Controlled trial of an audit facilitator in diagnosis and treatment of childhood asthma in general practice

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Abstract

Objective—To test whether an audit facilitator could alter the pattern of diagnosis and treatment of childhood asthma.

Design—Randomised stratified controlled trial.

Setting—12 general practices in Tayside.

Subjects—3373 children aged 1-15 inclusive who had symptoms suggestive of asthma or possible asthma drawn from a systematic review of 10 725 general practice case records.

Intervention—Children were targeted for a clinical review by their general practitioner or practice nurses.

Main outcome measures—Asthma related consultations, prescriptions, hospital attendances, and health service costs 12 months before and after study.

Results—Compared with controls (n=1563) the intervention group (n=1585) had more practice initiated consultations for asthma (relative risk 2.18 (95% confidence interval 1.74 to 2.73)), new diagnoses of asthma (2.83 (2.26 to 3.54)), and past diagnoses reaffirmed (1.30 (1.08 to 1.58)), and they were more frequently prescribed inhaled cromoglycate (1.52 (1.02 to 2.25)). Hospital inpatient day rates fell from 152 to 122 in the intervention group and rose from 69 to 117 in the control group between the year before and the year after study. Total primary care costs rose from £30 118 to £37 243 in the intervention group and fell from £29 131 to £27 990 in the control group. Hospital care cost fell in the intervention group from £25 406 to £20 727 and rose in the control group from £12 699 to £19 650.

Conclusion—An audit facilitator can favourably influence the pattern of diagnosis and treatment of childhood asthma in general practice. This may have an impact on health service costs.

Introduction

Asthma is an important cause of morbidity in childhood.¹² Its prevalence in children is increasing,^{3,4} and one in 10 children will experience asthma related symptoms at some stage.⁵

Asthma is responsible for many hospital admissions^{6,7} and general practice consultations and for distress to sufferers and their families.¹⁸ The economic impact of childhood asthma includes the costs of primary and secondary care to the health service, disruption of education, and lost working time for parents.^{2,9-12}

Asthma is treatable. Appropriate use of modern antiasthma drugs should mean that nearly all children can lead normal lives with unrestricted activity, but there is a gulf between the theory of modern asthma care and clinical practice.^{13,14} The main challenge for the 1990s is to ensure that advances in medical science and treatment are translated into improvements in patient care.

Although most asthma is diagnosed and treated solely in primary care, there have been few rigorous controlled studies to evaluate the optimum methods of delivering primary health care to patients. The common theme of work by Levy and Bell on diagnosis⁸ and that of Hilton *et al*^{15,16} and Charlton *et al*^{17,18} on treatment programmes is that we do not yet know the best way of translating advances in the theory of asthma treatment into everyday clinical practice and to reduce patient morbidity.

The audit facilitator model, pioneered as a means of helping general practitioners and practice nurses improve their recognition and management of cardiovascular disease risk factors, may be applicable to other conditions.^{19,20} A facilitator acts as a catalyst to assist change within practices.²¹ This is a method in which several practices receive help and advice, thereby perhaps changing their clinical management of large groups of patients. To date, there have been no large scale controlled trials to test the effectiveness of facilitators in childhood asthma.^{22,23} Before health authorities commit themselves to funding initiatives such as audit facilitation a rigorous evaluation is essential.

The childhood asthma project in Tayside (1990-3) was designed to test the hypothesis that an audit facilitator could change the pattern of diagnosis and treatment of childhood asthma in general practice.

Patients and methods

PRACTICES AND PATIENTS

General practices from the Tayside region in east central Scotland were classified according to the number of partners, locality (urban, rural, market town), and enthusiasm for asthma care (committed to running an asthma clinic or less committed). A representative 12 were invited and agreed to participate.

A total of 72 690 patients were registered with the 12 practices, of whom 12 511 were aged 1-15 years inclusive. Two larger practices were halved, making a total of 10 725 children eligible for study. The audit facilitator (FPB) visited each practice in a rolling schedule of one practice a month. This was for logistic reasons but also had the effect of minimising seasonal bias. All the case records of children aged 1-15 were read from cover to cover at the rate of about 100 a day to look for major and minor key items.

