Homeopathy (2011) 100, 122–130

doi:10.1016/j.homp.2011.05.001, available online at http://www.sciencedirect.com

ORIGINAL PAPER

The feasibility of a pragmatic randomised controlled trial to compare usual care with usual care plus individualised homeopathy, in children requiring secondary care for asthma

EA Thompson[1,*], A Shaw[2], J Nichol[2], S Hollinghurst[2], AJ Henderson[3], T Thompson[1] and D Sharp[2]

[1]*Bristol Homeopathic Hospital, University Hospitals Bristol Foundation Trust, Cotham Hill, Bristol BS6 6JU, England, UK*
[2]*Academic Unit of Primary Health Care, School of Social and Community Medicine, University of Bristol, Canynge Hall, 39 Whatley Road Bristol, BS8 2PS, UK*
[3]*School of Social and Community Medicine, University of Bristol Oakfield House, Oakfield Grove, BS8 2BN*

Objective: **To test the feasibility of a pragmatic trial design with economic evaluation and nested qualitative study, comparing usual care (UC) with UC plus individualised homeopathy, in children requiring secondary care for asthma. This included recruitment and retention, acceptability of outcome measures patients' and health professionals' views and experiences and a power calculation for a definitive trial.**
Methods: **In a pragmatic parallel group randomised controlled trial (RCT) design, children on step 2 or above of the British Thoracic Society Asthma Guidelines (BTG) were randomly allocated to UC or UC plus a five visit package of homeopathic care (HC). Outcome measures included the Juniper Asthma Control Questionnaire, Quality of Life Questionnaire and a resource use questionnaire. Qualitative interviews were used to gain families' and health professionals' views and experiences.**
Results: **226 children were identified from hospital clinics and related patient databases. 67 showed an interest in participating, 39 children were randomised, 18 to HC and 21 to UC. Evidence in favour of adjunctive homeopathic treatment was lacking. Economic evaluation suggests that the cost of additional consultations was not offset by the reduced cost of homeopathic remedies and the lower use of primary care by children in the homeopathic group. Qualitative data gave insights into the differing perspectives of families and health care professionals within the research process.**
Conclusions: **A future study using this design is not feasible, further investigation of a potential role for homeopathy in asthma management might be better conducted in primary care with children with less severe asthma.** *Homeopathy* (2011) **100**, 122–130.

Keywords: Homeopathy; Asthma; Children; Complexity; Mixed methods

Introduction

The debate continues about provision of homeopathy in the National Health Service (NHS).[1] The use of homeopathy and other complementary therapies is increasing, with a reported prevalence of 14.5% among asthma patients (adults and children) in a recent primary care survey.[2] Data from the UK homeopathic hospitals indicate that childhood asthma is one of the ten most common reasons for referral.[3,4] The prevalence of asthma in children has

*Correspondence: Elizabeth Thompson, Bristol Homeopathic Hospital, University Hospitals Bristol Foundation Trust, Cotham Hill, Bristol, England, UK.
E-mail: elizabeth.thompson@UHBristol.nhs.uk
Received 18 November 2010; revised 9 May 2011; accepted 9 May 2011

increased over the past ten years and it constitutes a significant burden to children, their families and Health Services. Motivating factors for use of complementary and alternative medicine (CAM) vary but include parents' wish to minimise use of steroids[5] yet asthma remains a potentially life threatening condition where the use of regular conventional treatments is strongly recommended. Research into the role of homeopathy in this context is essential for patients to make informed and safe choices for their children's health care.

Some in-vitro models of high homeopathic dilutions have yielded reproducible positive results.[6] One study showed that low dose cytokines which have undergone 'sequential kinetic activation' were active in a mouse asthma model.[7] A Cochrane review of homeopathy for asthma concluded available evidence was inconclusive and that, as well as randomised trials, there is a need for observational data to document the different methods of homeopathic prescribing.[8] Observational data from clinical practice suggests that homeopathy can improve asthma for children.[3,9] Clinical trials in asthma have mainly centred around the use of isopathic homeopathic medicines, for example, an ultra molecular dilution of house dust mite to desensitise allergic triggers.[10,11]

In routine clinical homeopathic practice individualised homeopathic prescriptions are considered more effective treatment because the body is viewed as a whole system to which the medicine is matched: symptoms of the mind and body are synthesised and a single remedy chosen. One trial of individualised homeopathy included a high proportion of children with very mild asthma and it was therefore difficult, due to floor and ceiling effects, to demonstrate a benefit of the intervention.[12,13] We therefore tested the feasibility of a possible future pragmatic randomised trial design in children with more severe asthma, who were at Step 2 or above on the British Thoracic Guidelines (BTG)[14] and required secondary care input for their asthma management.

Aims

This study was designed to:

- Establish whether we could successfully recruit and retain patients from this target population, whether randomisation was acceptable and other aspects of a larger trial.
- Pilot the acceptability of outcome measures to study participants and explore between-group differences.
- Explore patients' and health professionals' views and experiences of living with asthma, the research process and homeopathic treatment.
- Pilot the feasibility of an economic evaluation using resource use questionnaires.
- Enable a power calculation for a definitive trial.

