DfES, 2003) has proposed the mainstreaming of Sure Start. The paper puts forward radical proposals for strengthening preventive services for children, providing support for

parents and families, and earlier intervention for children at risk. These proposals include that of providing specialist support through frequent home-visiting programmes in the ante- and post-natal period. Finally, later in 2004, the Department of Health will publish the Children and Maternity Services National Service Framework (NSF). Its findings and recommendations should be considered alongside this evidence briefing.

While such policies reflect a growing consensus about the effectiveness of home visiting as a strategy for combating inequalities in child health, demonstrating evidence of effectiveness for such programmes in the scientific literature has been a more complex task. This is partly because of the diversity of such programmes and the difficulties of demonstrating impact in controlled trials. The outcomes at which home-visiting programmes are directed are broad and often hard to measure. Problems of attributing change to components of the intervention are more than usually complex in the often multi-faceted interventions delivered in home-visiting programmes.

Evidence of effectiveness has been drawn from interventions which have not, for the most part, been replicated, and take place in different cultural and healthcare contexts. Most obviously, literature within the scope of this evidence briefing is heavily biased to North America and the US. Universal home visiting as provided by UK health visitors or midwives is largely unevaluated by controlled trials and US nurse-based home-visiting programmes therefore dominate the discussion of evidence which follows.

Review methodology

The evidence briefing series from the HDA presents the findings of reviews of reviews on the current evidence for the effectiveness of interventions to improve health and reduce health inequalities. The following procedure was used to identify reviews to be included in the briefing:

- Systematic searching of the literature
- Selection of relevant review-level intervention studies
- Critical appraisal of selected reviews by two readers for transparency, systematicity and relevance
- Assessment of the strength of the evidence, gaps in the evidence base and recommendations for further research.

HDA evidence briefings are intended to inform policy and decision makers, NHS providers, public health physicians

and other public health practitioners in the widest sense. The briefings are not reviews of primary data or individual intervention studies. Furthermore, in preparing this evidence briefing we have not conducted a systematic search for data on good practice or grey literature. Further work will be done to turn the summary of evidence presented here into advice for practice.

Nine reviews were included in the HDA Evidence Base and form the basis of the findings presented here:

Included reviews

Ciliska, D., Hayward, S., Thomas, H., Mitchell, A., Dobbins, M., Underwood, J., Rafael, A. and Martin, E. (1996). A systematic overview of the effectiveness of home visiting as a delivery strategy for public health nursing interventions. *Canadian Journal of Public Health* 87: 193-8.

Elkan, R., Kendrick, D., Hewitt, M., Robinson, J. J. A., Tolley, K., Blair, M., Dewey, M., Williams, D. and Brummell, K. (2000). The effectiveness of domiciliary health visiting: a systematic review of international studies and a selective review of the British literature. *Health Technology Assessment* 4 (13).

Guterman, N. B. (1999). Enrolment strategies in early home visitation to prevent child abuse and neglect and the 'universal versus targeted' debate: a meta-analysis of population-based and screening-based programs. *Child Abuse and Neglect* 23: 863-90.

Hodnett, E. D. and Roberts, I. (2000). Home-based social support for socially disadvantaged mothers (Cochrane Review). Currently withdrawn from the Cochrane Library for updating.

Hodnett, E. D. (2001). Support during pregnancy for women at increased risk of low birth weight babies (Cochrane Review). In: *The Cochrane Library*, Issue 3. Oxford: Update Software.

Kendrick, D., Elkan, R., Hewitt, M., Dewey, M., Blair, M., Robinson, J., Williams, D. and Brummell, K. (2000). Does home visiting improve parenting and the quality of the home environment? A systematic review and meta-analysis. *Archives of Disease in Childhood* 82: 443-51.

MacLeod, J. and Nelson, G. (2000). Programs for the prevention of family wellness and the prevention of child maltreatment: a meta-analytic review. *Child Abuse and Neglect* 24: 1127-49.

MacMillan, H. L. with the Canadian Task Force on Preventive Care (2000). Preventive health care, 2000 update: prevention of child maltreatment. *Canadian Medical Association Journal* 163: 1451-8.

Roberts, I., Kramer, M. S. and Suissa, S. (1996). Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *British Medical Journal* 312: 29-33.

Findings

Can home visiting improve child health outcomes?

- There is insufficient evidence to suggest that home-visiting programmes can have a beneficial impact on low birth weight or other pregnancy outcomes.
- The findings from review-level studies of home visiting on child abuse present an incomplete and complex picture. Where positive effects have been found, they tend to be in measures of parenting rather than in direct measures of abuse. There appear to be significant methodological problems with measuring child abuse in trials of home visiting, with a serious problem of outcome report and surveillance bias. As a result, there is inconclusive evidence for any impact of home visiting on child abuse outcomes in review-level data, and outcome report and surveillance bias are likely to be a threat to the validity of findings in current or future trials.
- There is good evidence to suggest that home visiting can have an impact in reducing rates of childhood injury.
- There is some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children; these effects appear to be most apparent among children with identified problems associated with low birth weight or failure to thrive.
- There is insufficient evidence to determine the influence or effect of home-visiting interventions on immunisation or hospital admission rates.
- Evidence suggests that home visiting has the potential to encourage and support breastfeeding but more evidence is needed.
- There is some weak evidence to suggest a positive effect of home-visiting interventions on children's diets, but further research is needed to assess this effect in the light of methodological issues.

Can home visiting improve the quality of parenting?

- There is some good evidence to suggest that home visiting can produce positive effects on various dimensions of parenting or mother-child interaction. Further work is needed to evaluate which types of programme, or which programme components, are likely to replicate these impacts and to develop measures which limit bias in results.

Can home visiting improve outcomes for mothers?

- There is some evidence for a positive effect of home visiting on the detection and management of post-natal depression. Issues of measurement and report bias need careful consideration in future trials.
- There is insufficient evidence to prove any long-term benefit of home visiting on access to social support.
- There is insufficient evidence to prove any long-term benefit of home visiting on maternal life course development such as participation in education or employment, or the spacing of subsequent pregnancies.

How are home-visiting programmes best delivered?

- Evidence suggests that home-visiting interventions that are restricted to the pursuit of only a narrow range of outcomes are less effective than those with a more comprehensive approach in which the multiple needs of families are addressed.
- There is some evidence to suggest that more intensive programmes of home visiting have greater impact than others, but there is no clear answer to the exact prescription for the intensity and duration of home-visiting programmes to be found within existing evidence.
- Current evidence is not clear on the issue of whether home visiting is more effective when professionals rather than lay people provide it.

Recommendations for research

Current UK home-visiting programmes are not well evaluated and there is a clear need for more well designed studies to build the UK knowledge base in this area. In particular, the following research gaps need to be addressed:

- A general need for more UK trials of home visiting which address the methodological limitations identified in this evidence briefing. Elkan et al. (2000) suggest controlled trials of the UK programmes need to be carried out, designed to measure short- and long-term outcomes for both children and parents
- A need for future evaluations to address some of the key questions about delivery currently unanswered in the literature. For example:

- Studies on the effectiveness of home-visiting programmes delivered to high-risk groups compared with those not identified as at risk
- Studies on the effectiveness of an intervention delivered by nurses compared to the same delivered by para-professionals
- Studies designed to compare effect sizes in interventions of different intensity and duration
- A need for more trials to look at both the effectiveness and cost effectiveness of home-visiting programmes, including economic evaluations
- Studies that address the issues of client satisfaction as related to the outcomes measured. Measurement tools tested for reliability and validity should be used. The cultural acceptability of home-visiting interventions for families of different ethnic backgrounds needs careful consideration
- More studies in the areas of child abuse, child injury and accident prevention, post-natal depression.

Conclusion

Evidence from review-level literature presented in this evidence briefing suggests that home-visiting programmes to parents of young children can be associated with:

- Improvements in parenting
- Reported improvements in some child behavioural problems
- Improved cognitive development, especially among some sub-groups of children such as those born prematurely or born with low birth weight
- A reduction in accidental injury among children
- Improved detection and management of post-natal depression.

There is either no evidence or inconclusive evidence for the impact of home visiting on the other outcomes reviewed in this briefing, including child abuse, increased uptake of immunisation, reduced hospital admissions or maternal participation in education or in the workforce.

Given the potential importance of the contribution of home visiting to tackling child health inequalities, there is an urgent need to further develop the UK evidence base in this area.

Introduction

Decisions about policy and practice in the public sector are increasingly driven by consideration of the best available evidence. The process of drawing together, analysing and synthesising evidence from research is a central principle of evidence-based practice. Typically, the process of reviewing an area of practice or intervention will include the production of a systematic review of effectiveness, a meta-analysis or some other review-level synthesis, and interpretation of evidence from research (Swann et al., 2003a).

As more reviews and meta-analyses are carried out across the spectrum of public health, there is an increasing need to map the areas that they cover, assess their quality and pull together any common findings about what works in particular areas to improve health and reduce health inequalities. The Health Development Agency (HDA) has taken on the task of mapping and synthesising the best available review-level evidence for the effectiveness of interventions to improve health and reduce health inequalities across priority areas of public health. This evidence briefing is part of the first set of publications from the project. Mapping and synthesis of review-level data will enable practitioners and policy makers to view the aggregate strength of the evidence in key areas, see clearly where review-level evidence is lacking, and inform the development and commissioning of future research and reviews.

Undertaken by the HDA, evidence briefings are essentially reviews of reviews, analysing the strengths and weaknesses at this level in an area's evidence base, identifying gaps in the evidence, analysing future primary and secondary research needs, and discussing the implications of findings for policy and practice. Each briefing has a free standing summary that is published separately. The briefings are also published on and supported by the HDA Evidence Base website

(www.hda.nhs.uk/evidence), which also contains electronic copies of or access to the original reviews on which these briefings are based, when they are available. Evidence briefings are designed to be accessed by a variety of users including those simply looking for headline findings, those wanting complete and detailed syntheses, and those who need to track back to the original primary and secondary sources.

Providing comprehensive, up-to-date syntheses of the literature available in reviews is the chosen first step in a process of building the public health evidence base. As our programme of work continues, we will turn our attention to bringing into our evidence briefings work that does not usually find its way into systematic reviews.

Presently, a three-tier structure underpins the HDA's work to develop the public health evidence base:

- A Public Health Evidence Steering Group (PHESG) with membership drawn from universities, public health and research and development divisions of the Department of Health, other government departments, public health practitioners, representatives of research funding bodies, the Centre for Reviews and Dissemination, Cochrane and Campbell Collaborations, the EPPI-Centre, and other UK and WHO representatives. The group is chaired by Professor Jim McEwen, emeritus professor of public health, University of Glasgow, on behalf of the Chief Medical Officer for England. This over-arching group advises on the broad strategic direction of the evidence base and has a remit to quality assure the processes developed by the HDA to construct the evidence base
- For each topic area covered (eg accidental injuries, teenage pregnancy and parenthood), there is a Reference Group. These groups report to the PHESG, and consist of key academics, practitioners and officials

with expertise in the area. Reference groups control the content of the HDA Evidence Base and guide the production of evidence briefings

- Finally, the HDA is working to establish a robust evaluation framework for the entire Evidence Base project. This will include the formation of user panels to guide and inform our priorities and work.

