Does home visiting prevent childhood injury? A systematic review of randomised controlled trials

Ian Roberts, Michael S Kramer, Samy Suissa

Abstract

***Objective*—To quantify the effectiveness of home visiting programmes in the prevention of child injury and child abuse.**

***Design*—Systematic review of 11 randomised controlled trials of home visiting programmes. Pooled odds ratios were estimated as an inverse variance weighted average of the study specific odds ratios.**

***Setting*—Randomised trials that were available by April 1995.**

***Subjects*—The trials comprised 3433 participants.**

***Results*—Eight trials examined the effectiveness of home visiting in the prevention of childhood injury. The pooled odds ratio for the eight trials was 0·74 (95% confidence interval 0·60 to 0·92). Four studies examined the effect of home visiting on injury in the first year of life. The pooled odds ratio was 0·98 (0·62 to 1·53). Nine trials examined the effect of home visiting on the occurrence of suspected abuse, reported abuse, or out of home placement for child abuse. Because of the potential for bias in outcome reporting in these studies, pooled effect estimates were not calculated.**

***Conclusions*—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.**

Department of Community Paediatric Research, Montreal Children's Hospital, McGill University Faculty of Medicine, Montreal, Quebec, Canada
Ian Roberts, *overseas fellow*

Departments of Pediatrics and of Epidemiology and Biostatistics, McGill University Faculty of Medicine
Michael S Kramer, *professor*

Division of Clinical Epidemiology, Royal Victoria Hospital, Montreal
Samy Suissa, *director*

Correspondence to:
Dr Ian Roberts, Department of Epidemiology and Biostatistics, Institute of Child Health, London WC1N 1EH.

BMJ 1996;312:29-33

Introduction

Home visiting programmes have long been advocated for improving the health of disadvantaged children. In Britain home visits by health visitors are considered to have a key role in accident prevention because of the advice given during the visits on child development and home safety.[1] In the United States home visiting has been promoted primarily for the prevention of child abuse and neglect.[2] In 1991 the United States Advisory Board on Child Abuse and Neglect called for the establishment of a universal programme of home visiting in an attempt to stem the increase in numbers of child abuse reports.[3]

Over the past two decades several randomised trials have examined the effect of home visiting programmes on the occurrence of child abuse and other child health outcomes. The results of these trials, however, have been conflicting. Although several published articles have reviewed the evidence from randomised trials,[4,5] none of these satisfies the methodological criteria that have been proposed for scientific overviews.[6] To quantify the effect of home visiting programmes on the occurrence of child injury and abuse we conducted a systematic review.

Methods

Inclusion criteria—We included studies in the systematic review if they met all three of the following criteria: (*a*) the assignment of the study participants to the intervention or control group had to be random or quasi-random—for example, alternate record numbers; (*b*) the study intervention had to include one or more postnatal home visits; and (*c*) the study had to address the outcomes of child injury (unintentional or intentional).

Identification of relevant trials—We identified trials by a computerised literature search of Medline (January 1966 to April 1995) and Embase (January 1975 to April 1995). We also searched the social sciences citation index for articles referencing randomised trials of home visiting. Key terms used for searching included social support, family support, home (and health) visitors, home (and health) visitation, child abuse, and child neglect. We reviewed the references of all relevant papers found in the searches, as well as those of review articles and textbooks. Because home visiting is often encountered in the context of the prevention of child abuse, a hand search was conducted of the *Journal of Child Abuse and Neglect* (from 1977 1(1) through to 1995 19(3)). We contacted the authors of identified papers and experts in the field and asked about any published or unpublished work that they might be aware of. To access studies not formally published, such as research reports and abstracts, we searched relevant conference proceedings. If studies met the first two inclusion criteria but did not report outcomes of child injury or abuse we asked the authors to provide any unpublished data on child injury.

