ORIGINAL RESEARCH

A universal 30-month child health assessment focussed on social and emotional development

Lucy C Thompson[1], Philip M J Wilson[1], Alex McConnachie[2]

1. Institute of Health and Wellbeing, University of Glasgow, The United Kingdom. 2. Robertson Centre for Biostatistics, University of Glasgow, The United Kingdom.

Correspondence: Lucy Thompson. Address: Child and Adolescent Psychiatry, University of Glasgow, Caledonia House, RHSC Yorkhill, Dalnair Street, Glasgow G3 8SJ. Telephone: 44-141-201-9239. Fax: 44-141-201-0620. Email: lucy.thompson@glasgow.ac.uk.

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Abstract

Background: The Glasgow Parenting Support Framework was published in 2009 with a view to improving universal and targeted parenting support for families in the city of Glasgow. In order to provide structured support to families at all levels of need (i.e., either the whole population (universal) or those families with identified problems (targeted)), it was important to have a robust means of assessing the needs of families. To this end, two routine family visits by Health Visitors (community child nurses) were piloted in order to assess their utility in assessing need for parenting support. Both visits involved home assessments, one when the child reached 13 months of age and the other at 30 months. The utility of the 13 month visit is reported elsewhere [6]. We describe findings from the 30 month contact in this paper.

Aims: The present study aimed to assess the utility of a home visit at 30 months of age in assessing families' need for parenting support. It describes (a) the level of need established and (b) the extent to which the home assessment influenced health visitors' choice of subsequent action.

Methods: Health visitors were asked to arrange to see the principal carer (usually the mother) of the child at home with the child within a month of the child reaching 30 months of age. They collected data on: existing problems and service provision to families, including whether there were known developmental problems for the child or parental issues such as substance misuse or medical problems; parenting stress reported by the child's principal carer using the Parenting Daily Hassles Scale; parent's perception of their child's language development using a two-item brief language screen and parent's perception of the child's behaviour using the Behaviour Screening Questionnaire. Using unique Community Health Index identification numbers, linked data from the Child Health Surveillance System, which allowed us to allocate a social deprivation score (using Scottish Index of Multiple Deprivation (SIMD)) to families, were incorporated into statistical models of service use.

Results: From a whole population of 819, data were obtained for 437 families of which 330 had a completed visit. The remaining families were not visited usually due to difficulties in securing an appointment or families not being home at the time of the planned appointment. Parenting stress was generally low and behaviour problems commonly reported. Scores on both parenting stress and behaviour measures were higher in families already identified to have higher levels of need and those living in more deprived areas. Health visitors were more likely to intend to revisit or refer as parenting stress and behaviour scores increased, and where there was previously identified need and socio-economic deprivation.

Conclusions: Current service provision matches need to some extent but routine visits focused on children's social and emotional development at 30 months may help to identify families needing support who would not otherwise have received it.

Key words

Child mental health, Parenting support, Screening

1 Introduction

The social and emotional development of children is of central importance to their development as successful and healthy individuals. There is now considerable evidence supporting the importance of early intervention [1]. Services for parents of young children (aged under 5 years) therefore require consideration in designing health and social care policy. In a review of child health services in the UK, Hall and Elliman [2] recommended that there should be a universal health programme for all children as a basis from which those families in greater need of support can be identified and resource allocated accordingly. Resultant policy changes in Scotland led to children being assigned at an early age (16 weeks) to a Health Plan Indicator (HPI) which determines the level of face-to-face contact by health visitors (HVs - community child nurses) offered through the early years [3]. Most families (those assigned to a 'Core' HPI) have no scheduled contacts between 13 and 36 months. There are, nevertheless, difficulties in accurate prediction of level of need for service support in families with children under five years of age [4]. For example, in assigning a Core HPI at 12 months of age, a child who goes on to show poor language development or motor coordination will not necessarily be identified. Parents are not always in a position to know if their child's development is slower than should be expected and may not feel a need to make contact with services themselves.