Methods

Design

Following the Medical Research Council's guidelines on the evaluation of complex interventions,[15] this was a mixed methods study using both quantitative and qualitative research to investigate the research content and process. We used a pragmatic parallel randomised controlled trial design of 'A versus [A + B]', where A is usual care (UC) and B is homeopathic care (HC). The study was approved by the Oxfordshire Ethics Committee (05/Q1605/126 November 2005) and had approval from the Medicines and Health care Products Regulatory Agency (MHRA). The qualitative findings will be presented in more depth in another paper.

Participants

Inclusion criteria were: children aged 7−14 years who were seen in a secondary care respiratory clinic (the outpatient departments of the Bristol Royal Hospital for Children (BRHC) and Southmead Hospital (SMH), Bristol) and who were at Step 2 or above on the BTG[16] (see Table 1). Exclusion criteria were: children who were presently using homeopathy, who were too unwell to take part or refused informed consent.

Every child and his or her parents were informed verbally by research and clinic nurses that the study was taking place followed by a letter of invitation to join the study. The homeopathic intervention was delivered at the Bristol Homeopathic Hospital (BHH) part of University Hospitals Bristol NHS Foundation Trust.

Interventions

The study took place from January 1st 2005 to September 30th 2007 with a defined end point of 16 weeks after initiating homeopathic treatment for each subject. HC consisted of an existing package of care offered at the BHH consisting of one long initial consultation lasting up to 60 min and four follow up visits spaced between 4−8 weeks, each lasting 20 min. The same doctor (TT) treated all patients, prescribing on the basis of several homeopathic therapeutic strategies. The ideal was considered matching 'totality of symptoms' but isopathic medicines such as mixed pollen or cat fur for known allergens were also used. Clinical cases were supervised as needed by the lead clinician of BHH (ET). The homeopathic prescriptions were in tablet, granule or liquid form and potency was unrestricted. Children in the UC arm were seen at intervals appropriate to their needs as judged by the individual respiratory clinician who was not directly informed of randomisation status.

Outcome measures

Identification of study participants, ease of recruitment and retention within the trial were recorded. Outcome measures were not formally designated as primary or secondary as in a phase III trial, since one of the objectives of this study

Table 1 British Thoracic Society Asthma treatment steps

Step 1	As needed bronchodilator
Step 2	Regular inhaled corticosteroid plus as needed bronchodilator
Step 3	Plus long acting beta agonist (LABA) e.g. serevent, or leukotriene−receptor antagonist (LTRA), e.g. montelukast
Step 4	Plus high dose inhaled corticosteroid
Step 5	Plus regular systemic corticosteroid

was to assess appropriateness of various outcomes for a future RCT. Patients were asked to keep daily symptom diaries recording interference of asthma symptoms with sleep, activity and daily symptoms plus a measure of morning and afternoon peak flow. The Paediatric Asthma Quality of Life Questionnaire (PAQLQ) and Asthma Control Questionnaire (ACQ) were administered monthly[17,18] by post. The Medication Change Questionnaire (MCQ) recorded any changes in medication on a weekly basis.

We estimated the cost to the health care provider (the National Health Service in England) and parents and carers over the course of the study. Parent and carer costs included: travel associated with primary and secondary care; and loss of earnings. All resource use data were collected by means of a self completed questionnaire, administered monthly. Resources were valued, where possible, using standard national sources. Primary care consultations were valued according to the methods of Curtis and Netten[19] and we used the NHS tariff[20] and Department of Health Reference costs[21] for secondary care and ambulance services. The cost of a consultation at the BHH was obtained from the finance department of the hospital as was the cost of the homeopathic remedies. For prescribed medication we used costs reported in the British National Formulary[22]; the AA schedule of motoring costs[23] was used for travel by car. The impact of asthma on daily living along with a measure of well-being was measured using Outcome in Relation to Daily Living (ORIDL) at the end of the 16 week study period[24] (see Table 2 for the schedule of assessments).

Paired interviews were conducted with children and parents in the homeopathy arm after study completion with recognition given to the parent's potential influence on the child's account. The interview schedule included living with asthma, the research process and experiences of homeopathic treatment. Interviews with health professionals explored their views of homeopathic treatment and potential integration and the research process. All interviews were recorded (using a digital recorder), fully transcribed and anonymised.

Sample size

It was judged that a sample size of between 50 and 80 participants would allow sufficient data to compare the groups to be gathered. For the qualitative interviews a purposeful sampling strategy targeted 10 children and their carers from the homeopathy arm only and 9 families were subsequently interviewed. Sampling for variation was used, to include patients with some degree of diversity in terms of socio-demographic background and asthma severity. A range of health care professionals involved in the study was also interviewed, including three respiratory physicians, two respiratory nurses, two homeopathic physicians and the research nurse.

Patient allocation and blinding

After obtaining informed consent, patients were allocated to receive either UC or UC plus individualised homeopathy minimising by disease severity, age and gender. For consenting patients, data were sent to a staff member not otherwise involved with the study who implemented the minimisation spreadsheet thereby ensuring allocation concealment. Due to the nature of the treatment, this was an open trial. Outcome measures were completed by children and parents at home and the data analyst remained blinded to group allocation until all analyses were completed.