The next stage in the process is the development of practice advice derived from the findings of the evidence briefing. This evidence briefing does not contain advice or guidance for practice. Following the publication of this briefing, a similar process of mapping and synthesis, informed and reviewed by practitioner and research experts, will take place, and practice-based advice and publications will be produced.

Who is this briefing for?

This briefing paper is intended to inform policy and decision makers, NHS providers, public health physicians and other public health practitioners in the widest sense. Further work will be done to turn the summary of evidence presented here into advice for practice. The limitations of this briefing and the data on which it is based, and alternative sources of evidence that may be helpful to inform policy and practice, are set out below.

What evidence?

At present, the systematic review is probably the most robust and reliable marker of effectiveness, closely followed by a well-designed meta-analysis. They are used heavily in clinical sciences to inform practice and are generally well regarded when used appropriately. This evidence briefing pulls together evidence from systematic reviews of effectiveness, meta-analyses and narrative or literature reviews – a good spectrum of all of the review-level evidence in the area. Yet relying on this type and level of evidence to inform our conclusions about home-visiting programmes for young mothers has some limitations, and it is important to consider them when making decisions about policy or practice.

Definitions of what constitutes ‘good’ quality evidence in mainstream public health have been inherited from medical and scientific paradigms, where the experimental evaluation of clinical efficacy is commonplace and often

appropriate. Although there is an increasing use of these approaches that rely on traditional evidence hierarchies, they may not always be the most appropriate methods of assessing the impact of interventions to improve public health, nor in particular to assess the impact of interventions on health inequalities (Swann et al., 2003b).

At review (rather than single study) level, meta-analyses and systematic reviews of effectiveness can be very powerful tools for demonstrating the impact (or lack of it) of an intervention. However, they rely heavily on controlled evaluation studies, and quantifiable outcome variables. In contrast, home visiting and its impact are highly complex and relational, and almost impossible to fully capture in terms of quantitative and statistical outcomes alone. Public health priorities often do not ‘fit’ easily into these types of study designs.

A second issue is that, while meta-analyses and systematic reviews (and sometimes, to a lesser extent, literature reviews) are well placed to make judgements about the strength of impact of an intervention, and the quality of the evaluation design, they tend not to examine the appropriateness or quality of an intervention itself, and certainly not in any robust or systematic manner. This can be a source of bias – an inappropriate intervention might have a strong impact on one quantifiable outcome measure, and therefore influence review conclusions, even though that outcome measure might not be the most appropriate or useful. In other words, there is a risk that inappropriate or ill-designed interventions can be given more weight than more suitable (and often more complex or long-term) interventions because they may be simpler and quicker to evaluate, or because they can prove some effect relatively easily. However, in spite of these limitations systematic reviews are still a powerful tool in certain circumstances, based as they are on principles of finding good and effective interventions, eliminating harmful interventions, and facilitating public accountability – principles that are important cornerstones to building the public health evidence base.

A third issue is that reviews tend to rely on data from certain types of evaluation design – most often experimental and quasi-experimental trials – so excluding a substantive amount of literature from their consideration. This highlights an important point – if this evidence briefing has uncovered no evidence to support a certain intervention or programme, it does not mean

there is absolutely no evidence out there, just that we have found no evidence included in reviews that meet our quality criteria.

At present there are problems in trying to incorporate other types of evidence into our evidence briefings. In some areas, such as qualitative research, the thresholds as to what constitutes 'good' quality work are contested by different researchers. There is as yet no agreed method for systematically synthesising or reviewing such work, although there are a number of projects underway nationally and internationally to develop an appropriate methodology. Neither is there any clear nor agreed method for combining non-traditional forms of evidence – such as that from qualitative research, action research, expert opinion and so on – with evidence from more traditional types of study to provide a more comprehensive assessment of the effectiveness of different interventions. For the time being, the HDA has taken a first step to integrate evidence from systematic reviews, meta-analyses and good-quality narrative reviews, with an acknowledgement that this limits our data pool and may provide only partial answers to our research questions.

A final issue is that of time lag. Inevitably, if one relies on review-level data to gather information about effectiveness, some time – usually one or more years – will elapse between the publication of single studies, the subsequent examination of these single studies by reviewers, and the publication of their reviews. Because of the processes involved in carrying out meaningful, high quality research, this is to some extent inevitable, and the procedures that cause this delay – the need for publications to be peer reviewed, the need for a body of work to build up before it can be reviewed and examined – can be argued help avoid bias in review findings. It means that the reviews considered for this briefing will take into account single studies with a cut-off date of at least one year before the most recent review. If one single study has been published in the meantime that alters common conceptions or consensus about home visiting, it will take a while for the findings of that single study to filter into this forum. We expect to revise and update this briefing annually, which should ensure that new review data is included swiftly.

In summary, the data presented in this evidence briefing – data from reviews – is only a partial answer to 'what works' with respect to home visiting. In using this briefing

to inform practice or policy making, there are a number of other sources of information and evidence that could usefully be taken into account. These include:

- Information from practice studies (eg practice databases, 'best practice' case studies)
- Research studies that are often or usually excluded from systematic reviews and meta-analyses eg qualitative studies, non-controlled case studies, action research
- Local data and project evaluations (local to your context and area)
- Expert and practitioner opinion
- Client opinion and experience.

Mapping, collating and making available data from these alternative sources will be a future priority for the HDA (see Swann et al., 2003b; Kelly et al., 2003; Kelly and Speller, 2003). In the meantime, the Public Health electronic Library (PHeL – www.phel.gov.uk) will be a good starting point for the practitioner or policy maker seeking to take these other types of evidence into account.

What is effectiveness?

In this briefing we use the term effectiveness to describe demonstrable, intended effects on (usually quantitative) outcomes. However, the term is not uncontested. First, while 'demonstrable' effects, in this context, usually imply those that are statistically significant, in some situations – particularly where interventions require careful, long-term evaluation – this may be an ambitious definition. Second, in the UK at least there are some tensions between different kinds of outcome measures, depending upon the focus of the study – for example, between educational and health outcomes.

The rating system that we have used (see the critical appraisal tool – Appendix 2) favours reviews that have a transparent and replicable data search, methodology and analysis. This means that systematic reviews of effectiveness and meta-analyses tend to be rated highest (if they are well conducted) because of their clear methodology, relative to literature or other non-systematic reviews. This is not to say that literature reviews cannot be counted as strong evidence – where review rationale, methodology and analytic techniques are clear, they are rated highly.

A word of caution is that reviews are not always comparing the same thing – some reviews examine outcome data studies, others look at more prospective studies – so interpretation of what we have found is complicated by the state of the data pool. Equally, the reviews themselves sometimes make difficult or inappropriate comparisons between and across evaluation studies that examine different aspects of the problem.

Finally, we have not been able, at this stage, to search systematically for or include practice data ('good' or 'best' practice studies) or grey literature. Again, this is not to discount the validity of such data – we believe that they have an important place in the process of gathering evidence for making decisions about evidence for effective practice. However, tools to enable us to search systematically and rate such data in an appropriate and sensitive way are yet to be fully developed, and we foresee this work as being an important future activity in the area of home visiting.

Summary

Specifically, this briefing aims to:

- Identify all relevant systematic reviews, meta-analyses and other reviews
- Review the evidence provided in these papers
- Highlight conflicting evidence, gaps in the evidence and make recommendations about future research and commissioning.

It does not draw on other sources of evidence, or contain specific advice for practice: this will be developed as part of the next stage of the HDA's evidence into practice work. Systematic review-level evidence is but one source of evidence that should be used to inform guidance for practitioners. Evidence into practice requires gathering evidence from all sources and combining it with political and social information, mindful of resource constraints, to develop learning that is passed on to practitioners. The HDA will be piloting this process of evidence into practice in a number of topic areas within the year 2003/4.

Background

Visiting pregnant women and new mothers at home has become an increasingly important focus of public health nursing in many countries. In the US, for instance, the number of home-visiting programmes for parents of young children has grown substantially, with large numbers of children enrolled in such schemes (Olds et al., 2000). This reflects a growing recognition of the importance of the early years of life in determining adult health and in preventing a range of adverse child health outcomes that may be associated with social disadvantage. These include outcomes such as child accidents and injuries (which display a steep social gradient in the UK), child abuse and maltreatment, and ‘maladaptive’ parenting. However, the emphasis in many home-visiting programmes has also been to promote positive aspects of ‘family wellness’ including the cognitive and intellectual development of children, positive maternal mental health and use of other health services. Table 1, adapted from Byrd (1997), provides a snapshot of the range of potential outcomes at which home-visiting programmes may be directed.

This growing interest in home visiting has also reflected the development of theory in psychological literature. Theories exploring the role of stress and other psycho-social factors as they affect the biological processes of pregnancy have had an important role to play in suggesting that a causal

relationship exists between stress/lack of social support and pregnancy outcomes such as pre-term delivery/low birth weight (Hoffman and Hatch, 1996). Interventions such as home visiting are predicated on the notion that the provision of additional social support may have some preventive effect on these outcomes. Several commentators have examined the causal mechanisms that may be involved in this in more detail and have articulated the difficulties of defining and measuring the concept of social support (De Panfilis, 1996).

What is home visiting?

Home visiting is not a single or uniform intervention; rather, it is a mechanism for the delivery of a variety of interventions directed at different outcomes.

Home-visiting programmes are diverse in their goals, their target recipients, the mode and timing of their delivery and in their theory and content. Halpern (1984) has developed a typology of home-visiting interventions, delineating the key dimensions on which they differ: purpose and emphasis, target populations, causal assumptions on which they are based, intervention framework, intervention activity and evaluation approach.

Table 1: Measured outcomes of home-visiting programmes (adapted from Byrd, 1997)

Maternal	Child	Parent-child interaction	Environmental
Health habits	Birth weight	Maternal report of infant behaviour	Home environment
Pre-post natal mental health	Child abuse/neglect	Observed parent-child interaction	Use of healthcare services
Social support	Child injury		Use of support networks
Life course development	Hospital admission rates		Workforce/education participation
	Physical and cognitive development		

For example, home visiting may provide parent training/education, psycho-social support to parents, infant stimulation, infant and maternal health surveillance. It may be provided by nurses, midwives, or lay people within different professional bases. It may vary in when it begins, how long it lasts and how many times within this period it occurs. Home visiting may be provided to all families with a new baby, to families in disadvantaged circumstances, to parents or children with particular problems, or parents of children defined as 'at risk'.