Data extraction and study appraisal—We extracted the following data from each study: strategy for allocation concealment, number of randomised participants, duration of follow up, loss to follow up, blinding of outcome assessment, and the professional background of the home visitor (health or welfare professional or non-professional). We evaluated the quality of the trial using a modification of Prendiville's criteria.[7] With this approach trials are scored from 1 to 3 (1=poorest score, 3=best score) on three important aspects of study methodology: control of confounding at entry (adequacy of allocation concealment); control of selection bias (extent to which analyses are based on all randomised participants); and control of information bias in assessing outcome (blinding of observers). While the original criteria assigned a score of 3 for random assignment by telephone and 2 for using opaque sealed envelopes, we assigned a score of 3 for using either of these methods. Trials that assigned subjects to treatment by using methods intended to reduce the risk of foreknowledge of allocation but which were not as secure as random assignment by telephone or use of opaque sealed envelopes scored 2. Trials in which the authors did not report the method

of allocation concealment (and were unable to provide further details or could not be contacted) and trials using alternate record numbers or other similar strategies scored 1. If a published report contained insufficient information for us to assess the quality of the trial, we asked the authors to provide further details. Two assessors performed the data extraction independently, with agreement on methodological criteria evaluated with weighted κ.[8] Each point of disagreement was settled by collaborative review.

Statistical methods—The measure of association, the odds ratio, was calculated directly for studies in which injury was expressed in binary (yes/no) form, with the variance estimated by Wolf's method.[9] For studies in which injury occurrence was allowed to be multiple and expressed as an incidence density, the odds ratio was estimated on the assumption of a Poisson distribution, with the probability of a participant having at least one event being given by $1-e^{-ID}$, where ID is the incidence density. Pooled odds ratios were then calculated as an inverse variance weighted average of the study specific odds ratios.

Results

The combined search strategies identified 33 trials meeting the first two inclusion criteria (randomised trials of postnatal home visiting).[10–42] Eleven of these trials (with 3433 participants) reported outcome data on injury or abuse, or on both.[10–19 42] One of the eleven trials was published as an abstract only[42]; the author of this report was contacted, but the relevant outcome data were not available for inclusion in the review. Of the remaining 10 trials, one reported no differences in the occurrence of accidents,[13] and in another injury outcome data had been collected but not reported.[19] In both of these trials the authors gave us the relevant data. The authors of 13 of the 22 trials meeting the first two inclusion criteria but not reporting outcome data on injury or abuse responded to our request for information on unpublished injury outcomes. As a result of this process one further trial was identified that met all three inclusion criteria.[43] Eleven trials were therefore identified that had outcome data on injury or abuse, or both.

Table 1 shows the scores for the quality of methodology for the trials included in the systematic review. The weighted κ for agreement between the two assessors was 0·94 for adequacy of allocation concealment, 0·51 for the extent to which analyses were based on all randomised participants, and 0·78 for blinding. The mean scores for the unintentional injury outcomes were: adequacy of allocation concealment, 2·4; extent to which analyses were based on all randomised participants, 1·9; blinding, 1·5.

CHILD INJURY

Table 2 shows the data for the eight trials that examined the effect of home visiting on the occurrence of childhood injury. Six of the eight trials reported a lower incidence of injury in the group that received home visits. One study reported three injury outcome measures, representing three different time periods of follow up. For this study, the overall injury rates and odds ratios were calculated for the entire (four year) follow up period (odds ratio 0·74 (95% confidence interval 0·55 to 0·99)). The pooled odds ratio for injury for the eight trials (figure) was 0·74 (0·60 to 0·92). Four studies examined the effect of home visiting on injury occurrence in the first year of life only. The pooled odds ratio was 0·98 (0·62 to 1·53).

CHILD ABUSE

Table 3 shows the data for the nine trials that examined the effect of home visiting on the occurrence of suspected abuse, reported abuse, or out of home placement for child abuse. In four trials the frequency of occurrence of abuse was lower in the visited group. In five trials the frequency of occurrence was higher in the visited group. Substantial heterogeneity of the odds ratios was found across the studies. The potential for bias in the outcome reporting was considered to be a serious threat to validity in all nine studies. Specifically, the presence of the home visitor may have resulted in an increased surveillance for child abuse and hence an increase in the number of reports of abuse. If present, this bias would have resulted in an apparent increased incidence of abuse in the visited group. Pooled effect estimates were therefore not calculated.

Discussion

Although home visiting is unlikely to be associated with adverse effects, the widespread implementation or intensification of home visiting programmes may have important resource implications. Our meta-analysis of the results from eight randomised trials shows a significant preventive effect of home visiting on the occurrence of childhood injury.