Major key items were past or present drug treatment for asthma; wheezy bronchitis; diagnosis of asthma; and two or more episodes of wheeze or bronchospasm.

Minor key items were eczema; persistent cough; bronchitis; chestiness; family history of asthma (first degree relative); hay fever; bronchiolitis; allergy; seasonal symptoms (lifetime prevalence); and five or more respiratory consultations, three or more prescriptions for antibiotics for respiratory problems, and two or more prescriptions for cough linctus within the past year.

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Children with one or more major key items or two or more minor key items were entered into the study.

RANDOMISATION AND STRATIFICATION

Children were stratified according to age band 1-4, 5-9, and 10-15 inclusive and again by whether they had received treatment for asthma within the past three months.

The children were then randomly allocated (by a secretary using a random number sequence independently from the facilitator) into intervention and control groups within each practice. To ensure two or more children from the same family were in the same arm of the trial, siblings were grouped and randomly allocated together.

INTERVENTION

Those in the intervention group had a project sticker (a kite logo marked childhood asthma project) placed on the front of their case records. Inside the records were filed a chart entitled asthma diagnosis, a protocol for managing acute asthma attacks, a letter suggesting the general practitioner review the patient, and guidelines on maintenance treatment with prophylactic drugs—that is, cromoglycate first and then inhaled steroids (this was before publication of the British Thoracic Society's guidelines²⁴⁻²⁶).

A complete list of the names, addresses, and dates of birth of all the children in the intervention group were supplied to the practices. In addition, each practice received an asthma assessment briefcase containing all the commonly used inhaler devices and a range of patient education materials produced by the National Asthma Campaign. Supplies of low reading peak flow meters were given to the practices (this was before their availability on prescription). Each practice was donated one or more portable nebulisers with a supply of nebulisers for emergency use and a supply of asthma assessment stamps from the Tayside Asthma Group.

The intervention thus comprised the information and equipment required for each practice to offer all the children in the intervention group a systematic or opportunistic review, appropriate follow up, assessment, education materials, and emergency treatment in line with modern recommendations. The facilitator had no direct patient contact or regular meetings with doctors or nurses. The practices were not informed of the names of children in the control group and their case records were left unmarked. The expectation was that children in the control group would receive standard medical care but in the context of a heightened awareness of asthma.

OUTCOME MEASURES

After exactly one year the project secretary removed the kite stickers and information from the case records to the intervention group. The facilitator then reread through all the case records of all the children in the study blind to which group they belonged.

Year 1 was classified as the 12 months before the facilitator's visit to the practice and year 2 as the 12 months after. For both years the facilitator recorded (a) practice initiated consultations for asthma and respiratory conditions (patients attended in response to a clinic invitation or specific instruction on follow up); (b) patient initiated consultations (patients attended with symptoms); (c) structured asthma assessments; (d) diagnosis of asthma (both new and reaffirmed diagnosis); (e) prescriptions for respiratory drugs, including bronchodilators, prophylactics, antibiotics, and cough linctus; (f) the strength, preparation, and cost of every drug to treat asthma; and (g) admissions and attendances at outpatient clinics and accident and emergency departments.

ECONOMICS

General practice consultation, prescription, and hospital costs for year 1 and year 2 were calculated on the basis of prices in April 1991 (the mid-point of the project). General practice costs were calculated from the NHS scale of fees and allowances, prescription costs from those quoted in the April 1991 edition of the *British National Formulary*, and hospital costs from Tayside Health Board sources.

ETHICS

The project was approved by the Tayside Medical Ethics Committee, and computer data were stored under the terms of the Data Protection Act.

ANALYSIS

The effect of period was estimated from control group data by using the ratio of the incidences in year 2 to those in year 1. Because the denominator is the same for both years this is the ratio of the number of events.