In the UK, midwives visit all women ante-natally and at home up to 28 days after the birth. Health visitors also visit all women in the period after the birth as part of routine child health surveillance checks. In the US, by contrast, no universal home-visiting programme exists but there may be a targeted initiative provided in different ways with different underlying models.

Despite this diversity, most home-visiting interventions share certain underlying features. The first is that by providing additional social support to families variously identified as 'at risk' they aim to increase the buffering effect of social support in protecting families from the potential effects of disadvantage and enhance family functioning to the benefit of both mother and child. The second is the underlying premise that the home is the optimal place to provide such multi-component interventions. The third is that the nurse- (or para-professional/lay visitor) client relationship is the central component of such social support (McNaughton, 2000).

The policy context

In the current UK policy context the effectiveness or otherwise of home-visiting programmes has become an increasingly salient question. There are a number of policy drivers for this. The most important of these has been the key policy priority of reducing health inequalities and, within this, the focus on children in the *Independent Inquiry into Inequalities in Health Report* (Acheson, 1998). In this report, home visiting is identified as an important and promising intervention for tackling health inequalities from an inter-generational perspective with a recommendation for:

'The further development of the role and capacity of health visitors to provide social and emotional support to expectant parents, and parents with young children.' (Acheson, 1998, p76)

A second policy driver has been a renewed political interest in parenting, as expressed in the policy paper *Supporting Families* (Home Office, 1998). Both of these policy concerns converge in their emphasis on a new and expanded role for health visitors in providing support to families in their parenting role, particularly to families in disadvantaged circumstances. Home visiting by health visitors is now a key delivery mechanism for the Sure Start programme, which builds on both these policy drivers in delivering a multi-component support strategy for families of 0-4 year olds in certain deprived communities.

Sure Start has offered the potential for an extended public health role for midwives, to include more intensive home visiting to women in disadvantaged areas during the post-natal period. The green paper *Every Child Matters* (DfES, 2003) has proposed the mainstreaming of Sure Start. The paper puts forward radical proposals for strengthening preventive services for children, providing support for parents and families, and earlier intervention for children at risk. These proposals include the provision of specialist support through frequent home-visiting programmes in the ante- and post-natal period.

Finally, later in 2004, the Department of Health will publish the Children and Maternity Services National Service Framework (NSF). Its findings and recommendations should be considered alongside this evidence briefing.

While such policies reflect a growing consensus about the desirability of home visiting as a strategy for combating inequalities in child health, demonstrating evidence of effectiveness for such programmes in the scientific literature has been a more complex task. This is partly because of the diversity of such programmes and the difficulties of demonstrating impact in controlled trials. The outcomes at which home-visiting programmes are directed are broad and often hard to measure. Problems of attributing change to components of the intervention are more than usually complex in the often multi-faceted interventions delivered in home-visiting programmes. Evidence of effectiveness has been drawn from interventions which have not, for the most part, been replicated, and take place in different cultural and healthcare contexts. Most obviously, literature within the scope of this briefing is heavily biased to North America and the US. Universal home visiting as provided by UK health visitors or midwives is largely unevaluated by controlled trials and so US nurse-based home-visiting programmes dominate the discussion of evidence that follows.

Methodology

This briefing is a 'review of reviews' and not a systematic review of individual intervention trials. However, where there is a lack of systematic reviews or meta-analyses for a particular topic area or intervention, the evidence from high-quality literature reviews has been used and its use indicated. In the identified HDA Evidence Base papers, findings were typically derived from randomised controlled trials (RCTs). However, where there was a lack of RCT research, findings were elicited from non-RCT, quasi-experimental or observation studies.

An extensive and systematic search of the literature was conducted. The search strategy was devised in collaboration with the Centre for Review and Dissemination, University of York. The search strategy is provided in Appendix 1. Searches were conducted on the following electronic databases:

- The Cochrane Library
- The DARE database
- The 'Wider Public Health' report
- Medline
- TRIP
- HTA
- SIGN
- Health Evidence Bulletins Wales
- National Guidelines Clearinghouse
- NCCHTA website
- NICE website
- REFER
- National Research Register
- Clinical Evidence
- EMBASE
- Sociological Abstracts
- PsycINFO
- EPPI-Centre, Institute of Education, University of London
- Department of Health website

- ESRC
- MRC
- BBSRC
- DETR
- Psychological abstracts
- Campbell
- PsycLit
- Cinahl
- Sociofile
- Social science citation index
- SIGLE
- CAB

All databases were searched from January 1996 to November 2001. All citations (135) were downloaded into Reference Manager software.

Data-handling process

Titles and abstracts of identified references were independently assessed for relevance by two authors. The following inclusion criteria were used:

- English language only
- 1996 to November 2001
- Human studies
- Systematic reviews, syntheses and meta-analyses
- Interventions and programmes in relation to ante- and post-natal home visiting.

Where no clear decision could be made on the basis of the title or abstract, studies were considered relevant. Reference lists of all retrieved papers (17) were also searched to identify further papers.

All papers were assessed independently by two authors and critically appraised in terms of transparency,

systematicity and relevance according to HDA Evidence Base methodology (see Swann et al., 2003b). There was no blinding of authorship of retrieved papers. Any queries regarding the methodology of the review or meta-analysis were followed up with the authors. A critical appraisal form was completed by each reviewer (Appendix 2) and a joint decision was made regarding whether the paper was of a suitable quality to be an HDA Evidence Base paper, whether it could be used in the briefing to inform discussion, or discarded. Disagreements were resolved through discussion, or in the case of four papers, by recourse to a third reviewer.

The Evidence Base papers were compared and findings collated. Conflicting evidence was identified and gaps in the evidence were charted. Evidence statements were derived from top-level findings of reviews themselves and reported according to main outcomes or outcome groupings.

Evidence Base papers

This briefing draws on the nine papers listed on this page, which have met quality criteria for inclusion onto the HDA Evidence Base. However, other reviews or studies are referred to where they add additional contextual, commentary or background information. A list of excluded studies is provided in Appendix 3.

Furthermore, we make a number of summary statements about whether certain interventions were effective, based on the evidence from the included Evidence Base papers (see Results section).

Characteristics of the trials included in the Evidence Base papers are shown in Table 2.

Included reviews

Ciliska, D., Hayward, S., Thomas, H., Mitchell, A., Dobbins, M., Underwood, J., Rafael, A. and Martin, E. (1996). A systematic overview of the effectiveness of home visiting as a delivery strategy for public health nursing interventions. *Canadian Journal of Public Health* 87: 193-8.

Elkan, R., Kendrick, D., Hewitt, M., Robinson, J. J. A., Tolley, K., Blair, M., Dewey, M., Williams, D. and Brummell, K. (2000). The effectiveness of domiciliary health visiting: a systematic review of international studies and a selective review of the British literature. *Health Technology Assessment* 4 (13).

Guterman, N. B. (1999). Enrolment strategies in early home visitation to prevent child abuse and neglect and the 'universal versus targeted' debate: a meta-analysis of population-based and screening-based programs. *Child Abuse and Neglect* 23: 863-90.

Hodnett, E. D. and Roberts, I. (2000). Home-based social support for socially disadvantaged mothers (Cochrane Review). Currently withdrawn from the Cochrane Library for updating.

Hodnett, E. D. (2001). Support during pregnancy for women at increased risk of low birth weight babies (Cochrane Review). In: *The Cochrane Library*, Issue 3. Oxford: Update Software.

Kendrick, D., Elkan, R., Hewitt, M., Dewey, M., Blair, M., Robinson, J., Williams, D. and Brummell, K. (2000). Does home visiting improve parenting and the quality of the home environment? A systematic review and meta-analysis. *Archives of Disease in Childhood* 82: 443-51.

MacLeod, J. and Nelson, G. (2000). Programs for the prevention of family wellness and the prevention of child maltreatment: a meta-analytic review. *Child Abuse and Neglect* 24: 1127-49.

MacMillan, H. L. with the Canadian Task Force on Preventive Care (2000). Preventive health care, 2000 update: prevention of child maltreatment. *Canadian Medical Association Journal* 163: 1451-8.

Roberts, I., Kramer, M. S. and Suissa, S. (1996). Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *British Medical Journal* 312: 29-33.

Table 2: Characteristics of the review-level evidence of ante- and post-natal home-visiting programmes

Objective	Author and year	Number and type of studies included	Setting	Participants	Intervention	Conclusion
Assess the effectiveness of public health nursing interventions when carried out by the strategy of home visiting	Ciliska et al. (1996)	11 relevant studies judged to be strong or moderate – 3 RCTs, 5 clinical controlled trials and 3 cohort studies. Databases searched to 1993	US, UK and Canada. Studies conducted in the home, clinics, community, hospitals and health centre	Ante-natal: women at risk for delivery of low birth weight infant (<i>n</i> 2,235). Post-natal: pre-term infants and black teen mothers, depressed post-partum women, low and very low birth weight infants and families, mothers at risk of child abuse (<i>n</i> 1,480). Ante-and post-natal: ante-natal women (<i>n</i> 400) and pregnant families (<i>n</i> 35)	Ante-natal: social support and health and nutrition information provided by nurses or social workers Post-natal: home visits, education of mothers on child health and development, counselling, parents groups provided by nurses, home visitor, community worker, para-professional, ethnic parent and consultants. Ante-and postnatal: home visits and support including education and problem solving provided by nurse, social worker or psychologist	‘There were no reported negative effects of home visiting. Positive outcomes included improvement in children’s mental development, mental health and physical growth, reduction in mother’s anxiety, depression, and tobacco use; improvement in maternal employment, nutrition and other health habits and government cost saving’
Meta-analysis examining enrolment approaches in home visitation studies and their reported outcomes	Guterman (1999)	19 controlled outcome studies. Date of last search unknown	No information on country of studies. Studies conducted in the home, women recruited in ante-natal, public health and obstetrical clinics	4,765 women – African-American, women from low-income groups, black teenage mothers, young and unmarried mothers	Home visits including psycho-social support, parenting education, support groups, counselling and peer education. Provided by nurses, paediatricians, psychologists, social workers, para-professionals and home visitors. 10/19 studies used the HOME (Home Observation for Measurement of the Environment) inventory	Population-based enrolment strategies appear favourable to screening-based ones in early home-visiting programmes seeking to prevent physical child abuse and neglect

Table 2: Characteristics of the review-level evidence of ante- and post-natal home-visiting programmes (cont.)