METHODOLOGICAL ISSUES

The effect of home visiting on the occurrence of child abuse varied across studies in both magnitude and direction. This may have been the result of bias in the assessment of child abuse outcomes. A report of child abuse entails the occurrence and discovery of an injury, as well as an attribution of intent. In several of the primary studies the information leading to the report of child abuse was provided by the home visitor, raising the possibility of "surveillance bias." Differential surveillance for child abuse between the inter-

Table 1—*Scores* for quality of methodology and study characteristics for randomised trials of home visiting*

Trial (year, country)	Allocation concealment	Analysed as randomised†	Blinding†	No of participants randomised	Follow up (years)
IHDP (1995, USA)[43]	3	2	1	985	1
Marcenko *et al* (1994, USA)[10]	2	2	1	225	0·8
Johnson *et al* (1994, Republic of Ireland)[11]	3	2	1	262	1
Barth (1991, USA)[12]	1	2	1	313	3
Dawson *et al* (1989, USA)[13]	1	1	1	145	1
Hardy *et al* (1989, USA)[14]	1	2	2	290	1·9
Olds *et al* (1986, USA)[15]	3	1	2	400	4
Lealman *et al* (1983, England)[16]	3	2	3	312	1·5
Larson (1980, Canada)[17]	3	2	2	80	1·5
Siegel *et al* (1980, USA)[18]	3	3	1	321	1
Gray *et al* (1979, USA)[19]	3	2	1	100	1·4

IHDP=infant health and development programme.
*On scale of 1 to 3 (1=poorest score, 3=best score).
†Judged for injury outcome measures whenever possible.

Table 2—*Home visiting and childhood injury*

Trial (year, country)	Study population	Intervention	Outcome	Participants visited	Controls	Odds ratio (95% confidence interval)
IHDP (1995, USA)[43]	Parents of low birthweight premature infants	Postnatal, non-professional, emotional, social, practical, and informational support	"Non-hospitalised injuries by maternal report"	17/345	26/551	1·05 (0·56 to 1·96)
Johnson *et al* (1993, Republic of Ireland)[11]	Disadvantaged first time mothers	Postnatal, non-professional support and encouragement in child rearing using the child development programme	"Suffered an accident"	3/127	8/105	0·29 (0·08 to 1·14)
Hardy *et al* (1989, USA)[14]	Inner city mothers of poor infants	Postnatal, non-professional parenting and childcare education	"Outpatient diagnosis of closed head trauma	8/131	15/132	0·51 (0·21 to 1·24)
Dawson *et al* (1989, USA)[13]	Pregnant women attending for maternity care not selected for psychosocial risk	Antenatal and postnatal, non-professional emotional support; information and help in using community resources	"Accidents or ingestion requiring medical attention	5/67	6/44	0·51 (0·15 to 1·79)
Olds *et al* (1986, USA)[15]	Primiparas who were teenagers, unmarried, or of low socioeconomic status	Antenatal and postnatal parenting education in infant development from nurse; involvement of family members and friends in child care; linkage of family members with health and human services	"Emergency visit for accidents and poisoning (1st year of life)"	0·12*	0·06*	2·06 (0·83 to 5·15)
			"Emergency visit for accidents and poisoning (2nd year of life)"	0·15*	0·34*	0·40 (0·21 to 0·77)
			"Emergency department visits for injuries/ingestion (25 to 50 months)"	0·47*	0·61*	0·71 (0·49 to 1·04)
Lealman (1983, England)[16]	Families predicted to be at risk of child abuse	Postnatal intervention and support from social worker	"Admissions with trauma"	1/103	4/209	0·50 (0·06 to 4·55)
Larson (1980, Canada)[17]	Working class families	Postnatal, non-professional emotional and informational support	"Significant falls, cuts, burns, poisonings or other injuries"	1·26**	1·55**	0·73 (0·46 to 1·16)
Gray *et al* (1979, USA)[19]	Families most likely to exhibit abnormal parenting practices	Postnatal emotional support from physician/nurse/lay visitor	"Accidents by maternal report"	16/26	13/25	1·48 (0·49 to 4·5)
Pooled results						0·74 (0·60 to 0·92)

IHDP=infant health and development programme.
*Adjusted mean. **Cumulative accident rate per child.

vention and control groups would almost certainly result in a substantial underestimation of any beneficial effect of home visiting programmes on the occurrence of child abuse, possibly to the extent of reversing the direction of the apparent effect. Indeed, the usefulness of reported abuse as an outcome measure in trials of home visiting deserves reconsideration.