The aim of this evaluation was to assess whether or not a universal health surveillance contact when children reach 30 months could improve the match between need for parenting support and provision of services to families. NHS Greater Glasgow and Clyde and Glasgow City Council published their joint parenting support framework [5] in June 2009, with one of its central components being robust assessment of support needs in order to optimise uptake and access to services and to address health inequalities. To address this component, West Glasgow Community Health and Care Partnership (CHCP) explored the utility of two universal contacts between HVs and families when children were aged 13 and 30 months. Data collected on the wellbeing of children and families visited were combined with routinely collected population level data to assess impact. The 13 month contact has already been reported [6], and this paper focuses on the feasibility and utility of the 30 month contact. We address the following specific questions:

- Did HVs detect currently unmet need for parenting support in terms of (a) parenting stress and (b) child behaviour problems?
- To what extent did information gathered at the contact influence health visitor decision making regarding intended revisit and referral?
- What was the response rate for the 30 month contact?
- What was the response rate for the individual measures used?

2 Method

2.1 Design

Data were collected on a whole population basis as part of a health visiting service development in West Glasgow Community Health and Care Partnership (CHCP). Following consultation and training on questionnaires and methods of enquiry, health visitors were asked to visit all families eligible for a 30 month contact within the evaluation period (June – December 2009), to collect data on family context and on the three main outcome measures.

2.2 Measures

Behaviour Screening Questionnaire (BSQ): Early behavioural problems in children strongly predict a range of adverse physical and mental health outcomes [8] and there is an increasingly strong case for screening for severe behavioural problems [9]. Richman and Graham's Behavioural Screening Questionnaire [7] is a 20-item questionnaire where parents indicate which of three statements relate most closely to their child. There are items pertaining to behaviours such as sleeping, eating, attention seeking, relations with other children, activity, concentration, tempers, mood, worries, and fears. This measure has been used in children aged 30 months and norms are available for a comparable population sample to that reported here [10]. It was selected due to its previous utility and acceptability in Glasgow and due to it being free of charge, an essential feature in a National Health Service based service evaluation. A cut-off score of 10 is used to indicate likely problems.

Parenting Daily Hassles Scale (PDHS): The PDHS is a 20-item measure that assesses the frequency of and perceived stress resulting from, a range of parenting events or tasks (e.g., 'continually cleaning up messes of toys or food' and 'having to change your plans because of unprecedented child needs'). Total 'Frequency' and 'Intensity' scores are generated, and scores of over 50 and 70 are considered respectively to indicate 'high' frequency of potentially hassling events and 'high' levels of felt stress by the parent [11].

Two-item language screen: Two outcomes – lack of two-word utterances and having a vocabulary of less than 50 words – are strongly predictive of later developmental problems [12]. HVs were therefore asked to enquire of parents whether (a) their child could make two-word utterances and (b) their child had a vocabulary of at least 50 words. Answering 'no' to either of these questions was considered as suggestive of language delay. Response rates will be presented here and further analysis of factors associated with language delay will be published separately.

Population data: The data gathered were combined with population-level data from the child health surveillance (pre-school) system which allowed us to incorporate demographic factors, including the Scottish index of Multiple Deprivation (SIMD) into our analyses [13]. SIMD is an area-based measure of deprivation referenced to the whole Scottish population: Glasgow has a relatively high level of deprivation and about half of our sample is in the most deprived Scottish SIMD quintile. This study used SIMD data from 2009.

Contextual factors: Health visitors were asked to note any significant factors about the family (e.g., already known to other services such as social work or community paediatrics) and their management plan following the contact (e.g., revisit and/or referral; change in HPI). Families are classified by the HPI as 'Core', 'Additional' or 'Intensive', with Core families receiving the basic universal child health surveillance programme, Additional families receiving additional support as necessary (e.g., extra HV input, a parenting group), and Intensive families requiring multi-agency support (e.g., social work services, community paediatrics, etc). These variables were used as indicators of service provision, to assess whether or not this matched need for support.

Return and response rate: HVs were asked to return forms even where a visit had not been possible. This would allow an accurate estimate of uptake rate from families. Management provided information on staff whole time equivalent and known leave arrangements by caseload number. This allowed an assessment of the form return rate according to caseload number, which is usually synonymous with an individual HV. We were also able to note where HVs were covering vacant caseloads. A sample of practitioners and service users was surveyed to augment our understanding of return and response rates.