Objective	Author and year	Number and type of studies included	Setting	Participants	Intervention	Conclusion
To conduct a systematic review of the effectiveness and cost effectiveness of domiciliary health visiting	Elkan et al. (2000)	34 studies (27 RCTs and 7 non-RCTs). Databases searched to July 1997	Studies conducted in US, Canada, UK, Ireland, Bermuda and Jamaica	6,027 participants (mothers and infants) including at risk pregnant and post-partum women, low socio-economic status families, black teenage mothers, low birth weight infants, infants with failure to thrive, parents of pre-school children with multiple psycho-social problems	Home-visiting programme where at least one ante-natal visit was undertaken. Home visits included counselling and advice, peer support, parent education and training on child health, development and simulation, maternal support. Home visits carried out by nurses, teachers, infant and parent therapists, lay workers, health visitors, paediatricians and trained mothers. 17/34 studies used the HOME inventory	Evidence to suggest that home visiting was associated with improvements in parental skills and in the quality of the home environment, amelioration of several child behavioural problems, improved intellectual development among children, a reduction in the frequency of unintentional injury, improved detection and management of post-natal depression and improved rates of breastfeeding
To evaluate the effectiveness of home visiting programmes on parenting and quality of the home environment	Kendrick et al. (2000)	Further analysis of Elkan et al. (2000) – 12 study meta-analysis of HOME scores (Home Observation for Measurement of the Environment). Databases searched to July 1997				Home-visiting programmes were associated with an improvement in the quality of the home environment. Few studies used UK health visitors, so caution must be exercised in extrapolating the results to current UK health-visiting practice

Table 2: Characteristics of the review-level evidence of ante- and post-natal home-visiting programmes (cont.)

Objective	Author and year	Number and type of studies included	Setting	Participants	Intervention	Conclusion
To assess the effects of programmes offering additional home-based support for women who have recently given birth and who are socially disadvantaged	Hodnett and Roberts (2000)	11 randomised and quasi-randomised studies. Date of last search 26 October 1998	Studies conducted in the US, Ireland, Canada and the UK	2,992 families, socially disadvantaged mothers with infants who had recently given birth. Participants included: parents identified at high risk of engaging in child abuse, parents of low birth weight pre-term infants, families most likely to exhibit abnormal parenting practices, women at risk of out-of-home placement of their newborns, poor black mothers, first time mothers and teenage unmarried or of low socio-economic status	Home-based support interventions involved educational, practical, and emotional support during one or more post-partum home visits by either a professional or specially trained lay care givers. Home-based support was compared to usual care	'Post-natal home-based social support programmes appear to have no risks and may have benefits for socially disadvantaged mothers and their children, possibly including reduced rates of child injury. Differential surveillance does not allow easy interpretation of the child abuse and neglect findings'
To assess the effects of programmes offering additional social support for pregnant women at increased risk of low birth weight babies	Hodnett (2001)	16 RCTs. Databases searched to 30 January 2003	Trials were conducted in Australia, UK, France, Latin America, the Netherlands, South Africa and the US	13,651 women in the first or second trimester of pregnancy judged to be at risk of having pre-term and/or growth-restricted babies	Standardised or individualised programmes of additional social support, provided in either home visits, during regular ante-natal clinic visits, and/or telephone on several occasions during pregnancy. Three trials compared care and support during home visits with inpatient hospital care. Social support provided by midwives, nurses, social workers, multidisciplinary teams and lay workers	Programmes offering additional social support for at-risk pregnant women were not associated with improvements in any peri-natal outcomes. Some improvements in immediate maternal psycho-social outcomes were found in individual trials

Table 2: Characteristics of the review-level evidence of ante- and post-natal home-visiting programmes (cont.)

Objective	Author and year	Number and type of studies included	Setting	Participants	Intervention	Conclusion
To determine the effectiveness of programmes in promoting family wellness and preventing child maltreatment	MacLeod and Nelson (2000)	56 studies, including 23 home-visiting studies. Review covered the period from 1979 to 1998	No information on country of studies. Studies predominately carried out in the home	No information on the number of participants. A higher percentage was predominately black, low socio-economic status and first-time mothers	Home visiting by professionals or para-professionals, on a selective or indicative basis	Findings demonstrate that child maltreatment can be prevented and that family wellness can be promoted
Reviewing the evidence for the effectiveness of interventions aimed at preventing child maltreatment (update of 1993 review)	MacMillan with the Canadian Task Force on Preventive Health Care (2000)	3 RCTs and 1 follow-up RCT from previous work. Databases searched from February 1993 to February 1999	One trial was conducted in Hawaii. No information for the other RCTs. Studies predominately carried out in the home	487 women (262 disadvantaged first-time mothers and 225 women identified ante-natally as being at risk for having a newborn removed from their care). 372 low income, multi-ethnic families with two children on average studied	Monthly home visits provided by non-professional volunteer community mothers or para-professionals and ante-and post-natal home visits by lay home visitors	Two RCTs showed a reduction in the incidence of childhood maltreatment or outcomes related to physical abuse and neglect among first-time disadvantaged mothers and their infants. They received a programme of home visiting by nurses in the peri-natal period extending through infancy
To quantify the effectiveness of home-visiting programmes in the prevention of child injury and child abuse	Roberts et al. (1996)	11 RCTs. Databases searched to April 1995. 8 trials – child injury ; 9 trials – suspected child abuse	Studies conducted in the US, Ireland and England. Studies predominately carried out in the home	3,433 participants include parents of low birth weight infants, disadvantaged first-time mothers, teenage, unmarried and women of low socio-economic status, and families predicted to be at risk of child abuse	Ante- and post-natal including emotional, social, practical, information, peer and coping support provided by nurses, non-professionals, social workers and physicians	Home-visiting programmes have the potential to reduce significantly the rates of childhood injury. The problem of differential surveillance for child abuse between intervention and control groups precludes the use of reported abuse as a valid outcome measure in controlled trials of home visiting

Results

Results are summarised below, organised by outcome or outcome grouping. Evidence statements have been derived from the findings and conclusions of reviews themselves and summarised into evidence statements.

Child health outcomes

Birth weight

One systematic review (Hodnett, 2001) looked at the effect of social support interventions for women judged to be at increased risk of having pre-term and/or growth-restricted babies. This review included a variety of social-support interventions; only three were trials of home visits. The conclusion of this review was that the provision of social support in the form of home visits or other types of intervention did not improve birth outcomes such as low birth weight. There was, however, some beneficial effect on shorter-term maternal psycho-social variables such as ante-natal anxiety and satisfaction with ante-natal care.

Ciliska et al. (1996) also found no consistent positive effect on birth weight for a systematic review of home-visiting studies.

In a narrative update on individual studies, Olds et al. (2000) report on one trial which demonstrated some positive impact on birth weight among very young mothers who were also smokers. These results were not replicated in the follow-up study.

Evidence statement: There is insufficient evidence to suggest that home-visiting programmes can have a beneficial impact on low birth weight or other pregnancy outcomes.

Child abuse

The effectiveness of home visits to families with very young children in preventing child abuse has been the subject of much published research. This is explained in part by the central role given to home-visiting programmes in US policy in preventing growing rates of reported abuse.

The strongest and most current evidence on this is to be found in Elkan et al. (2000). The authors of this review have found that no conclusions can be drawn on the benefits of home visiting in preventing child abuse because of the inherent limitations with measuring this outcome, including:

- Surveillance bias
- Non-comparability of outcome measures used
- Confounding
- Difficulties with detection.

Another systematic review of the effects of home visiting for socially disadvantaged mothers, Hodnett and Roberts (2001), currently withdrawn for updating, included eight trials where reported suspected child abuse was one of the measured outcomes. The results of these trials were inconclusive, with half showing lower rates of abuse in the visited groups and half showing higher reported rates. The authors of this review draw attention to the chance of outcome report bias in child abuse measures in trials of home visiting as a serious threat to validity of the findings. Home visiting is a potential source of increased surveillance and reported abuse is therefore much more likely to be higher in visited families. The authors question the utility of reported suspected abuse as a measure in future trials.

This outcome bias effect is also noted in Roberts et al. (1996), where the pooled effect sizes for the nine trials

which examined suspected abuse, reported abuse, or out-of-home placement for child abuse, were not calculated for reasons of potential reporting bias. In an examination of nine trials for outcomes on the occurrence of suspected abuse, reported abuse, or out-of-home placement for abuse, the authors of this systematic review found four trials with lower frequency of reported abuse and five trials with higher frequency of occurrence. Substantial heterogeneity of the odds ratios was found across the studies and this, together with the possibility of surveillance bias also highlighted by the authors, casts doubt over the validity of the findings.

MacMillan and the Canadian Task Force (2000) undertook a narrative review and critical appraisal of programmes for preventing child maltreatment, including home visiting as a screening measure. The outcomes examined were an occurrence of one or more sub-categories of physical abuse, sexual abuse, neglect and emotional abuse in childhood. The focus is on two studies of an intensive intervention plus follow-up of the same intervention (Olds et al., 1994, Olds et al., 1997).

High-quality trials of these two programmes showed a reduction in the incidence of childhood maltreatment or outcomes related to physical abuse and neglect among the visited group – who were first-time, socially disadvantaged mothers and their infants who were visited throughout infancy by nurses (0.29 v 0.54, $\leq p = 0.001$). No meta-analysis was performed in this study and effect sizes were therefore not pooled. This review finds that other studies have not produced statistically significant results on child abuse outcomes and are methodologically weak. Despite this, the authors conclude that there is good evidence from well-designed trials that home visiting is an effective intervention in the prevention of child maltreatment, but this conclusion is based on only two successful programmes.

Any effects on child abuse and other potentially positive outcomes from home visiting are clearly moderated by aspects of the delivery of intervention. This is explored to some extent in two meta-analyses. One meta-analysis of home-visiting studies compares interventions that employ different enrolment strategies: targeting through screening of individuals thought to be at risk of abusing their children versus targeting communities where demographic risk is concentrated (population strategies) on the prevention of child abuse and neglect (Guterman,

1999). In this study, separate meta-analyses were conducted for effect sizes on the following outcomes:

- Protective services reports (child protection services data)
- Proxy measures of child maltreatment, such as parents' attitudes or interactions with children such as verbal responsivity, nurturance or punishment behaviours.

Based on 19 studies, collecting data from more than 4,200 families, this analysis found effect sizes of +3.72 for the population-based enrolment interventions as compared with -0.07 for the screening-based studies in 'protective services report data'. On maltreatment measures of parenting, an effect size of +0.092 is found for population-based interventions compared with +0.020 for individual screening interventions. Ninety-five per cent confidence intervals are not given. It is noted that though these effect sizes seem small by conventional statistical standards, they are likely to be clinically meaningful given the relatively small size of the at-risk childhood population. The authors conclude that population-based enrolment strategies appear favourable to screening-based ones in early home-visiting programmes aiming to prevent child abuse and neglect. A suggested explanation for this is that screening programmes may recruit families less likely to change and they provide services that don't match with client needs.