Statistical methods

An intention to treat analysis (last value carried forward method) was conducted. Because of the multiple independent variables, between-group differences at follow up for each of the outcome measures were estimated using appropriate regression models, adjusting for minimisation variables and the value of the outcome variable at baseline. In consideration of the magnitude of likely differences for any future trial, we focussed on 95% confidence intervals (95% CI); p-values were not considered. Data from the semi-structured interviews were analysed thematically, drawing on the principles of constant comparison with analysis proceeding alongside data collection in an iterative process.[9,10] Data were analysed both for emergent themes and anticipated themes directly asked about in interviews to inform the development of a protocol for a full trial. Disconfirming and confirming cases were sought to enhance the robustness of the analysis. Analysis was led by JN but ET and AS independently coded a sub-sample of the transcripts and met with JN to discuss and agree the coding framework.

Table 2 Schedule of assessments during study period

Visit		*Visit 1.*	*Visit 2.*	*Visit 3.*	*Visit 4.*	*Visit 5.*
Weeks after randomisation	*−1*	*0*	*+4*	*+8*	*+12*	*+16*
ACQ	×	×	×	×	×	×
PAQLQ	×	×	×	×	×	×
Patient diary including peak flow, interference with sleep and activities and days of symptoms	×	×	×	×	×	×
Resource data questionnaire	×	×	×	×	×	×
Medication Change Questionnaire		×	×	×	×	×
ORIDL						×
Qualitative interviews with families						×
Qualitative interviews with health professionals						×

Results

Patient recruitment, retention and the acceptability of the research process

Figure 1 describes the participant flow through the study. The diagram includes information on the interventions received, outcome measures sent out and received and the number of patients actively followed up at different times during the trial. Recruitment was slow and a second recruitment site (SMH) was added following ethics approval. Despite aiming for a total sample size of 50−80, out of 226 potential families identified, 67 showed an interest in taking part and were sent the first pack of questionnaires, ultimately 39 children took part and were randomised to HC or UC.

Decisions about participating in the study were influenced positively by an openness to complementary approaches or negatively by worries over school attendance and a preference for local health centres. Other motivating factors included parent's worries about long term conventional treatments particularly steroid side effects, an interest in a whole person approach and some felt 'anything was worth a try'. The majority of families interviewed thought that the research was explained well and the quality of contact with respiratory nurses and research nurse was good and all nine families found the study to be well-organised and interesting to participate in. 35 participants completed the trial (17 HC/18 UC). 4 families withdrew post randomisation, 3 in the UC arm and 1 in the HC group (see Figure 1). Retention within the trial following randomisation was good although some questionnaires were not returned and families blamed the post for this. Attendance was variable. Children in the UC arm had a mean number of 0.67 outpatient appointments (median = 0) whereas those receiving HC had a mean of 3.89 (median = 4). Children randomised to the homeopathic treatment attended a mean number of 3.1 appointments (mode = 3; median = 3) at the homeopathic hospital; four children (23%) attended for the full five visits as per protocol. Some families did not appear to have a clear motivation for using homeopathy and did not stay committed to the process. Some found the quantity and frequency of questionnaire completion a burden, in the context of a busy life where the child may already have multiple clinical appointments. The prescribing homeopath at times was challenged by the lack of commitment from some families (see Table 5). A range of potencies were used from 12c to 10M and LM dilutions as needed. A combination of individualised remedies reflecting totality and isopathic prescriptions were used. Low potencies and LM potencies were given regularly otherwise a single split dose was given.

Baseline characteristics and the complexity of asthma and its management

Baseline characteristics are set out in Table 3. Thirty children (77%) were at step 3 or 4 of the BTG indicating these children needed a significant number of regular medicines to improve symptoms. Despite medication, symptom burden was present at baseline as detected sensitively by the ACQ which also indicated poor control. Two children were at step 5 and one child had a number of hospital admissions and follow up within the trial was difficult (see Table 3). When asked to indicate activities that were affected by their asthma, children chose a range of often physical activities at school and at home such as cricket, football, playing outside along with skipping, singing and laughing. This was mirrored in the qualitative data with children particularly worried about physical impairment (see Table 4). Parents were very happy with the care received from the respiratory team and their access to clinical support for what was a frightening illness with interview data showing high levels of anxiety (see Table 4). All professional groups commented on the complexities of asthma and 'variables such as anxiety that predispose them to a worsening of their asthma' (HP4). A nurse emphasized 'family dynamics' (HP5) as well as the illness and the individual. Respiratory physicians felt some disappointment with current medications and even new, more potent drugs were viewed as more problematic, with a higher risk of 'serious adverse effects' (HP6). Control was also thought to be compromised by limited compliance with treatment regimens. The homeopathic physician admitted to finding prescribing homeopathy in this complex clinical condition challenging because of a reduction of asthma symptoms controlled by medication which would usually guide the prescriber to an appropriate homeopathic remedy (See Table 5).