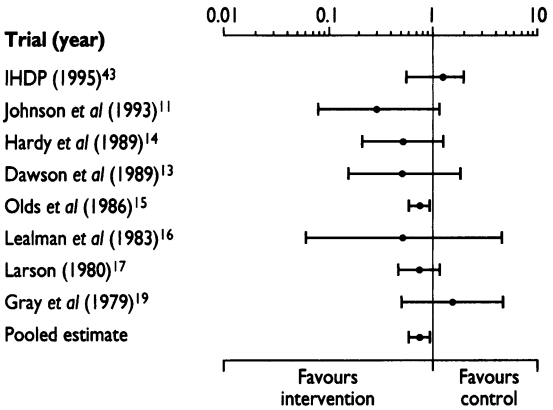
Publication bias is one of the most important potential threats to the validity of systematic reviews. Such bias may arise if certain outcome data are selectively omitted from published reports because the results fail to reach significance. To avoid this type of bias we wrote to the authors of all identified randomised trials of home visiting programmes, asking them to provide any unpublished outcome data on injury or abuse (one further trial was identified by this approach). The authors of nearly half of the studies meeting the first two inclusion criteria, however, could not be traced. These were predominantly small studies and so would make a comparatively minor impact on the overall result. Funnel plots can be used to estimate the extent of publication bias, but because their use is limited to meta-analyses that have enough trials to allow a funnel shape to be visualised, this approach is not helpful in this review.[44]

A recurring issue in the context of systematic reviews is the extent to which the interventions examined are sufficiently comparable for the results from the studies to be combined. The effectiveness of home visiting may depend on its timing, duration, and intensity. Nevertheless, for unintentional childhood injuries no clear heterogeneity was seen in the effect across studies.

IMPLICATIONS

Because most of the trials included in this review used non-professional home visitors, the question of the relative effectiveness of professional versus non-professional home visiting remains unanswered. The observed effect of home visiting on child injury is consistent with a generic effect of home based maternal support. In Britain a programme of home visiting is provided by health visitors. Current health visiting programmes, however, should not be assumed to achieve the effects on childhood injury that are implied by the results of this systematic review. Firstly, the experimental home visiting may have been more intense than that which is typically provided by health visitors. Secondly, in all but one of the trials the intervention was targeted at groups considered to be at increased risk for adverse child health outcomes. This may restrict the extent to which the results are generalisable to programmes of universal health visiting.

The Health of the Nation strategy established child accident prevention as a national priority. Few injury



Odds ratios and 95% confidence intervals for effect of home visiting on child injury

Key messages

- The Health of the Nation established prevention of child injury as a national priority
- Home visiting has been proposed as a prevention strategy, but the results from randomised trials are conflicting
- This systematic review of randomised trials shows that home visiting can substantially reduce rates of child injury
- No consistent effect on child abuse was found, but differential surveillance for child abuse between visited groups and control groups is an important weakness in many trials
- The role of health visitors and non-professionals in the prevention of child injury deserves further attention

prevention interventions, however, have been shown to reduce injury rates in randomised controlled trials. Given the results of this systematic review, the effectiveness of home visiting by health visitors and non-professional support agencies in preventing childhood injury deserves further examination.

We thank the authors of the original articles who replied to inquiries and provided data not included in their published articles. We specifically thank Drs Marie McCormick and Pamela Klebanov for conducting new analyses of the data from the infant health and development programme.

Funding: IR was supported by an overseas fellowship from the Health Research Council of New Zealand. SS is a research scholar of the Fonds de la Recherche en Santé in Quebec.

Conflict of interest: None.