2.3 Procedure

According to usual service delivery in health visiting, HVs wrote to eligible families explaining the pilot evaluation and how their data would be used. The questionnaires to be used were included for information. The letter invited them to take part in an assessment and informed parents that HVs would be in contact by telephone to arrange an appointment. Some families refused to take part in the visit. Some families proved difficult to establish contact with. HVs made as many attempts to contact families as possible, and if parents were not at home at a prearranged time they attempted to arrange an alternative. As there was no obligation for parents to take part in the visit and due to the time-limited nature of the pilot evaluation, it was not possible to include all eligible families. Where visits took place, HVs followed their normal practice of asking parents if they had any questions about the measures, reviewing the responses with parents to see if there were any queries or concerns requiring further discussion, and making arrangements for any follow-up activity as a result. HVs completed contextual information questionnaires and returned all paperwork to the parenting evaluation office.

2.4 Statistical analysis

Data were analysed using IBM SPSS Statistics 19 and R for Windows version 2.11.0. Missing PDHS and BSQ responses were imputed where appropriate. PDHS results were analysed as scores for each of the two main subscales: Frequency and Intensity; BSQ data were analysed by total score. Scores on both measures were summarized by median and inter quartile range (IQR) according to HPI status (prior to the 30 month visit), quintile of SIMD, whether the family was known to other services and revisit/referral status after the visit. Subgroups were compared with Kruskal–Wallis and Mann–Whitney tests. The number and percentage of families with a revisit scheduled or who were referred was summarized by HPI at the start of the visit, SIMD quintile, child's gender, and the family being known to other services. Revisit/referral rates were compared between subgroups with Fisher's exact test or Chi-squared test for trend. Logistic regression was used to establish if PDHS and BSQ scores could predict a revisit or referral in addition to current indicators of need: SIMD quintile, HPI at the start of the visit and the family being known to other services. Each predictor was assessed univariately, and a multivariate model was fitted with all predictors simultaneously. Factors associated with revisit or referral in the multivariate model were used to create a predictive model, which was illustrated graphically.

2.5 Ethical review

Ethical approval was not required for this work as it was conducted as part of service evaluation. Participants were informed of this and had the opportunity for their data to be excluded.

3 Results

HVs gathered information for 53.4% of 819 families in West Glasgow eligible for a visit during the pilot. Of these 437 families, 75% were successfully visited. SIMD and HPI distribution of these families closely matched those eligible for a contact in West Glasgow (see Table 1). The main recorded reason for not completing visits was that the parent did not respond to attempts to contact. Subsequent survey feedback showed that parents working full time found it difficult to arrange appointments, especially when parents did not perceive the need for a visit. There was nevertheless also considerable variation between practitioners; some HVs successfully visited all of their allocated families while others visited only a small proportion of their eligible caseloads.

The language screen was most likely to be completed, and the PDHS least likely (see Table 2). Even where participants attempted a measure, only 46.8% of participants completed all items on all measures.

Thirty three children (10%) were found to have suspected language delay. 57% of these were in the most deprived SIMD 09 quintile (not significantly different from the population $\chi^2=3.9$; $p>0.1$) and 47% were in the Core HPI category at the start of the visit.

Table 1. Background information on families with 30 month old children

Variable	**Frequency (%)**		
	Visit complete n=330	**Data received[a] n=437**	**Eligible population n=819**
Child's sex			
Male	150 (45.5)	194 (44.4)	399 (48.7)
Female	153 (46.4)	201 (46.0)	420 (51.3)
Missing	27 (8.2)	42 (9.6)	-
Health Plan Indicator			
Core	211 (63.9)	275 (62.9)	531 (64.8)
Additional	87 (26.4)	115 (26.3)	208 (25.4)
Intensive	32 (9.7)	42 (9.6)	66 (8.1)
Missing	-	5 (1.1)	14 (1.7)
Other CHS-PS visits complete?			
Neonatal hearing screening	291 (88.2)	374 (85.6)	766 (93.5)
HV first visit	284 (86.1)	364 (83.3)	750 (91.6)
6-8 week review	277 (83.9)	353 (80.8)	732 (89.4)
2 year review[b]	129 (39.1)	171 (39.1)	292 (35.6)
Missing	27 (8.2)	42 (9.6)	-
SIMD 09			
1 (most deprived)	127 (38.5)	172 (39.4)	361 (44.1)
2	46 (13.9)	58 (13.3)	110 (13.4)
3	51 (15.5)	58 (13.3)	108 (13.2)
4	26 (7.9)	34 (7.8)	85 (10.4)
5 (least deprived)	53 (16.1)	73 (16.7)	155 (18.9)
Missing	27 (8.2)	42 (9.6)	-

a. Although HVs were instructed to return basic data on families they did not visit, we received anecdotal reports that this did not always happen. Therefore these data do not necessarily represent all families which HVs attempted to visit; b. This contact is currently routinely offered only to families in Additional and Intensive HPI