Exploring differences in outcome between groups using mixed methods

An intention to treat analysis was carried out and although differences between groups were observed for asthma control and asthma quality of life (Table 6) differences across the range of outcome measures were close to null and 95% CI were wide suggesting any evidence for differences between groups was lacking. Although there was evidence of a difference in both morning and evening peak flow in favour of the UC arm, mean number of medicines and total doses of medicines per week point estimates were close to 0 and confidence intervals were wide. We were therefore unable to exclude clinically meaningful differences for peak flow or any other outcome measure (Table 6).

Interview data revealed that three of the nine families interviewed felt that homeopathic treatment made no difference to the child's asthma symptoms. Six families reported improvement in symptoms and activity during the trial, in terms of breathing, running and sports. One of the children had moved on to steroid tablets at the same time as commencing homeopathy and found it hard to disentangle whether the benefits were due to homeopathy or the medication. A whole person approach was valued by parents, namely the combination of the remedy, looking at feelings and dietary advice. One mother reported changes with the homeopathic remedy where her daughter 'has come out of herself' (FM3), with membership of the school netball team and school attendance up from 61% to 91%. Families

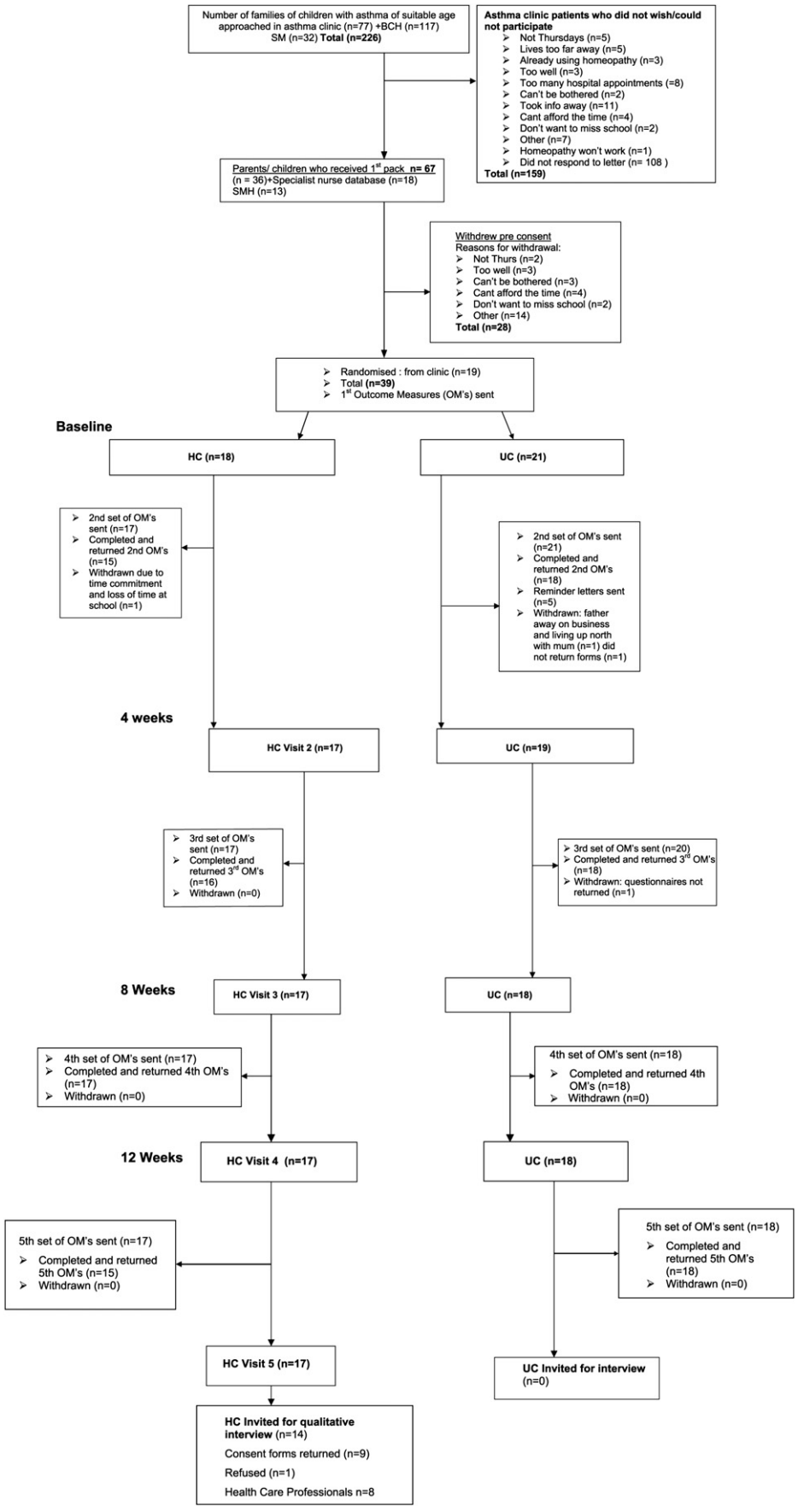

Figure 1 Participant flow.