MacLeod and Nelson (2000) conducted a meta-analysis using a three-step process of analysis to find patterns or 'models' among the included studies. Fifty-six programmes from 1979-1998 classified as either proactive or reactive were included in the analysis. The majority of these studies involved home visiting by professionals or para-professionals. Among the home-visiting studies, there was significant heterogeneity and sample sizes in sub-group analysis were small, sometimes as few as one or two studies. The results may therefore need to be treated with caution. The authors found an overall mean effect size for the interventions included in the meta-analysis of 0.41. This is interpreted as positive outcomes for the intervention group, exceeding 66% of those in the control group. Effect sizes for distinct outcome measures were variable within a range of 0.17-0.56 and were larger for measures of family wellness (competencies such as positive parent-child interaction) than those interventions that measured child abuse, which included placement rates and incidence of maltreatment. Confidence intervals are not reported.

In summary, the findings from review-level studies of home visiting on child abuse show an incomplete and complex picture. Where positive effects have been found they tend to be in measures of parenting rather than in direct measures of abuse. There appear to be significant methodological problems with measuring child abuse in trials of home visiting, with a serious problem of outcome report and surveillance bias.

Evidence statement: There is inconclusive evidence for any impact of home visiting on child abuse outcomes in review-level data and outcome report and surveillance bias are likely to be a threat to validity of findings in current or future trials.

Child injury

While in the US home visiting has been developed with a primary emphasis on the prevention of child abuse, in the UK childhood accident prevention has been a more commonly emphasised potential benefit for home-visiting programmes.

Elkan et al. (2000) reviewed the evidence from studies on both hazard reduction and injury occurrence. The authors conclude that there is some evidence that the advice given during home-visiting interventions has the potential to reduce the total number of hazards in the home and that home-visiting programmes can be effective in reducing the frequency of childhood injury. However, they note significant methodological problems in the measurement of this outcome, including the use of imprecise measures such as attendance at accident and emergency departments and the lack of precision in measuring severity of injury. They note that it is not possible, using current evidence, to prove the hypothesis that reducing hazards in the home on the basis of home-visiting advice results in fewer injuries, as many studies fail to look at both outcomes (hazard reduction and injury recurrence).

Childhood injury is an outcome examined in the review by Hodnett and Roberts (1997). Of eight trials that examined the effect of home visiting on child injury, six reported a lower incidence of injury in the visited group. The pooled odds ratio (OR) from these eight trials was 0.74 (95% confidence interval (CI) 0.54-1.03). Four trials reported the effect of home-based support on hospital admissions for children. In all these there was a lower incidence of hospital admissions in the visited group (OR 0.65; CI 0.43-0.98). They conclude that families who

receive additional support are less likely to have babies that require hospitalisation, but that aspects of delivery could be critical to this effect.

Roberts et al. (1996) provided another published report on the Hodnett and Roberts (1997) data. Odds ratios varied between studies depending on the time period over which injury was measured but were generally in a positive direction. The conclusion of this study is that home visiting has significant preventive potential for reducing the occurrence of childhood injury.

Evidence statement: There is good evidence to suggest that home visiting can have an impact on reducing rates of childhood injury.

Physical and intellectual development

The best available evidence on this is to be found in Elkan et al. (2000). In this systematic review, the authors found no evidence for any effect on height or weight of infants or children resulting from home-visiting programmes.

However, the authors found positive effects on mental development scales from a pooled effect of eight studies using a standardised measurement scale (Bayley's scale of mental development). The overall effect size (0.17, 95% CI 0.06-0.28), however, may be of limited clinical significance.

The authors reported a five point increase in IQ (as measured by the Stanford-Binet IQ test) among children in the intervention group. Significant heterogeneity in effects sizes was apparent.

The authors hypothesise that such improvements may be due to improvements in parenting and the home environment that result from home visiting but found this to be supported only in interventions delivered to premature infants or those who were identified as failing to thrive.

On the basis of these findings, Elkan et al. (2000) conclude that home visiting is associated with improvements in the intellectual functioning of children but that larger effects are to be noted among children with intellectual impairment or delay associated with prematurity, low birth weight or failure to thrive. It is not yet known, they conclude, whether such results may also be achieved with other groups of children considered to be 'at risk'. No studies have specifically compared effects

sizes from the same intervention delivered to different sub-groups of children. Nor is it known how long these positive effects may be maintained.

There is very little other review-level data looking at child development outcomes. Other measures of physical health of children are from individual rather than aggregated study findings and small sample sizes prevent generalisable conclusions on these measures. In Ciliska et al. (1996) findings from individual studies are presented in a 'systematic overview'. This review finds mixed results, with some studies reporting an effect in home-visited groups on measures such as child IQ, improved mental development and social skills – and other studies finding non-significant effects.

Evidence statement: There is some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children. These effects appear to be most apparent among children with identified problems associated with low birth weight or failure to thrive.

Immunisation rates

Hodnett and Roberts (1997) reviewed 11 studies – in six studies the effect of home-based support on well-child immunisation is reported. Of these, four trials found that infants of visited mothers were significantly less likely to have incomplete immunisations. The pooled estimate for effect was 0.56 (95% CI 0.41-0.66). Other, non-systematic reviews show a mixed or conclusive result for the impact of home visiting on immunisation rates (Macmillan, 2000; Olds et al., 1994). Elkan et al. (2000) found that pooled results from several studies of home visiting produce no significant effect in increasing the uptake of immunisation or other preventive health services. They conclude that home-visiting programmes are not effective in increasing uptake of immunisation.

Evidence statement: There is insufficient evidence to determine the influence or effect of home-visiting interventions on immunisation rates.

Hospital admissions

Hodnett and Roberts (1997), in their review of home visiting in relation to childhood injury, found reduced rates of hospital admissions among visited children. Elkan et al. (2000) report the findings of a meta-analysis of seven studies that also showed that children in the intervention group were significantly less likely to be

admitted to hospital (0.73; 95% CI 0.55-0.98). When the meta-analysis was restricted to only three controlled studies (RCTs), no effect on hospital admissions was found. On the basis of this evidence the authors suggest that home visiting probably does not have any effect on reducing hospital admissions.

Evidence statement: There is insufficient evidence to determine the effects of home-visiting interventions on rates of hospital admission.

Breastfeeding

Elkan et al. (2000) reported on seven studies where breastfeeding is one of the outcomes under scrutiny. Only four of these, which look at breastfeeding rates three months after delivery, are entered into a meta-analysis. The results of this analysis show an odds ratio of 1.34 (95% CI 1.03-1.74) in favour of the home-visited group, leading the authors to conclude that home visiting has the potential to encourage and support breastfeeding. The authors note the possibility of bias inherent in maternal self-report measures of breastfeeding.

Evidence statement: There is some evidence to suggest that home visiting may positively influence rates of breastfeeding three months after delivery. However, further research is needed to assess this effect, taking into account the potential for reporting bias.

Child nutrition

Elkan et al. (2000) reported on four studies that looked at outcomes related to children's diets/eating habits. Three studies reported better outcomes on these measures. Once again, self-report data leaves findings open to the possibility of bias, poor standardisation of measures and lack of follow-up, and so weaken these findings.

Evidence statement: There is some weak evidence to suggest a positive effect of home-visiting interventions on children's diets, but further research is needed to assess this effect in the light of methodological issues.

Measures of parenting

Review-level evidence has looked at a number of measures of parenting or mother-child interaction. The most commonly used of such composite measures within the evaluation of home-visiting services is the Home Observation for Measurement of the Environment inventory (HOME). The young children's version of this inventory consists of six sub-scales measuring aspects of the quality of the home environment in relation to parenting. It includes observations of emotional responsiveness, verbal interaction and avoidance of restriction and punishment, among other dimensions.

Kendrick et al. (2000) carried out a systematic review of 17 studies using the HOME instrument and a further 27 reporting other measures of parenting. This study forms part of the larger systematic review reported in full in Elkan et al. (2000). The results of 12 of these studies were pooled to reveal a highly significant effect of home visiting on the HOME score in favour of home visiting. ($x = 126.9$, $28 df$, $p \leq 0.001$). The further 27 studies reported on other measures of parenting such as observed measures of conversational interaction and levels of reported difficulties in the mother-infant relationship, and also found significant treatment effects for the home-visited groups on a range of measures. The authors found that eight studies failed to show any positive effect and they did not share similar characteristics, which could explain their lack of effect.

Elkan et al. (2000) noted various measures relating to maternal report of child temperament, feeding and sleeping behaviours, schooling attendance and adjustment, with findings which are generally in a positive direction. For example, mothers who received home visits were significantly less likely to report sleeping difficulties in their children (0.45, 95% CI 0.30-0.76). The authors conclude that home visiting is associated with greater success among parents in managing their children's behaviour. The possibility of self-report and social desirability bias is noted and the authors suggest that methods for minimising such bias need to be considered in future trials.

In Ciliska et al. (1996), positive outcomes on dimensions of parenting are reported from a small number of individual studies, drawing on several reports of the same intervention reported by Olds and colleagues (Olds et al.,

1994). They find broadly positive effects on mothers' reports of their baby's moods ($p < 0.04$), their lower level of concern with their infant's behaviour ($p < 0.05$) and the frequency with which mothers restricted their children ($p = 0.007$).

Studies that have looked primarily at child abuse as an outcome of home visiting have often included measures of parenting related to abusive behaviour in their analysis. Guterman (1999), for example, identifies proxy measures of child maltreatment such as verbal responsiveness, nurturance or punishment behaviours. MacLeod and Nelson (2000) identify proxy measures of parenting such as parent attitudes and behaviour as well as the HOME score as lying on the 'healthy' end of a continuum between maltreatment and family wellness. MacLeod and Nelson's meta-analysis finds positive effects for home visiting on these measures.

Evidence statement: There is some good evidence to suggest that home visiting can produce positive effects on various dimensions of parenting or mother-child interaction. Further work is needed to evaluate which types of programme, or which programme components, are likely to replicate these impacts and to develop measures which limit bias in results.

Maternal outcomes

Maternal mental health

Again, the best quality and most recent evidence on this outcome is from Elkan et al. (2000). In this review, eight of 13 included studies report positive effects on a range of measures of maternal mental health among home-visited women. Three studies, all UK-based and all using a standardised measurement scale for post-natal depression (the Edinburgh Post Natal Depression Scale), reported significant differences in rates of post-natal depression in favour of the visited group. The possibility of self-report bias in these studies was noted, as was the targeting of women considered to be at risk in the studies concerned.

Whether such effects could be replicated in programmes delivered to all post-natal women remains questionable. No conclusive results are found for self-esteem as an outcome in this review. Existing studies focus on the detection and management of post-natal depression or

the outcomes of post-natal depression. Elkan et al. (2000) note that further research is needed in this area.