Table 2. Return and completion rates of 30 month HV visits

Families visited (denominator) % (n)	**Language Screen % (n)**	**PDHS % (n)**	**BSQ % (n)**	**Complete data (all questions on all three questionnaires) % (n)**	**Complete data (following imputation of missing values)* % (n)**
100 (330)	95.5 (315)	87.3 (288)	98.2 (324)	46.8 (155)	73.3 (242)

*missing values were imputed from mean subscale scores if respondent had completed at least 50% of questionnaire subscales

On average scores on the PDHS were low (see Table 3) and the majority of participants scored well below given cut-off points. There is a significant increase in Intensity subscale scores with escalation of HPI and with increased levels of multiple deprivation. A high level of behaviour problems was identified, with 50% of the sample scoring above the established cut-off point. Scores increased significantly with escalation in HPI and with increased multiple deprivations. Scores were also significantly higher for boys and for children already known to other services. However, 50% of parents with a high child behaviour problem score were in the Core HPI (compared to 34% Additional and 16% Intensive).

Table 3. PDHS and BSQ scores by HPI, SIMD, gender, other service involvement and revisit/referral

Variable	**PDHS subscale score**		**BSQ total score**
	Intensity	**Frequency**	
	Median (IQR)	**Median (IQR)**	**Median (IQR)**
All	34.7 (15.5)	37.0 (10.9)	10.0 (6.7)
Health Plan Indicator			
Core	32.8 (15)	36.8 (10)	9.0 (6)
Additional	37.0 (13)	37.9 (12)	11.6 (7)
Intensive	39.5 (21)	41.5 (15)	14.4 (9)
p-value	.005	.068	<.001
SIMD 09 (1=deprived; 5=affluent)			
1	38.0 (21)	37.8 (14)	11.8 (7)
2	36.5 (14)	37.0 (8)	8.2 (6)
3	36.0 (15)	36.0 (13)	7.6 (6)
4	30.3 (10)	36.0 (10)	9.5 (5)
5	31.6 (10)	37.9 (8)	8.7 (5)
p-value	.003	.441	<.001
Child's sex			
Male	35.8 (15)	38.0 (12)	10.0 (6)
Female	33.7 (15)	36.0 (10)	8.9 (7)
p-value	.068	.031	.016
Known to other services?			
Yes	37.0 (22)	40.0 (17)	11.0 (8)
No	34.7 (15)	37.0 (9)	9.5 (6)
p-value	.106	.139	.010
Revisit and / or referral?			
Yes	41.0 (21)	41.0 (14)	13.0 (8)
No	33.0 (14)	36.0 (9)	9.0 (6)
p-value	<.001	<.001	<.001

Includes maximum *n* = 251 participants with complete PDHS-I data; 289 with complete PDHS-F data; and 324 with complete BSQ data. PDHS, Parenting Daily Hassles Scale; BSQ, Behaviour Screening Questionnaire; HPI, Health Plan Indicator; SIMD, Scottish Index of Multiple Deprivations. Full data (including complete *n* for each test and test statistic) are available in supplementary material.

Table 3 shows that HVs were significantly more likely to note an intention to revisit a family or refer them on to other services where there were high PDHS or BSQ scores. Information already known on families (Intensive HPI, living in a more deprived area and being known to other services) also had a significant association with HVs' decisions to revisit or refer (see Table 4). The gender of the child did not have an impact on intention to revisit or refer.

Table 4. Revisit and referral rates by HPI, SIMD and other service involvement

	Total	Revisit?	Referral?	Revisit OR referral
All	**330**	**80**	**42**	**103**
Health Plan Indicator				
Core	211	26 (12.3)	18 (8.5)	36 (17.1)
Additional	87	32 (36.8)	13 (14.9)	38 (43.7)
Intensive	32	22 (68.8)	11 (34.4)	29 (90.6)
p-value		<.001	<.001	<.001
SIMD 09 (1=deprived; 5=affluent)				
1	127	48 (37.8)	25 (19.7)	62 (48.8)
2	46	8 (17.4)	3 (6.5)	9 (19.6)
3	51	13 (25.5)	6 (11.8)	16 (31.4)
4	26	2 (7.7)	3 (11.5)	4 (15.4)
5	53	4 (7.5)	0	4 (7.5)
p-value		<.001	<.001	<.001
Child's sex				
Male	150	38 (50.7)	21 (56.8)	49 (51.6)
Female	153	37 (49.3)	16 (43.2)	46 (48.4)
p-value		.46	.22	.36
Known to other services?				
Yes	55	32 (58.2)	15 (27.3)	42 (76.4)
No	275	48 (17.5)	27 (9.8)	61 (22.2)
p-value		<.001	.001	<.001

Includes *n* = 330 participants for whom a visit was known to have taken place. HPI, Health Plan Indicator; SIMD, Scottish Index of Multiple Deprivations.