Table 3 Characteristics of trial participants at baseline

Total: n = 39	*UC: n = 21*	*HC: n = 18*
No. males:No. females	9 (43%):12 (57%)	11 (61%):7 (39%)
Mean age (years)	10.4 (SD 2.9)	11 (SD 2.6)
No. at BCH:No. at Southmead	15 (71):6 (29%)	13(72%):5(28%)
Use of CAM in past	7 (33%)	4 (22%)
BTG steps		
Step 2	4 (19%)	3 (17.5%)
Step 3	8 (38%)	4 (22%)
Step 4	8 (38%)	10 (55%)
Step 5	1 (5.0%)	1 (5.5%)
ACQ*	1.7 (1.2)	2.1 (1.1)
PAQLQ-symptoms*	5.0 (1.3)	4.5 (1.6)
PAQLQ-activity score*	4.8 (1.4)	4.1 (1.7)
PAGLQ-emotional score*	5.0 (1.6)	4.7 (1.6)
Interference with sleep*	0.5 (0.9)	1.7 (2.3)
Days of symptoms*	3.7 (2.8)	4.0 (2.5)
Interference with activities*	1.7 (2.1)	2.0 (2.2)
Peak flow (morning)*	284 (91.4)	262 (70.1)
Peak flow (evening)*	286 (88.0)	262 (68.5)
No of doses per week on MCQ*	74.9 (55.1)	82.2 (68.5)
Mean no meds on MCQ*	2.9 (1.3)	3.0 (2.2)

The Minimal Important Difference (MID) is 0.5 on the seven point score for asthma control. A higher score suggests poorer control and a score of 1.50 or greater suggests asthma is not well controlled. ACQ total indicates composite of six item questionnaire. For PAQLQ MID = 0.5 per domain and overall quality of life with higher scores showing less impact on quality of life. Mean with standard deviation is given.
* Mean (SD).

valued being able to reflect on the condition in more depth and some felt the emphasis placed on the child's own experience of asthma was not only revealing but sometimes led to changes at the level of emotion and well-being (see Table 5).

Table 4 Excerpts from qualitative transcripts – experience of asthma and conventional care (HP = Health Professional FM = Family Member FC = Family Child)

Parents' and professionals experience of asthma	Family dynamics are 'very pertinent' (HP5) and can act as a barrier to taking medication as prescribed. "Geared to keeping around him, trying to keep him healthy all of the time" (FM1). "A bit frightening when he gets rushed in" (FM4). "It is a bit of a nightmare. It really is a bit of the nightmare" (FM6). "At the moment we can't see any end to where he can stop having it. This worries me the most" (FM1).
Children's experience of asthma	"Don't spin and not spin around fast, don't jump up high" (FC5). "I can't run as fast because I get tired and I have to always stop" (FC3).
Experience of conventional care	"At the actual hospital itself, absolutely brilliant." (FM9) "The consultants have responded very well, you know, when we've needed help and we've got a, a respiratory nurse now." (FM7) "The general asthma nurse through the GP I just felt like that's all, all she basically … I felt I could've told her more about it than she, she knew to be honest." (FM9)

Table 5 Excerpts and qualitative transcripts – experience of HC

Parents expectations of HC	"It wasn't something I particularly believed in. but you tend to get to a stage anything's worth a try … I didn't think it would work, to be honest" (FM2). "I think it's her whole person we need to concentrate on and the only way I'm going to get that done is to go homeopathic".
Participation in study	"It did make you sort of stop and think about it a little bit more about how it's affecting your life and perhaps well, if it's doing this, is there anything we can do to make it better or change that?" (FM7).
Parents and homeopathic physician's experience of homeopathic consultations	"About halfway through, I sort of started to realise why they were asking these questions, because if you have like … if you … they said if you have nightmares more than what you do normal dreams, there's different medication which you need for it, sort of … then it sort of clicked and I sort of realised." (FC2) "And because she's very quiet and he sort of helped her to talk about things, whereas normally they'll go past her, because she doesn't answer, and they just go straight to me, when what she came out with, some of it we didn't even know, [yeah] so it was good. It was good, yeah." (FM3) Some people came along with no idea of what homeopathy was about and a 'significant minority' didn't stay committed to the process. (HP1) Children with serious problems needed to keep their other medication at a high level, and "if a child has no asthma symptoms and no real suffering to talk about, then … you just sometimes find it impossible to individualise the case". (HP1)

Economic evaluation (see Table 7 and 8)

Complete data on resource use were available for 35 children (17 HC and 18 UC) suggesting data collection using monthly questionnaires was feasible. The main categories are summarised in Table 7. The use of primary and inpatient care was similar in each group, four children (two in each arm) spent some time in hospital. Ten (28%) parents reported having some time off work because of their child's illness varying from one day to a maximum of 32. The mean cost per patient, by group, is shown in Table 8. On average each of the children in the HC group cost the NHS £615 more than each of those in the UC group. This difference is largely accounted for by the frequency of outpatient visits by children receiving HC. The lower cost of homeopathic remedies compared to conventional medication and the lower use of primary care by children in the homeopathic group was not sufficient to offset the difference in outpatient costs of £482. The greater number of outpatient appointments for children receiving HC was also reflected in parental costs. Travel for these appointments and loss of earnings due to time off work was higher in this group than for those in the UC arm.