There is otherwise very little review-level evidence on the effects of home visiting on maternal mental health. In the systematic review conducted by Hodnett and Roberts (1997) the findings of two trials are presented that reveal some positive impacts on reported distress among mothers in the intervention groups. The authors urge caution in interpreting these findings, given the small sample sizes and difficulties of measurement and of potential bias. In Ciliska et al. (1996) two home-visiting intervention studies are identified which report a statistically significant reduction in rates of depression – it is not clear whether the same measures were used in each of these studies. A Cochrane review by Ray and Hodnett (2001) found that professional and/or social support may help in the treatment of post-partum depression, but the review is not confined to home-visiting interventions (though some studies of home visiting are included). It is not therefore possible to identify the particular effects of home visiting as opposed to other interventions from this review.

Evidence statement: There is some evidence for a positive effect of home visiting on the detection and management of post-natal depression. Issues of measurement and report bias need careful consideration in future trials.

Social support

Five studies are reported in Elkan et al. (2000) that examine maternal use of social support networks. Three of these report improved perception of social support among home-visited women. Only one study found a significant difference in reported use of community resources. Social support was measured in different ways in different studies and this, together with the small number of studies, amounts to weak/inconclusive evidence on this outcome.

Evidence statement: There is insufficient evidence to determine the influence of home-visiting interventions on outcomes related to social support.

Maternal life course

Some home-visiting programmes have attempted to influence long-term maternal outcomes relating to life course and wider socio-economic circumstances of mothers and families. These include education,

employment and the spacing of subsequent pregnancies. In the review by Ciliska et al. (1996), several studies (Olds et al., 1994, 1997; Kitzman et al., 1997) reported some positive effect on long-term life course outcomes. In the Olds et al. studies (1994, 1997) of the Nurse Home Visitation Programme (NHVP), trials found an early increase in educational attainment by mothers, an increase in employment among unmarried mothers and a reduction in subsequent closely spaced pregnancies. The same review identifies one other study of only 'moderate' methodological quality, with a 10 year follow-up that finds a statistically significant increase in maternal education ($p < 0.05$).

A narrative and non-systematic review by Olds et al. (2000), which expands and updates the findings of Olds and colleagues from the same NHVP, included a more recent follow-up study that attempted to replicate the findings of the earlier programme. This study replicated the effects on spacing of subsequent pregnancies at the child's second birthday. In this non-systematic review Olds et al. (2000) note that these effects were applicable only among unmarried mothers of lower socio-economic background.

Elkan et al. (2000) have been the first to conduct a meta-analysis on such outcomes. They combine results from four studies to examine overall effect sizes on family size, use of public assistance and employment rates. They found no significant differences on any of these measures between the intervention and control group. On the outcome of participation in education, a meta-analysis could not be performed due to insufficient data, and findings from individual studies gave mixed results. The authors conclude that the number of studies is too small to draw any firm conclusions about any of the outcomes relating to maternal life course.

Evidence statement: There is insufficient evidence to prove any long-term benefit of home visiting on maternal life course development.

Cost effectiveness

Elkan et al. (2000) reviewed studies that looked at cost effectiveness or have included economic evaluation as part of their objectives. All of the studies reviewed indicated that home visiting was economically favourable but the authors note that all of the studies fall short of a

full analysis of the costs and benefits of such programmes.

Evidence statement: Although there are some indicators that home-visiting interventions are economically favourable, there is insufficient evidence to make a full statement on this and further research is needed.

The delivery and implementation of home-visiting programmes

The diversity of home-visiting programmes, their different underlying objectives, the different and the wide ranging outcomes which they hope to influence and the complexity of measuring some of these, make undertaking systematic reviews of meta-analysis an unusually complex task. Equally, it is clear from the review literature that variations in the content, timing, intensity and targeting of home-visiting interventions may, in part, explain the mixed and often inconclusive picture yielded by reviews. Aspects of process are, however, rarely considered in any systematic review.

Single or multi-focus

Evidence suggests that home-visiting interventions that are restricted to the pursuit of only a narrow range of outcomes are less effective than those with a more comprehensive approach in which the multiple needs of families are addressed.

Targeting

Early reviews of home visiting such as Olds et al. (1994) came to the relatively firm conclusion that home visiting was more effective when targeted at particular sub-groups or communities considered to be at most risk of adverse outcomes associated with poverty. This was based on a number of studies that showed the largest effect sizes in populations of low socio-economic status, particularly low income, unmarried younger mothers. Others (eg Gomby et al., 1993) have continued to call for universal home-visiting services, principally on the grounds that targeted services assume a deficient model of family functioning in low-income communities that is stigmatising in its effect.

More recently, Guterman (1999) has attempted through meta-analysis to compare home-visiting programmes that use different targeting mechanisms – those based on an

individualised assessment of risk of abusing their children and those based on demographic or community level indicators of risk. In looking at effect sizes for child abuse alone, Guterman (1999) finds in favour of an enrolment mechanism based on demographic or community level risk indicators. However, this leaves much of the issue about targeted versus universal home-visiting services unanswered.

Most trials of home visiting have been conducted on interventions delivered in low income or disadvantaged communities. It is not therefore known whether similar interventions would demonstrate effectiveness in a more universally delivered service. No study has yet tested this hypothesis by comparing effect sizes for targeted or universal delivery of the same programme. Elkan et al. (2000) point to the extent to which this limits the extent to which findings can be generalised to UK programmes of universal health visiting. In a wider discussion of the universal versus targeted debate, Elkan et al. (2000) suggest that the trade-off to be made here may be one of small effect sizes in large populations versus large effect sizes in small populations. The latter may make a larger contribution to tackling health inequalities at the expense of a degree of overall health improvement.

Intensity, timing and duration

It has generally been accepted in the literature that effect sizes for interventions increase with intensity and duration of the programme. This was a finding to emerge from the Olds et al. studies (1994, 1997) and from early systematic reviews (eg Ciliska et al., 1996). More recently MacLeod and Nelson (2000) found in a meta-analysis that effect sizes were larger in interventions which lasted for six months or more and provided more than 12 home visits. The same study also suggests that interventions that began either pre-natally or at birth were more effective than those which began later into parenthood.

Despite this, there is currently no clear answer as to the exact prescription for the intensity and duration of home-visiting programmes. Very few studies have compared interventions of differing intensity. Elkan et al. (2000) suggest that this should be dictated by the needs of individual families. Some families may need a minimal level of interventions while others will benefit from more intensive support. However, the number of visits that should constitute the minimum and the relative importance of the number of visits versus the intensity of

the contact are unknown and further work in this area is needed.

Providers

Once again, evidence from the Olds et al. studies (Olds et al., 1994, 1997) suggested an emerging consensus that programmes delivered by nurses (as in the NHVP trials) were likely to be more effective. But more recent studies have shown that programmes delivered by para-professionals or lay visitors can also be effective, but that they may require guidance, supervision and support. In a more recent review, Olds et al. (2000) suggested that delivery by nurses is not sufficient to ensure effectiveness. In this review a trial was reported as underway that will compare delivery of the same intervention by different providers. The results of this trial are not yet available. The suitability of different providers may in part depend on the nature of the outcomes to which the programme is directed, but current evidence is not clear on this issue. The issue of the degree of support and training for non-professionals delivering home-visiting services is also unexplored.

Evidence statement: The evidence so far suggests that effective home-visiting interventions tend to be multi-focus, targeted and of medium- to long-term duration.

Conclusions

What we know: effective ante- and post-natal home-visiting interventions

Evidence from review-level literature presented in this evidence briefing suggests that home-visiting programmes to parents of young children can be associated with:

- Improvements in parenting
- Reported improvements in some child behavioural problems
- Improved cognitive development, especially among some sub-groups of children such as those born prematurely or born with low birth weight
- A reduction in accidental injury among children
- Improved detection and management of post-natal depression
- Improved rates of breastfeeding.

There is either no evidence or inconclusive evidence for the impact of home visiting on the other outcomes reviewed in this briefing, including child abuse, increased uptake of immunisation, reduced hospital admissions or maternal participation in education or in the workforce.

A summary of the existing review-level evidence for particular outcomes, adapted from the table at the beginning of this briefing, is provided in Table 3.

The evidence so far suggests that effective home-visiting interventions tend to be:

- Multi-focus
- Targeted
- Medium- to long-term duration.

There is conflicting evidence on who should deliver home-visiting interventions, although this may be addressed by current research.

Despite the potentially positive impact of home-visiting interventions in alleviating some of the problems of disadvantaged families indicated in this briefing, the quality of primary research in this area is heavily biased to North American studies, many of which suffer from significant methodological limitations or have insufficient power to demonstrate an effect. Major questions as to which model of home visiting is best suited to particular needs as well as who should provide it and for how long are unanswered in review-level data. Current UK home-visiting programmes are not well evaluated and there is a clear need for more well-designed studies to build the UK knowledge base in this area. Given the current importance of family support in the UK policy agenda in tackling health and wider social inequalities, this recommendation is a matter of urgent priority.

Table 3: Measured outcomes of home-visiting programmes (adapted from Byrd, 1997)

Maternal	Child	Parent-child interaction	Environmental
Health habits	Birth weight	Maternal report of infant behaviour	Home environment
Pre-post natal mental health	Child abuse/neglect	Observed parent-child interaction	Use of healthcare services
Social support	Child injury		Use of support networks
Life course development	Hospital admission rates		Workforce/education participation
	Physical and cognitive development		

Home visiting, however, is not a panacea for the significant and far-reaching effects of child poverty. It can only be seen as part of a wide ranging attack on poverty and disadvantage that would include wider social and economic policies which support families in need. As a complement to such a macro-social policy environment, well-designed home-visiting programmes appear to make a modest but significant contribution to the important policy priority of giving every child a good start in life.

Methodological issues

All of the reviews included in this briefing have noted the often weak quality of trials of home visiting. Significant methodological limitations include:

- High rates of attrition or low rates of participation in studies
- Inadequately specified randomisation methods
- Non-blinded randomisation methods
- Limited follow-up periods in evaluations to test whether positive effects dissipate over time
- Insufficiently detailed description of the timing, content and methods of the interventions
- Small sample sizes which mitigate against positive findings, especially in the case of outcomes which are rare, such as child abuse or low birth weight
- Lack of specified theoretical foundation to studies, with a failure to hypothesise how changes in behaviour might be achieved
- Outcomes – the intended outcomes of home-visiting interventions are diverse and often difficult to measure with precision, eg parenting or child abuse. Measurement of the same outcome can employ different instruments in different studies and this weakens the potential for pooling of effect sizes across studies
- Outcomes such as child abuse are open to a significant threat of report bias in home-visiting interventions, as home visiting is an increased form of surveillance. There is also a possibility of bias in the reporting of outcomes such as distress/negative attitudes to parenting, with visited mothers less likely to report such outcomes for reasons of social desirability.