1 Avery JG, Jackson RH. *Children and their accidents.* Edward Arnold: London, 1933.
2 Kempe CH. Approaches to preventing child abuse: the health visitor concept. *Am J Dis Child* 1976;130:941-2.
3 United States Advisory Board on Child Abuse and Neglect. *Child abuse and neglect: critical first steps in response to a national emergency.* Washington DC: US Government Printing Office, 1990. (Publication no 017-092-00104-5.)
4 Olds DL, Kitzman H. Can home visitation improve the health of women and children at environmental risk? *Pediatrics* 1990;86:108-16.
5 Combs-Orme T, Reis J, Ward LD. Effectiveness of home visits by public health nurses in maternal and child health: an empirical review. *Public Health Rep* 1985;100:490-9.
6 Oxman AD, Cook DJ, Guyatt GH. User's guides to the medical literature. VI. How to use an overview. *JAMA* 1994;272:1367-71.
7 Prendiville W, Elbourne D, Chalmers I. The effects of routine oxytocic administration in the management of the third stage of labor: an overview of the evidence from controlled trials. *Br J Obstet Gynaecol* 1988;95:3-16.
8 Cohen JA. A coefficient of agreement for nominal scales. *Educational and Psychological Measurement* 1960;20:37-46.
9 Wolf B. On estimating the relation between blood group and disease. *Ann Hum Genet* 1965;19:251-3.
10 Marcenko MO, Spence M. Home visitation services for at-risk pregnant and postpartum women: a randomised trial. *Am J Orthopsychiatry* 1994; 64:468-78.
11 Johnson Z, Howell F, Molloy B. Community mother's programme: a randomised controlled trial of non-professional intervention in parenting. *BMJ* 1993;306:1449-52.
12 Barth RP. An experimental evaluation of in-home child abuse prevention services. *Child Abuse Negl* 1991;15:363-75.
13 Dawson P, Van Doorninck WJ, Robinson JL. Effects of home based, informal social support on child health. *J Dev Behav Pediatr* 1989;10:63-7.
14 Hardy JB, Streett R. Family support and parenting education in the home: an effective extension of clinic-based preventive health care services for poor children. *J Pediatr* 1989;115:927-31.
15 Olds DL, Henderson CR, Chamberlin R, Tatelbaum R. Preventing child abuse and neglect: a randomised trial of nurse home visitation. *Pediatrics* 1986;78:65-78.
16 Lealman G, Haigh D, Philips J. Predicting and preventing child abuse—an empty hope? *Lancet* 1983;i:1423-4.
17 Larson CP. Efficacy of prenatal and postpartum home visits on child health and development. *Pediatrics* 1980;66:191-7.
18 Siegel E, Bauman KE, Schaefer ES, Saunders MM, Ingram DD. Hospital and home support in infancy: impact on maternal attachment, child abuse and neglect, and health care utilization. *Pediatrics* 1980;66:183-90.
19 Gray JD, Cutler CA, Dean JG, Kempe CH. Prediction and prevention of child abuse and neglect. *Journal of Social Issues* 1979;35:127-39.
20 Infante-Rivard C, Filion G, Baumgarten M, Labelle J, Messier M. A public health home intervention among families of low socioeconomic status. *Children's Health Care* 1989;18:102-7.
21 Casey PH, Kelleher KJ, Bradley RH, Kellogg UW, Kirby RS, Whiteside L. A multifaceted intervention for infants with failure to thrive. *Arch Pediatr Adolesc Med* 1994;148:1071-7.
22 Greenberg RA, Strecher VJ, Bauman KE, Boat BW, Fowler MG, Keyes LL, *et al.* Evaluation of a home-based intervention program to reduce infant passive smoking and lower respiratory illness. *J Behav Med* 1994;17: 273-90.