Adverse events: An adverse event was reported for one child in the HC arm who required hospitalisation, unrelated to homeopathic treatment.

Table 6 Outcome measurements 4 weeks and 16 weeks after randomisation [mean (SD)]

	4	*4*	*16*	*16*	*UC–HC over 16 weeks*
	UC	*HC*	*UC*	*HC*	*Mean difference in change from baseline [95% CI] on repeated measures*
juniper asthma control (ACQ)*	1.4 (1.1)	1.6 (1.1)	1.7 (1.2)	2.0 (1.4)	0.95 [−2.84 to 4.73]
PAQLQ-symptoms	5.3 (1.5)	5.2 (1.2)	5.1 (1.4)	5.0 (1.6)	−0.1 [−0.8 to 0.6]
PAQLQ-activity	5.3 (1.6)	5.0 (1.2)	5.4 (1.6)	5.5 (1.7)	0.16 [−0.65 to 0.96]
PAQLQ-emotional	5.7 (1.5)	5.3 (1.3)	5.4 (1.4)	5.3 (1.6)	−0.3 [−1.03 to 0.4]
Interference with sleep*	1.0 (1.9)	1.1 (1.6)	0.9 (1.8)	1.6 (2.6)	0.05 [−0.6 to 0.7]
Days of symptoms	2.9 (3.1)	1.9 (2.4)	2.9 (2.6)	2.8 (3.1)	−0.25 [−1.23 to 0.7]
Interference activities	1.05 (2.1)	1.2 (1.6)	0.9 (1.5)	1.6 (2.4)	0.2 [−0.36 to 0.8]
Peak flow (morning)	276 (89.2)	251 (66.3)	282 (100.6)	221 (64.8)	−39 [−72 to −6.9]
Peak flow (evening)	278 (91.9)	249 (64.1)	289 (101.5)	219 (55.7)	−40 [−72 to −9.1]
Doses per week on MCQ	59.5 (79.5)	49.6 (45.6)	66.4 (72.6)	64.2 (68.7)	2.4 [−15.3 to 20.2]
Mean no meds on MCQ	2.5 (1.6)	2.1 (1.4)	2.9 (3.0)	2.9 (2.5)	0.7 [−0.9 to 1.1]
ORIDL (profile score)					−0.37 [−0.4 to 5.7]

* Lower score = improvement.

Discussion

This feasibility study was carried out to determine the best design for a future study to investigate whether a package of HC as delivered routinely in practice could safely and cost effectively improve asthma symptoms and quality of life in children with severe asthma. Findings suggested the complexity of the disease within the family context appeared to challenge the trial process and the homeopathic process. Qualitative and quantitative data highlighted poor asthma control in both groups and the ongoing difficulties of the day to day management of asthma reinforcing the burden this disease represents to families. Extra appointments and completing questionnaires in an already complex timetable for families were seen as burdensome even if families had an interest in complementary therapies.

Quantitative data suggest no advantage to children with severe asthma by adding HC to UC, although qualitative data suggest added value for some individuals. This has been discussed in the literature before with the suggestion that Stated Preference Discrete Choice Modelling could be a method to evaluate the added value provided by complementary approaches.[25] New outcome measures are being developed with a broader view of holistic care in their design allowing deeper changes at the emotional and psychological level to be viewed.[26] The use of such measures could be considered in a future trial.

The economic evaluation suggests the extra cost of homeopathic appointments is not offset by lower use of health care elsewhere although whether it was appropriate to expect

Table 7 Resource use by group

	HC		*UC*	
	n	*%*	*n*	*%*
Primary care appointments				
0	8	47.1	7	38.9
1	4	23.5	6	33.3
2	2	11.8	3	16.7
3	2	11.8	1	5.6
>3	1	5.9	1	5.6
Total	**17**	**100.0**	**18**	**100.0**
Outpatient appointments				
0	0	0.0	10	55.6
1	0	0.0	6	33.3
2	1	5.9	0	0.0
3	4	23.5	2	11.1
4	8	47.1	0	0.0
5	4	23.5	0	0.0
Total	**17**	**100.0**	**18**	**100.0**
Inpatient stays				
0	15	88.2	16	88.9
1	1	5.9	1	5.6
2	1	5.9	1	5.6
Total	**17**	**100.0**	**18**	**100.0**
Days off work				
0	14	82.4	11	61.1
1	1	5.9	3	16.7
2	0	0.0	3	16.7
5	1	5.9	1	5.6
32	1	5.9	0	0.0
Total	**17**	**100.0**	**18**	**100.0**