There are two other salient factors, beyond methodology, which compromise the strength of the review findings on home-visiting interventions. The first is to note that many positive or larger effects which appear to be drawn from

different studies are actually from what are essentially the same programme and its follow-up. The second important factor limiting the generalisability of these results is the strong US bias in many of the studies included in the reviews, including the Olds et al. studies (1994, 1997), from which many of the positive or larger effects of home visiting have been drawn. There is no reason to suppose, as Kendrick et al. (2000) notes, that positive results can be easily extrapolated to the UK health-visiting context.

Elkan et al. (2000) have made a detailed set of recommendations for improving the quality of primary research on home visiting to address the points made above. This includes the need for more trials incorporating:

- A clear theoretical framework linking the interventions to the desired outcome
- Concealed random allocation between design and control groups
- Sample sizes sufficiently large to generate clinically significant effect sizes
- Clear descriptions of the intervention's content, intensity, timing and duration
- Use of methods to overcome or minimise bias in results derived from self-report data (such as diary keeping, independent third-party assessment of child behaviour)
- Standardised measurement assessment tools including the use of the HOME inventory
- Incorporation of process measures
- Longer follow-up times
- Client perspectives and adequate measures of satisfaction.

Gaps in the evidence base

Elkan et al. (2000) with other commentators have noted that there are very few studies of UK-based home visiting. The mainly US-based focus of current primary research provides us with evidence that may or may not transfer to a very different cultural and healthcare context. There is therefore a clear need to develop trials in the UK of a sufficiently high methodological quality which attempt to replicate the findings of more promising interventions reported here. In particular, accumulated evidence from current review-level literature points to the following:

- A general need for more UK trials of home visiting that address the methodological limitations identified in this evidence briefing. Elkan et al. (2000) suggest controlled trials of the UK programmes need to be carried out, designed to measure short- and long-term outcomes for both children and parents
- A need for future evaluations to address some of the key questions about delivery currently unanswered in the literature. For example:
 - Studies on the effectiveness of home-visiting programmes delivered to high-risk groups compared with those not identified as at risk
 - Studies on the effectiveness of an intervention delivered by nurses compared with the same interventions delivered by para-professionals
 - Studies designed to compare effect sizes in interventions of different intensity and duration
- A need for more trials that look at both the effectiveness and cost effectiveness of home-visiting programmes, including economic evaluations
- A need for studies that address the issues of client satisfaction as related to the outcomes measured. Measurement tools tested for reliability and validity should be used (Elkan et al., 2000). The cultural acceptability of home-visiting interventions to families of different ethnic backgrounds needs careful consideration
- More studies are needed.

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APPENDIX 1

Search strategy

TOPIC B

Interventions with pregnant women and families with children under five to provide social support and encouragement

Limits

English language only
1996 to date
Human
NOT developing countries
Reviews only

Database checklist

	Version/service	File name
Cochrane Library	CD-ROM 2001/4	cochrane reviews.doc cochrane protocols.doc
DARE admin database	CRD website 14/11/01	dare.doc
'Wider Public Health' report	CRD website 15/11/01	wph.doc
TRIP	WWW 15/11/01	trip.doc
HTA database	CRD website 15/11/01	hta.doc
SIGN	WWW 15/11/01	–
Health Evidence Bulletins Wales	WWW 15/11/01	hebw.doc
National Guidelines Clearinghouse	WWW 15/11/01	–
NCCHTA website	WWW 15/11/01	–
NICE web pages	WWW 15/11/01	–
REFER	WWW 15/11/01	refer.doc
National Research Register	CD-ROM 2001/3	nrrcomp.doc nrrong.doc
Clinical Evidence	Issue 4 –	
EMBASE (1996-2001)	Ovid 15/11/01	embase.doc
Sociological Abstracts	Ovid 15/11/01	sociofile.doc
PsycINFO (2001/1 to 2001/8)	WinSPIRS 15/11/01	psycinfo.doc

Some search interfaces are relatively unsophisticated and extensive strategy searching is not possible. In those cases a range of high-level terms are identified and used to search the resources, or publications lists are scanned (for example with NCCHTA and SIGN websites).

As far as possible results are supplied in a tagged format that can be loaded into Reference Manager. This, however, may be more problematic when dealing with web pages and pdf files. These are copied via email to HDA.

Search facets:

Facet A: Target group: pregnant women, families
Facet B: Intervention: social support, home visits, education
Facet C: Outcome: improving health outcomes, reducing social variations

A and B and C

Searching notes:

Searching history: c:\HDA searches\B. family interven\

1 Cochrane Library (2001/4) (searched 15/11/01)

family or families
parent or parents
child or children or newborn or neonate*
mother* or baby or babies
#1 or #2 or #3 or #4
home next visit* or health next visit* or house next call*
social next worker*
parent* near (education or class* or training or program* or skill*)
(prenatal or ante next natal or antenatal or post next natal or postnatal) near (class* or training or education)
district next nurs* or community next nurs*
#6 or #7 or #8 or #9 or #10
#5 and #11

Details of one ongoing and four completed Cochrane reviews were found on interventions with pregnant women and families with young children. These are saved in files cochrane protocols.doc and cochrane reviews.doc

2 DARE admin database (searched 14/11/01)

s family or families
s parent or parents
s child or children or newborn or neonat\$
s mother\$ or baby or babies
s s1 or s2 or s3 or s4
s home(w)visit\$ or health(w)visit\$
s house(w)call\$
s social(w)worker\$
s parent\$(3w)(education or class\$ or training or program\$ or skill\$)
s (prenatal or ante(w)natal or antenatal or post(w)natal or postnatal)(3w)(class\$ or training or education)
s district(w)nurse\$ or community(w)nurs\$
s s6 or s7 or s8 or s9 or s10 or s11
s (improv\$ or increas\$(3w)(health or wellbeing or well(w)being)
s reduc\$(3w)(mortality or morbidity or health(w)inequ\$ or social(w)variation\$ or social(w)inequ\$)
s support or encourage\$
s (maternal or mother)(3w)health
s (parent\$ or mother\$(w)(child or infant)(w)relationship\$
s child\$(w)(development or welfare or abuse or health)
s s13 or s14 or s15 or s16 or s17 or s18
s s5 and s12 and s19
s (1996 or 1997 or 1998 or 1999 or 2000 or 2001)/dat
s s20 and s21

Twenty-six records in total were retrieved. These were scanned for relevancy, and reduced to eight records, which are saved in file dare.doc

3 'Wider Public Health' Report (searched 15/11/01) www.york.ac.uk/inst/crd/wph.htm

Eight references were found on interventions with pregnant women and families with young children in the chapter on 'Social Care and Social Welfare'. These are saved in file wph.doc.

4 TRIP (www.tripdatabase.com), (searched 15/11/01)

search terms: parent* or famil* or baby or babies or newborn or neonat* or mother*

Other than records from CDSR, Health Evidence Bulletins Wales, DARE and the HTA database, one additional record was found on TRiP. Details are saved in trip.doc.

5 HTA database (<http://nhscrd.york.ac.uk/>), (searched 15/11/01)

s family or families
s parent or parents
s child or children or newborn or neonate\$
s mother\$ or baby or babies
s s1 or s2 or s3 or s4
s home(w)visit\$ or health(w)visit\$
s house(w)call\$
s social(w)worker\$
s parent\$(3w)(education or class\$ or training or program\$ or skill\$)
s (prenatal or ante(w)natal or antenatal or post(w)natal or postnatal)(3w)(class\$ or training or education)
s district(w)nurse\$ or community(w)nurs\$
s s6 or s7 or s8 or s9 or s10 or s11
s s5 and s12
s (1996 or 1997 or 1998 or 1999 or 2000 or 2001)/xvr
s s13 and s14

Seven records were found on interventions for pregnant women and families with young children on the HTA database. These were scanned for relevancy, and a total of three records are saved in hta.doc.

6 SIGN (www.sign.ac.uk/guidelines/published/index.html), (searched 15/11/01)

No relevant guidelines found.

7 Health Evidence Bulletin Wales (searched 15/11/01)

There is a bulletin on injury prevention containing a section on childhood injury prevention that was produced in April 1998. This section contained three relevant references, which are saved in hebw.doc.

8 National Guidelines Clearinghouse (www.guideline.gov/index.asp) (searched 15/11/01)

Browsed all guidelines in 'Behavioral Disciplines and Activities' category.

No relevant guidelines were found on the NGC website.

9 NCCHTA (www.hta.nhsweb.nhs.uk) (searched 15/11/01)

No relevant ongoing or completed technology assessments were found.

10 NICE (www.nice.org.uk/nice-web) (searched 15/11/01)

No relevant references were found.

11 REFER (www.doh.gov.uk/research/rd3/information/findings.htm#refer), (searched 15/11/01)

search terms: (parent* or famil* or baby or babies or newborn* or neonat* or mother*) and (review* or overview* or meta*)

One relevant reference was found. This is saved in refer.doc.

12 National Research Register (Issue 2001/3)

family or families
parent or parents
child or children or newborn or neonate*
mother* or baby or babies
#1 or #2 or #3 or #4
home next visit* or health next visit* or house next call*
social next worker*
parent* near (education or class* or training or program* or skill*)
(prenatal or ante next natal or antenatal or post next natal or postnatal) near (class* or training or education)
district next nurs* or community next nurs*
#6 or #7 or #8 or #9 or #10
#5 and #11
review* or overview*
metanalys* or metaanalys* or meta next analys*
#13 or #14
#12 and #15

Details of two completed projects and four ongoing projects were found on interventions for pregnant women and families with young children. These are saved as nrrong.doc and nrrcomp.doc.

13 Clinical Evidence

No relevant information found.