Table 3—*Home visiting and child abuse*

Trial (year, country)	Study population	Intervention	Outcome	Participants visited	Controls	Odds ratio (95% confidence interval)
Marcenko *et al* (1994, USA)[10]	Women at risk of out of home placement of their newborns	Antenatal, postnatal, professional/non-professional to provide peer support; help to identify service needs; home based health education and parenting training	Out of home placement	35/110	15/77	1·93 (0·97 to 3·85)
Johnson *et al* (1993, Republic of Ireland)[11]	Disadvantaged first time mothers	Postnatal, non-professional support and encouragement in child rearing using the child development programme	Abuse unspecified	0/127	3/105	0·11 (0·01 to 2·25)
Barth (1991, USA)[12]	Parents identified as at risk of engaging in child abuse by community professionals	Antenatal and postnatal, non-professional, informational, emotional, and practical support	Reported abuse	64/97	54/94	1·44 (0·80 to 2·58)
Hardy *et al* (1989, USA)[14]	Inner city mothers of poor infants	Postnatal, non-professional parenting and childcare education	Suspected abuse	2/131	13/132	0·14 (0·03 to 0·64)
Dawson *et al* (1989, USA)[13]	Pregnant women attending for maternity care not selected for psychosocial risk	Antenatal and postnatal, non-professional emotional support; information and help in using community resources	Reported abuse	5/67	1/44	3·47 (0·39 to 30·74)
Olds *et al* (1986, USA)[15]	Primiparas who were teenagers, unmarried, or of low socioeconomic status	Antenatal and postnatal parenting education in infant development from nurse; involvement of family members and friends in child care; linkage of family members with health and human services	Registered abuse (age 0-2 years) Registered abuse (age 2-4 years)	0·05* 0·08*	0·10* 0·05*	
Lealman *et al* (1983, England)[16]	Families predicted to be at risk of child abuse	Postnatal intervention and support from social worker	Registered abuse	1/103	3/209	0·67 (0·07 to 6·55)
Siegel *et al* (1980, USA)[18]	Women with low income	Postnatal, non-professional support to promote mothers' involvement with their infants and to support mothers in coping with range of stresses	Reported abuse	14/159	9/162	1·64 (0·69 to 3·91)
Gray *et al* (1979, USA)[19]	Families most likely to exhibit abnormal parenting practices	Postnatal emotional support from physician/nurse/lay	Suspected abuse	0/50	5/50	0·08 (0·00 to 1·52)

*Adjusted means.

23 Currie AL, Gehlbach SH, Massion C, Thompson S. Newborn home visits. *J Fam Pract* 1983;17:635-8.
24 Thompson RJ, Cappleman MW, Conrad HH, Jordan WB. Early intervention program for adolescent mothers and their infants. *J Dev Behav Pediatr* 1982;3:18-21.
25 Yanover MJ, Jones D, Miller MD. Perinatal care of low-risk mothers and infants. *N Engl J Med* 1976;294:702-5.
26 Black MM, Nair P, Kight C, Wachtel R, Roby P, Schler M. Parenting and early development among children of drug abusing mothers: effects of home intervention. *Pediatrics* 1994;94:440-8.
27 Hall LA. Effect of teaching on primiparas' perceptions of their newborn. *Nursing Res* 1980;29:317-21.
28 Lowe ML. Effectiveness of teaching as measured by compliance with medical recommendations. *Nursing Res* 1970;19:59-63.
29 Yauger RA. Does family centered care make a difference? *Nursing Outlook* 1972;20:320-3.
30 Shyne AW, LeMat A, Kogan LS. Evaluating public health nursing service to the maternity patient and her family. *Nursing Outlook* 1963;11:56-8.
31 Stanwick RS, Moffat ME, Robitaille Y, Edmond A, Dok C. An evaluation of the routine public health nurse home visit. *Can J Public Health* 1982; 73:200-5.
32 Field TM, Widmayer SM, Stringer S, Ignatoff E. Teenage, lower class, black mothers and their pre-term infants: an intervention and developmental follow-up. *Child Dev* 1980;51:426-36.
33 Powell C, Grantham-McGregor S. Home visiting of varying frequency and child development. *Pediatrics* 1989;84:157-64.
34 Beckwith L. Intervention with disadvantaged parents of sick pre-term infants. *Psychiatry* 1988;51:242-7.
35 Barnard KE, Magyary D, Sumner G, Booth CL, Mitchell SK, Spieker S. Prevention of parenting alterations for women with low social support. *Psychiatry* 1988;51:248-53.
36 Scarr S, McCartney K. Far from home: an experimental evaluation of the mother-child home program in Bermuda. *Child Dev* 1988;59:531-43.
37 Madden J, O'Hara J, Levenstein P. Home again: effects of the mother-child home program on mother and child. *Child Dev* 1984;55:636-47.
38 Casiro OG, McKenzie ME, McFadyen L, Shapiro C, Seshia MM, MacDonald N, *et al.* Earlier discharge with community base intervention for low birth weight infants: a randomised trial. *Pediatrics* 1993;92:128-34.
39 Vines SW, Williams-Burgess C. Effects of a community health nursing parent-baby (ad)venture program on depression and other selected maternal child health outcomes. *Public Health Nursing* 1994;11:188-95.
40 Johnson DL, Walker T. Primary prevention on behaviour problems in Mexican-American children. *Am J Community Psychol* 1987;15:375-85.
41 Nicol AR, Stretch DD, Davison I, Fundudis T. Controlled comparison of three interventions for mother and toddler problems: preliminary communication. *J R Soc Med* 1984;77:488-91.
42 Olds DL, Kitzman HJ, Cole RE. Effect of home visitation by nurses on caregiving and maternal life course. *Arch Pediatr Adolesc Med* 1995; 149:76.
43 The Infant Health and Development Program. Enhancing the outcomes of low-birth-weight, premature infants. *JAMA* 1990;263:3035-42.
44 Dickersin K, Berlin JA. Meta-analysis: state of the science. *Epidemiol Rev* 1992;143:154-76.