Multivariate analysis (see Table 5) shows PDHS Intensity score, BSQ total score and HPI independently predicted HVs' intentions to revisit or refer. Figure 1 shows the predicted probabilities of being revisited or referred, dependent upon PDHS score, HPI status and BSQ score.

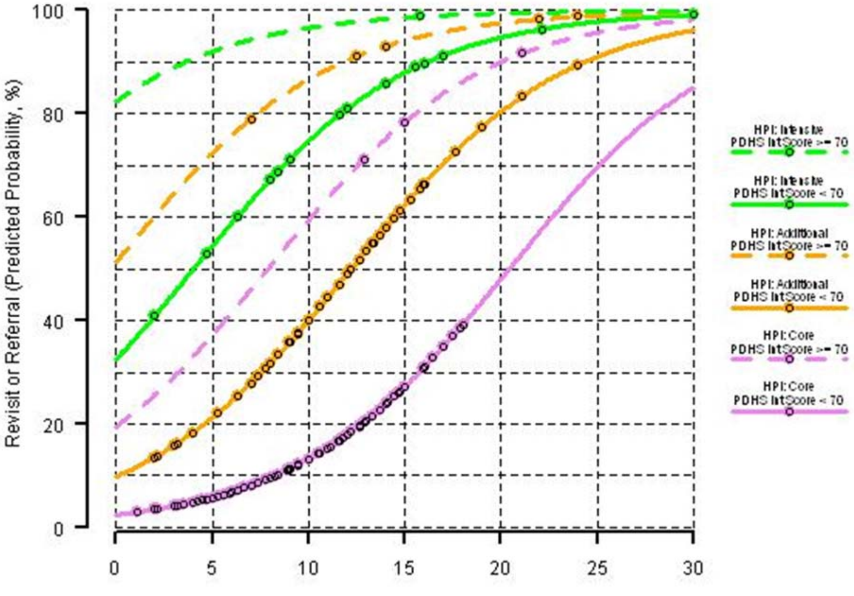

Figure 1. Predicted probability of revisit or referral

Based on a logistic regression model including Health Plan Indicator (HPI) status at the start of the visit, PDHS score, and BSQ score. PDHS, Parenting Daily Hassles Scale; BSQ, Behaviour Screening Questionnaire; HPI, Health Plan Indicator.

Table 5. Logistic regression analysis

Predictor	Univariate		Multivariate	
	OR (95% CI)	*p*-value	OR (95% CI)	*p*-value
PDHS Intensity Score	1.06 (1.04, 1.09)	<0.001	1.04 (1.01, 1.07)	0.015
BSQ Score	1.22 (1.14, 1.29)	<0.001	1.17 (1.06, 1.28)	0.001
HPI (Core, Additional, Intensive)	5.11 (3.37, 7.74)	<0.001	4.38 (2.60, 7.36)	<0.001

Note. Models for composite outcome of revisit or referral, in relation to PDHS intensity score, BSQ score and HPI status. PDHS, Parenting Daily Hassles Scale; BSQ, Behaviour Screening Questionnaire; HPI, Health Plan Indicator.

4 Discussion

Universal child health screening has been curtailed in Scotland with the intention of allowing a focus on the most vulnerable families. Routine child health contacts with families now end when children are 2-4 months old which may mean that subsequent need for support is not identified. The aim of this evaluation was to assess whether or not a universal health surveillance contact when children reach 30 months could improve the match between need for parenting support and provision of services to families. Our results confirm that current provision of health visiting services parallels need for many families already known to be experiencing problems. There was also evidence of unmet need: problems with parenting stress or behaviour problems were identified for a number of families who were not currently known to support services. The use of standardised measures in this visit may also have uncovered specific areas of need previously unknown by practitioners. Practitioners' decision making was informed by the information gathered at this visit.