Table 8 Cost per patient by group

£	*HC n = 17*	*UC n = 18*	*Mean difference (95% CI)*
	Mean (SD)	*Mean (SD)*	
NHS costs			
GP at the surgery	16 (22)	20 (36)	−4 (−25 to 16)
Other primary care	23 (43)	27 (66)	−4.00 (−42 to 34)
All primary care	**39 (56)**	**47 (95**	**−8 (−62 to 46)**
BHH	471 (102)	–	471 (−423 to 520)
BCH	65 (78)	31 (51)	34 (−11 to 79)
Other outpatient appointments	19 (43)	43 (94)	−23 (−74 to 27)
All outpatient appointments	**555 (106)**	**73 (107)**	**482 (409 to 555)**
Inpatient stays	225 (787)	100 (307)	126 (−281 to 532)
Ambulance use	30 (71)	0.00 (0.0)	30 (−4 to 63)
All secondary care and ambulance	**810 (887)**	**173 (313)**	**637 (185 to 1089)**
Prescribed medication and remedies	89 (53)	103 (89)	−14 (−65 to 37)
All NHS	**937 (913)**	**323 (374)**	**615 (140 to 1090)**
Personal costs			
Travel for primary care visits	0.75 (1.4)	1.10 (1.9)	−0.35 (−1.5 to 0.8)
Travel for secondary care visits	34 (39)	7.83 (11.7)	27 (7 to 46)
Loss of earnings	72 (244)	14 (29)	58 (−59 to 176)
All personal costs	**108 (271)**	**23 (37)**	**85 (−46 to 216)**

cost neutrality or cost savings with an additional service is debatable. This pilot economic data contrasts with a recent retrospective observational study of homeopathic versus conventional therapy in respiratory disease in Italy.[27] Here, the costs of conventional drugs for a group of patients affected by asthma and recurrent respiratory infections using homeopathy were matched to a group using conventional medicines only. Costs of pharmacological therapy were reduced by 46.3% in the first year of homeopathic treatment.

One of the strengths of this study was the mixed methods that allowed the different facets of asthma management and the research process to be studied and we have chosen to report these mixed methods together in one paper. Limitations include not having gathered qualitative data from the UC arm to gather their experience of the trial and to understand UC better or to interview those patients who withdrew from the study post randomisation. A further limitation was the length of the study period which may have needed to be longer in order for homeopathic treatment to make an impact in a complex disease with high variability through the year.

The use of a pragmatic design such as the one we chose has been debated in the literature with some having the view that the design lends itself to only a positive result.[28] However pragmatic trials in homeopathy had a higher rate of negative outcomes than placebo controlled trials when reviewed for the House of Commons Science and Technology Committee 'Evidence Check' report.[29] There may be something in this design which is problematic perhaps because UC is not standardised. A study investigating health care provided by a homeopath as an adjunct to UC for fibromyalgia found recruitment to be slow and the drop out rate in the UC to be higher. Those completing the trial in the UC arm reported a significant increase in their McGill Affective scores.[30] The authors questioned the design and wondered if it led to disappointment bias. However they found significant reduction in the Fibromyalgia Impact Score and given the acceptability of the treatment and the clinically relevant effect on function a definitive study to assess clinical and cost effectiveness was warranted.

Although our study showed no overall cost saving to the NHS others studies have suggested that savings can be made for adults and children using homeopathy.[31–33] If a future trial along these lines was considered recruitment might be improved if it were conducted in a primary care. Recruiting children with less severe asthma from step 2 of the BTG from primary care would create greater heterogeneity in a group of children and represent families who could more likely manage additional homeopathic visits.

Conclusion

From this pilot study of a pragmatic parallel group randomised controlled trial design to compare UC with UC plus individualised homeopathy, in children requiring secondary care for their asthma management, we conclude that a future trial of similar design is not feasible. Difficulties are predicted at various stages of the research process in this particular population of children. Quantitative data suggest that integrating homeopathy into existing conventional care would not confer additional benefit either medically or financially although this contrasted with qualitative evidence that some families felt they had benefited from and valued additional HC. Mixed quantitative and qualitative methods were very useful in the pilot phase to give detailed insight into individual and contrasting perspectives when compared to the quantitative summary of this patient population under study.

Acknowledgements

We thank all the children and adults who gave their time to this study and Dr Huw Thomas and the respiratory team of doctors and nurses at both recruiting sites and the Avon Primary Care Research Collaborative who funded the study. We thank Alan Montgomery for his help in the design and analysis of this study.