(Accepted 30 November 1995)

Collecting data in general practice: need for standardisation

D C Newrick, J A Spencer, K P Jones

Department of Primary Health Care, University of Newcastle upon Tyne, Newcastle upon Tyne NE2 4HH
D C Newrick, *research associate*
J A Spencer, *senior lecturer*
K P Jones, *senior lecturer*

Correspondence to:
Mr Newrick.

BMJ 1996;312:33-4

The variety of practice annual reports that have appeared since 1970[1,2] demonstrates that decisions about which data are best collected to assess the quality of patient care and for forward planning are usually left to individual practices to determine.

Subjects, methods, and results

To examine existing data collection and views about feedback we sent a postal questionnaire for self completion to all singlehanded practices, all fundholding practices, and all non-fundholding practices with over five partners, plus a one in three random sample of all other non-fundholding practices in the Northern region in September 1993 (n=211). The response rate was 79%.

Respondents spent substantial amounts of time entering data into computer systems or manual records each month (see table). In computerised practices, deciding on a standardised coding system and ensuring that team members consistently entered data caused problems.

Levels of recording of outpatient referrals and attendances at accident and emergency departments were high though low on diagnostic details. Chiropody, physiotherapy, and alcohol-drug counselling referrals were recorded by fewer respondents, as were social service referrals. Collection of data about surgery consultations, domiciliary visits, and night visits by general practitioners were high (all over 90%), but telephone consultations were recorded at lower levels. Recording of practice nurse surgeries was high, but nurse telephone consultations and home visits were recorded at under half the rate for general practitioners. Immunisations, vaccinations, cervical cytology, births, and deaths were recorded at extremely high levels. Least recorded data were for socioeconomic details of patients.

Satisfaction with the current feedback from family health services authorities was high (172, 70%) and 154 (62%) practices were prepared to standardise their data collection; the main concern about standardisation related to the time and cost. The main preferences for feedback of data were by individual practice (137) and by whole family health services authority (111). Over half the respondents (143) were in favour of using "spotter" practices to collect data from primary health care teams.

Mean, standard deviation, and 95% confidence intervals for the estimated amount of time spent in hours each month recording data by respondents, grouped by practice status and practice's views on methods of collecting/reporting data

Time	Practices	Mean time spent (h)	Standard deviation	95% Confidence interval	Missing
Large practice	7	217	141	87 to 348	2
Fundholder	43	227	162	178 to 277	11
Non-fundholder	83	112	92	92 to 133	9
Single handed	78	53	55	40 to 60	14
All practices	211	118	121	101 to 134	36

Comment

Extrapolating our data to all England and Wales suggests that about 1 230 000 hours are being spent every month in collecting data in general practice. Considerable duplication of data collection by other bodies exists—for example, for referrals, accident and emergency attendances, and item of service statistics. Historically, general practices have answered to the rest of the health service for what they do, recently through the ill perceived annual reports.[3] Data collection has been focused more on meeting administrative demands from outside. Despite high cost computerisation, there is little vision about which data should be recorded, how to use it, how it can best inform practices in their activities, and how it should be standardised.

Telecommunications could lead to fast and effective transfer of large amounts of data over wide area networks on an unprecedented scale. For this to be successful, however, data collection needs to have more focus, agreed standards, and consistent cross mapping so that it can eventually provide data for health resource planning and public health and epidemiological uses. This would also reduce general