Although this evaluation has enhanced our understanding of the utility of this addition to core child health services, there are a number of limitations which should be borne in mind when interpreting the findings. The uptake rate of the visits by families was reasonable for a short pilot and the sample was representative of the eligible population (see Table 1), however the findings are limited by the low rates of questionnaire completion within the visits (see Table 2). This may be due to issues with parental confidence but equally could relate to practitioner confidence in using standardised measures with which they had limited prior experience. There was varying degree of practitioner engagement with the visit in the pilot area. This may have been due largely to 'vacant' caseloads and sickness absences during the pilot period. Nevertheless, the proportion of visits completed varied markedly between individual practitioners. It is also difficult to attribute decision making of health visitors to the use of standardised measures. The relative influence of more intangible indicators known to form part of health visitors' holistic assessment of a family are difficult to disentangle.

A principal aim of this evaluation was to assess the feasibility and acceptability of the 30 month visit. The previously universal 24 month child health surveillance contact was removed in Scotland following the recommendations of Hall and Elliman [2] based on lack of evidence for efficacy. This may have resulted in families 'falling through the cracks' where problems impacting children's development arose after being assigned to the Core HPI (usually by 4 months of age). Health visitors and service managers expressed a perceived necessity for the reinstatement of a contact at this stage of development, but uptake rates in the present evaluation were ultimately disappointing. Data were returned on 54% of eligible families, lower than the 80% rate for the 24 month contact that was part of the universal service prior to 2006. However, whereas the families receiving the 24 month visit were disproportionately represented by more affluent 'worried well' parents, the present sample was representative of the eligible population in terms of socioeconomic deprivation and HPI. Survey feedback suggested that practitioners found it difficult to arrange appointments with parents who were in full time employment. It may be that the pilot nature of the work meant that parents did not view this as a routine health service and so were less prepared to take time off.

Whilst the overall uptake rate of the contact (40%) was reasonable in this feasibility study, response rates on individual measures decreased with increased complexity of the measures (see Table 2) and this should be considered in designing any future health surveillance activity. Issues of accessibility for both parents and practitioners, in terms of confidence, literacy and language, should be taken into account. There is an established tension with regard to introducing standardised measures to health visiting practice, which arguably has its strength in its reliance on an holistic professional judgment which practitioners acknowledge they find difficult to articulate [14-16]. Whilst somewhat intangible, research shows that health visitors use a range of skills in working with more vulnerable families [14, 16, 17]. It is likely that this will sometimes include not expecting parents to complete a relatively complex questionnaire, especially where HVs do not consider there will be any added advantage to doing so. The use of standardised measures as part of evidence-based child health surveillance should be further investigated.

Unmet need was clearly identified as a result of this visit. Whilst parenting stress increased with previously identified need (SIMD and HPI), there were parents in the Core HPI with very high scores. Furthermore, whilst there was a significant increase of behaviour problems with HPI, 50% of parents with a high child behaviour problem score were in the Core HPI (34% Additional; 16% Intensive). This might indicate significant unmet need, or may be an issue of the sensitivity of the measure. Parents and practitioners found the BSQ acceptable and straightforward to complete and score, but given the distribution of scores across the HPI categories and the high median, it may in fact be over-sensitive for this age group. It may be preferable to replace it with the Strengths and Difficulties Questionnaire [18], which is more widely used, has good validity and reliability, and has recently been shown to be applicable to children as young as 24 months [19].

There was a clear relationship between information gathered from the measures and the health visitor intention to revisit or refer on to other services. Almost a third of families visited were stated to have been identified as eligible for a revisit or referral. Whilst some of these families almost certainly would have received some further input regardless of this contact (i.e., those in an Additional or Intensive HPI), 35% of these families were in the Core HPI so almost certainly would not. Further, the significant association between PDHS and BSQ scores and likelihood of revisit or referral suggests that this information was of specific benefit in decision making. Further work is required to establish if the nature of the concern prompting revisit or referral was directly related to questionnaire scores.

This evaluation provides compelling evidence for establishing a routine child health surveillance contact at around 30 months of age. The current core programme means that the majority of children will be assigned a level of need long before their first birthday, which previous research has shown to be too early [4]. Direct measures of children's social and emotional development at this age can provide a useful indicator of need for support services which a health visitor is well disposed to administer and act upon. Further work is required regarding the specific measures to be used and the implications for long term outcomes for children and families.

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