14 EMBASE (searched on Ovid 15/11/01)

- 1 Meta Analysis/
- 2 metaanalys\$.ti,ab.
- 3 meta-analys\$.ti,ab.
- 4 meta analys\$.ti,ab.
- 5 cochrane.ti,ab,sh.
- 6 (review\$ or overview\$).ti.
- 7 review\$.pt.
- 8 (synthes\$ adj3 (literature\$ or research or studies or data)).ti,ab.
- 9 pooled analys\$.ti,ab.
- 10 ((data adj2 pool\$) and studies).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
- 11 (medline or medlars or embase or cinahl or scisearch or psychinfo or psycinfo or psychlit or psychlit).ti,ab.
- 12 ((hand or manual or database\$ or computer\$) adj2 search\$).ti,ab.
- 13 ((electronic or bibliographic\$) adj2 (database\$ or data base\$)).ti,ab.
- 14 ((review\$ or overview\$) adj10 (systematic\$ or methodologic\$ or quantitativ\$ or research\$ or literature\$ or studies or trial\$ or effective\$)).ab.
- 15 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
- 16 (retrospective\$ adj2 review\$).ti,ab,sh.
- 17 (case\$ adj2 review\$).ti,ab,sh.
- 18 (record\$ adj2 review\$).ti,ab,sh.
- 19 (patient\$ adj2 review\$).ti,ab,sh.
- 20 (patient\$ adj2 chart\$).ti,ab,sh.
- 21 (peer adj2 review\$).ti,ab,sh.
- 22 (chart\$ adj2 review\$).ti,ab,sh.
- 23 (case\$ adj2 report\$).ti,ab,sh.
- 24 (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh.
- 25 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
- 26 25 not (25 and 15)
- 27 15 not 26
- 28 editorial.pt.
- 29 letter.pt.
- 30 28 or 29
- 31 27 not 30
- 32 exp ANIMAL/

- 33 exp human/
34 32 not (32 and 33)
35 exp nonhuman/
36 exp human/
37 35 not (35 and 36)
38 34 or 37
39 31 not 38
40 (family or families or parent or parents).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
41 (child or children or newborn or neonat\$).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
42 (mother\$ or baby or babies).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
43 40 or 41 or 42
44 (home visit\$ or health visit\$).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
45 house call\$.mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
46 social worker\$.mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
47 (parent\$ adj3 (education or class\$ or training or program\$ or skill\$)).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
48 ((prenatal or ante natal or antenatal or post natal or postnatal) adj3 (class\$ or training or education)).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
49 (district nurse\$ or community nurs\$).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
50 44 or 45 or 46 or 47 or 48 or 49
51 ((improv\$ or increas\$) adj3 (health or wellbeing or well being)).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
52 (reduc\$ adj3 (mortality or morbidity or health inequ\$ or social variation\$ or social inequ\$)).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
53 (support or encourage\$).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
- 54 ((maternal or mother) adj3 health).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
55 ((parent\$ or mother\$) adj1 (child or infant) adj1 relationship\$).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
56 (child\$ adj1 (development or welfare or abuse or health)).mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
57 51 or 52 or 53 or 54 or 55 or 56
58 43 and 50 and 57
59 39 and 58
60 limit 59 to (human and english language and yr=1996-2001)
- The results are references (with abstracts if available) saved in file embase.doc in tagged (ovid) format which should be loadable into reference management software. Thirteen potentially relevant references were found.
- ### 15 Sociological Abstracts (searched on Ovid 15/11/01)
- NOTE: It was agreed following a technical discussion that searches of this database would initially be unlimited by study design. However, pending analysis of results and feedback from HDA this may change.
- 1 (family or families or parent or parents).mp. [mp=title, abstract, heading word, key phrase identifiers]
2 (child or children or newborn or neonat\$).mp. [mp=title, abstract, heading word, key phrase identifiers]
3 (mother\$ or baby or babies).mp. [mp=title, abstract, heading word, key phrase identifiers]
4 1 or 2 or 3
5 (home visit\$ or health visit\$).mp. [mp=title, abstract, heading word, key phrase identifiers]
6 house call\$.mp. [mp=title, abstract, heading word, key phrase identifiers]
7 social worker\$.mp. [mp=title, abstract, heading word, key phrase identifiers]
8 (parent\$ adj3 (education or class\$ or training or program\$ or skill\$)).mp. [mp=title, abstract, heading word, key phrase identifiers]
9 ((prenatal or ante natal or antenatal or post natal or postnatal) adj3 (class\$ or training or education)).mp. [mp=title, abstract, heading word, key phrase identifiers]

- 10 (district nurse\$ or community nurs\$).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 11 5 or 6 or 7 or 8 or 9 or 10
- 12 ((improv\$ or increas\$) adj3 (health or wellbeing or well being)).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 13 (reduc\$ adj3 (mortality or morbidity or health inequ\$ or social variation\$ or social inequ\$)).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 14 (support or encourage\$).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 15 ((maternal or mother) adj3 health).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 16 ((parent\$ or mother\$) adj1 (child or infant) adj1 relationship\$).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 17 (child\$ adj1 (development or welfare or abuse or health)).mp. [mp=title, abstract, heading word, key phrase identifiers]
- 18 12 or 13 or 14 or 15 or 16 or 17
- 19 4 and 11 and 18
- 20 limit 19 to (english language and yr=1996-2001)

The results are references (with abstracts if available) saved in file sociofile.doc in tagged format which should be loadable into reference management software. Six potentially relevant references were found.

16 PsycInfo (SilverPlatter version was searched on records added in updates during 2001; Earlier record should form part of the DARE admin database)

meta analy* in ti,ab
 metaanaly* in ti,ab
 (synthes* with (literature* or research* or studies or data)) in ti,ab
 (review or overview) in ti
 (review or overview) in ab
 (systematic* or methodologic* or quantitative or research* or literature* or studies or trial* or effective*) in ab
 (medline or medlars or embase or scisearch) in ab
 pooled analys*
 (data with pool with studies) in ti,ab
 ((hand or manual or computer or electronic or database) and search*) in ti,ab
 ((electronic* or bibliographic*) with database) in ti,ab
 (peto or der simonian or dersimonian or fixed effect*) in ti,ab
 "literature-review" in de
 "meta-analysis" in de

#13 or #14
 exact{literature-review-research-review} in pt
 exact{meta-analysis} in pt
 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #15 or #16 or #17
 family or families
 parent or parents
 child or children or newborn or neonat*
 mother* or baby or babies
 #19 or #20 or #21 or #22
 home visit* or health visit* or house call*
 social worker*
 parent* near3 (education or class* or training or program* or skill*)
 (prenatal or ante natal or antenatal or post natal or postnatal)
 near3 (class* or training or education)
 district nurs* or community nurs*
 #24 or #25 or #26 or #27 or #28
 (improv* or increas*) near3 (health or wellbeing or well being)
 reduc* near3 (mortality or morbidity or health inequ* or social variation* or social inequ*)
 support or encourage*
 (maternal or mother*) near3 health
 (parent* or mother*) near1 (child or infant) near1 relationship*
 child* near1 (development or welfare or abuse or health)
 #30 or #31 or #32 or #33 or #34 or #35
 #18 and #23 and #29 and #36
 #37 and (ud >= "20001227")
 #38 and (la = "english")

The results are references (with abstracts if available) saved in file psycinfo.doc in tagged format which should be loadable into reference management software. Thirteen potentially relevant references were found.

APPENDIX 2

HDA Evidence Base – critical appraisal tool

Authors: _____

Title: _____

Source: _____

Relevance to topic			
Does this paper address your topic area?	Yes	No	Unsure
Circle the type of paper:			
• Systematic review			
• Meta-analysis			
• Synthesis			
• Literature review			
• Other review (please specify)			
Does it address (circle as appropriate)?			
• Effectiveness (interventions and treatments)			
• Causation			
• Monitoring and surveillance trends			
• Cost			
• Other (please specify)			
Transparency			
Does the paper have a clearly focused aim or research question?	Yes	No	Unsure
Consider whether the following are discussed:			
• The population studied	Yes	No	Unsure
• The interventions given	Yes	No	Unsure
• The outcomes considered	Yes	No	Unsure
• Inequalities	Yes	No	Unsure
Systematicity			
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Consider whether details are given for:			
• Databases searched	Yes	No	Unsure
• Years searched	Yes	No	Unsure
• References followed up	Yes	No	Unsure
• Experts consulted	Yes	No	Unsure
• Grey literature searched	Yes	No	Unsure
• Search terms specified	Yes	No	Unsure
• Inclusion criteria described	Yes	No	Unsure
Is it worth continuing?	Yes	No	
Why/why not?			

Quality			
Do the authors address the quality (rigour) of the included studies? Consider whether the following are used:	Yes	No	Unsure
• A rating system	Yes	No	Unsure
• More than one assessor	Yes	No	Unsure
If study results have been combined, was it reasonable to do so? Consider whether the following are true:	Yes	No	Unsure
• Are the results of included studies clearly displayed?	Yes	No	Unsure
• Are the studies addressing similar research questions?	Yes	No	Unsure
• Are the studies sufficiently similar in design?	Yes	No	Unsure
• Are the results similar from study to study (test of heterogeneity)?	Yes	No	Unsure
• Are the reasons for any variation in the results discussed?	Yes	No	Unsure
What is the overall finding of the review? Consider: • How the results are expressed (numeric – relative risks, etc) • Whether the results could be due to chance (p-values and confidence intervals)			
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions?	Yes	No	Unsure
Does this paper cover all appropriate interventions and approaches for this field (within the aims of the study)? If no, what?	Yes	No	Unsure
Relevance to UK			
Can the results be applied/are generalisable to a UK population/population group?	Yes	No	Unsure
• Are there cultural differences from the UK?	Yes	No	Unsure
• Are there differences in healthcare provision with the UK?	Yes	No	Unsure
• Is the paper focused on a particular target group (age, sex, population sub-group etc)?	Yes	No	Unsure
Accept for inclusion onto HDA Evidence Base?	Yes	No	Refer to third party
Additional comments			

APPENDIX 3

Excluded studies

Author and title	Reason for exclusion
Byrd, M. E. (1997). A typology of the potential outcomes of maternal-child home visits: a literature analysis. <i>Public Health Nursing</i> 14: 3-11.	Not a systematic review. Not about effectiveness of interventions
De Panfilis, D. (1996). Social isolation of neglectful families: a review of social support assessment and intervention models. <i>Child Maltreatment</i> 1: 37-52.	Only partly relevant to home visiting, only partly about effectiveness of interventions. No discussion of methodology. Includes only non-experimental studies
Eckenrode, J. et al. (2000) Preventing child abuse and neglect with a program of nurse home visitation: the limiting effects of domestic violence. <i>Journal of the American Medical Association</i> 284: 1385-91.	Not a systematic review
Kearney, M., York, R. and Deatrick, J. (2000). The effects of home visits to vulnerable young families. <i>Journal of Nursing Scholarship</i> 32: 369-76.	Rejected by third reader. Failure to specify methods in detail
Lagerberg, D. (2000). Secondary prevention in child health: effects of psychological intervention, particularly home visitation on children's development and other outcome variables. <i>Acta Paediatr Suppl</i> 434: 43-52.	Not a systematic review
McNaughton, D. (2000). A synthesis of qualitative home-visiting research. <i>Public Health Nursing</i> 17: 405-14.	Not a systematic review
Olds et al. (1998). The promise of home visitation: results of two randomised trials. <i>Journal of Community Psychology</i> 26: (1): 5-21.	Not a systematic review
Olds, D. et al. (2000). Update on home-visiting for pregnant women and parents of young children. <i>Current Problems in Paediatrics</i> 30: 109-41.	Non-systematic literature review

Notes