The effect of treatment was estimated by adjusting for the frequency of events in the baseline year, year 1. The ratio of the incidences in year 2 to those in year 1 was calculated for the intervention and control groups. An index of the relative risk of the effect of treatment was then calculated as the ratio for the intervention group divided by the ratio for the control group. Again the denominators within each group are the same so the treatment effect ratio is an odds ratio of the number of events in the two groups over the two periods. Standard errors of the relative risk ratios were calculated according to the method described by Armitage and Berry,²⁹ and the 95% confidence interval was calculated as the relative risk plus and minus 1.96 times the standard error.

Results

The case records were available and read in 10 725 of the 10 865 children registered with the 12 practices. The entry criteria for the study were met for 3373 children.

The commonest key items were persistent cough (2474 children), one or more episodes of bronchospasm or wheeze (2535), and history of prescription of drugs for asthma (2134). The cumulative rate of asthma diagnosis was 8.4% (896/10 725), of wheezy bronchitis 4.6% (495), and of exercise induced symptoms 5.2% (555). A total of 574 children had received a prescription for asthma treatment in the previous three months.

Details of this case finding process have already been published.³⁰

OUTCOME MEASURES

The case records of 3148 (93.3%) children entered into the study were available for follow up one year later. Two hundred and twenty children had left the practices. Four children with cystic fibrosis and one with Down's syndrome were excluded because of high rates of respiratory illness unrelated to asthma.

The intervention group consisted of 1585 children of whom 943 were formally assessed by the practices during the 12 months of observation (year 2), 351 were invited by the practices for an asthma review but defaulted, and 291 were not seen or formally assessed. A total of 1563 children were randomly allocated to the control group. Results are presented on an intention to treat basis whether each child was formally assessed or not.

EFFECT OF TREATMENT

In the intervention group throughout year 2 there were 568 practice initiated consultations for the assessment and follow up of children with asthma, of

TABLE I—*Diagnosis and treatment of asthma in intervention and control groups*

	Intervention group (n=1585)		Control group (n=1563)		Effect (relative risk (95% confidence interval)) of:	
	Year 1	Year 2	Year 1	Year 2	Treatment	Period
<i>Patient initiated consultations for asthma</i>						
At surgery	191	209	183	169	1.18 (0.89 to 1.58)	0.92 (0.75 to 1.14)
Visits from general practitioner:						
During day	48	49	45	44	1.04 (0.59 to 1.86)	0.98 (0.65 to 1.48)
Out of hours	32	22	20	23	0.60 (0.27 to 1.34)	1.15 (0.63 to 2.09)
At night	16	16	22	14	1.57 (0.60 to 4.12)	0.64 (0.33 to 1.24)
Total	287	296	270	250	1.11 (0.88 to 1.41)	0.93 (0.78 to 1.10)
<i>Practice initiated consultations for asthma</i>						
Planned:						
General practitioner	192	342	191	156	2.18 (1.66 to 2.87)*	0.82 (0.66 to 1.01)
Nurse	44	173	40	47	3.35 (1.96 to 5.72)*	1.18 (0.77 to 1.79)
Opportunistic	44	53	29	39	0.90 (0.48 to 1.67)	1.34 (0.83 to 2.71)
Total	280	568	260	242	2.18 (1.74 to 2.73)*	0.93 (0.78 to 1.11)
<i>Consultations for other chest illnesses</i>						
Upper respiratory infection	1066	769	1030	762	0.98 (0.85 to 1.11)	0.74 (0.67 to 0.81)*
Bronchitis	24	13	24	12	1.08 (0.41 to 2.85)	0.50 (0.25 to 1.00)
Bronchiolitis	15	3	7	2	0.70 (0.09 to 5.18)	0.29 (0.06 to 1.38)
Wheezy bronchitis	13	4	21	1	6.46 (0.65 to 64.31)	0.05 (0.01 to 0.35)*
Chestiness	30	10	24	8	1.00 (0.34 to 2.93)	0.33 (0.15 to 0.74)*

*Excludes 1.