References

1 Ernst E. The truth about homeopathy. *Br J Clin Pharmacol* 2008 Feb; **65**(2): 163–164.
2 Shaw A, Noble A, Salisbury C, Sharp D, Thompson E, Peters TJ. Predictors of complementary therapy use among asthma patients: results of a primary care survey. *Health Soc Care Community* 2008 Mar; **16**(2): 155–164.
3 Spence DS, Thompson EA, Barron SJ. Homeopathic treatment for chronic disease: a 6-year, university-hospital outpatient observational study. *J Altern Complement Med* 2005 Oct; **11**(5): 793–798.
4 Thompson EA, Mathie RT, Baitson ES, *et al*. Towards standard setting for patient-reported outcomes in the NHS homeopathic hospitals. *Homeopathy* 2008 Jul; **97**(3): 114–121.
5 Thompson EA, Dahr J, Susan M, Barron S. Setting standards in homeopathic practice – a pre-audit exploring motivation and expectation for patients attending the Bristol Homeopathic Hospital. *Homeopathy* 2007 Oct; **96**(4): 243–246.
6 Witt CM, Bluth M, Albrecht H, Weisshuhn TE, Baumgartner S, Willich SN. The in vitro evidence for an effect of high homeopathic potencies – a systematic review of the literature. *Complement Ther Med* 2007 Jun; **15**(2): 128–138.
7 Gariboldi S, Palazzo M, Zanobbio L, *et al*. Low dose oral administration of cytokines for treatment of allergic asthma. *Pulm Pharmacol Ther* 2009 Dec; **22**(6): 497–510.
8 McCarney RW, Linde K, Lasserson TJ. Homeopathy for chronic asthma. *Cochrane Database Syst Rev* 2004;(1): CD000353.
9 Witt CM, Ludtke R, Baur R, Willich SN. Homeopathic medical practice: long-term results of a cohort study with 3981 patients. *BMC Public Health* 2005 Nov 3; **5**: 115.
10 Reilly D, Taylor MA, Beattie NG, *et al*. Is evidence for homoeopathy reproducible? *Lancet* 1994 Dec 10; **344**(8937): 1601–1606.
11 Lewith GT, Watkins AD, Hyland ME, *et al*. Use of ultramolecular potencies of allergen to treat asthmatic people allergic to house dust mite: double blind randomised controlled clinical trial. *BMJ* 2002 Mar 2; **324**(7336): 520.
12 White A, Slade P, Hunt C, Hart A, Ernst E. Individualised homeopathy as an adjunct in the treatment of childhood asthma: a randomised placebo controlled trial. *Thorax* 2003 Apr; **58**(4): 317–321.
13 Fisher P, Chatfield K, Mathie R. Homeopathy in childhood asthma. *Thorax* 2003 Sep; **58**(9): 827.

14 Levy ML, Thomas M, Small I, Pearce L, Pinnock H, Stephenson P. Summary of the 2008 BTS/SIGN British Guideline on the management of asthma. *Prim Care Respir J* 2009 Jan; **18**(Suppl. 1): S1−S16.
15 Campbell NC, Murray E, Darbyshire J, *et al*. Designing and evaluating complex interventions to improve health care. *BMJ* 2007 Mar 3; **334**(7591): 455−459.
16 British guideline on the management of asthma. *Thorax* 2003 Feb; **58**(Suppl. 1): i1−i94.
17 Juniper EF. Assessing asthma control. *Curr Allergy Asthma Rep* 2007 Sep; **7**(5): 390−394.
18 Juniper EF, Guyatt GH, Feeny DH, Ferrie PJ, Griffith LE, Townsend M. Measuring quality of life in children with asthma. *Qual Life Res* 1996 Feb; **5**(1): 35−46.
19 Netten A, Curtis L. *Unit costs of health and social care 2007*. PSSRU University of Kent, 2008.
20 Department of Health. National tariff 2006/07, www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4127649; 2009 [cited 2009 May 6].
21 Department of Health. Reference cost index 2004, http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4105545; 2009 [cited 2009 May 6].
22 British National Formularywww.bnf.org/bnf/9 A.D. [cited 2009 May 6].
23 The Automobile Association. The AA schedule of motoring costs, http://www.theaa.com/motoring_advice/motoring_costs.htm; 2009 [cited 2009 May 6].
24 Reilly D, Mercer SW, Bikker AP, Harrison T. Outcome related to impact on daily living: preliminary validation of the ORIDL instrument. *BMC Health Serv Res* 2007 Sep 2; **7**: 139.
25 Hollinghurst S, Shaw A, Thompson EA. Capturing the value of complementary and alternative medicine: including patient preferences in economic evaluation. *Complement Ther Med* 2008 Feb; **16**(1): 47−51.
26 Thompson EA, Quinn T, Paterson C, Cooke H, McQuigan D, Butters G. Outcome measures for holistic, complex interventions within the palliative care setting. *Complement Ther Clin Pract* 2008 Feb; **14**(1): 25−32.
27 Rossi E, Crudeli L, Endrizzi C, Garibaldi D. Cost−benefit evaluation of homeopathic versus conventional therapy in respiratory diseases. *Homeopathy* 2009 Jan; **98**(1): 2−10.
28 Ernst E, Lee MS. A trial design that generates only "positive" results. *J Postgrad Med* 2008 Jul; **54**(3): 214.
29 House of Commons. Science and technology committee − fourth report. Evidence check 2: homeopathy, www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/45/4502.htm; February 2010 [accessed 04.04.2011].
30 Relton C, Smith C, Raw J, *et al*. Healthcare provided by a homeopath as an adjunct to usual care for Fibromyalgia (FMS): results of a pilot Randomised Controlled Trial. *Homeopathy* 2009 Apr; **98**(2): 77−82.
31 Witt C, Keil T, Selim D, *et al*. Outcome and costs of homoeopathic and conventional treatment strategies: a comparative cohort study in patients with chronic disorders. *Complement Ther Med* 2005 Jun; **13**(2): 79−86.
32 Trichard M, Chaufferin G, Nicoloyannis N. Pharmacoeconomic comparison between homeopathic and antibiotic treatment strategies in recurrent acute rhinopharyngitis in children. *Homeopathy* 2005 Jan; **94**(1): 3−9.
33 Kneis KC, Gandjour A. Economic evaluation of Sinfrontal in the treatment of acute maxillary sinusitis in adults. *Appl Health Econ Health Policy* 2009; **7**(3): 181−191.