TABLE II—*Numbers of prescriptions for antiasthma treatments in intervention and control groups*

	Intervention group (n=1585)		Control group (n=1563)		Effect (relative risk (95% confidence interval)) of:	
	Year 1	Year 2	Year 1	Year 2	Treatment	Period
Bronchodilators:						
Inhaled	297	376	285	310	1.16 (0.93 to 1.45)	1.09 (0.93 to 1.28)
Oral	256	166	239	108	1.43 (1.06 to 1.94)*	0.45 (0.36 to 0.57)*
Sustained release	9	11	18	13	1.69 (0.54 to 5.26)	0.72 (0.35 to 1.47)
Prophylactic agents:						
Cromoglycate	103	123	99	78	1.52 (1.02 to 2.25)*	0.79 (0.59 to 1.06)
Inhaled steroids	93	151	94	150	1.02 (0.71 to 1.47)	1.60 (1.23 to 2.07)*
Others:						
Theophyllines	83	58	76	41	1.30 (0.78 to 2.15)	0.54 (0.37 to 0.79)*
Anticholinergics	1	1	1	1		
Spacer devices	60	93	76	70	1.68 (1.06 to 2.66)*	0.92 (0.67 to 1.27)
Peak flow meters	16	101	12	38	1.99 (0.86 to 4.60)	3.17 (1.65 to 6.06)*
Oral steroids (short course)	42	67	36	56	1.03 (0.58 to 1.81)	1.56 (1.02 to 2.36)*
Emergency						
Nebulisation	49	56	36	53	0.78 (0.44 to 1.37)	1.47 (0.96 to 2.25)
Injections	3	7	2	4	1.17 (0.13 to 10.22)	2.00 (0.37 to 10.92)
Antibiotics	675	536	664	492	1.07 (0.91 to 1.26)	0.74 (0.66 to 0.83)*
Cough linctus	257	173	279	186	1.01 (0.77 to 1.32)	0.67 (0.55 to 0.80)*
Nasal spray	74	101	91	87	1.43 (0.94 to 2.17)	0.96 (0.71 to 1.28)

*Excludes 1.

TABLE III—*Numbers of patients attending hospital in intervention and control groups*

	Intervention group (n=1585)		Control group (n=1563)		Effect (relative risk (95% confidence interval)) of:	
	Year 1	Year 2	Year 1	Year 2	Treatment	Period
No of patients admitted	22	25	13	28	0.53 (0.22 to 1.26)	2.15 (1.12 to 4.16)*
No of patients attending:						
Outpatient clinics	78	80	78	67	1.19 (0.76 to 1.88)	0.86 (0.62 to 1.19)
Accident and emergency departments	12	5	6	6	0.42 (0.09 to 1.94)	1.00 (0.32 to 3.10)

*Excludes 1.

TABLE IV—*Prices applied to calculations of costs of asthma care (table V)*

	Cost in April 1991 (£)
General practitioner:	
Consultation or daytime visit	9.00
Review	7.00
Nurse review	5.50
Out of hours visit	15.00
Night visit	45.00
Attendance at:	
Accident and emergency department	29.00
Outpatient clinic	27.00
Average cost per inpatient day	151.00

which 342 were planned by general practitioners, 173 were planned by practice nurses, and 53 were opportunistic. In contrast there were only 242 consultations in the control group (relative risk for treatment effect 2.18 (95% confidence interval 1.74 to 2.73), of which 156 were planned by general practitioners, 47 were planned by nurses, and 39 were opportunistic.

The assessment stamp of the Tayside Asthma Group was used 1301 times in the intervention group compared with 236 in the control (treatment effect relative risk 5.44 (4.82 to 6.13)).

Patient initiated consultations for asthma in the intervention group comprised 296 surgery consultations, 49 day time visits, 22 out of hours visits, and 16 night visits. Corresponding figures for the control group were 250 consultations, 44 day visits, 23 out of hours visits, and 14 night visits (table I). Consultation rates for other respiratory conditions were similar in both groups.

A new diagnosis of asthma was recorded in the case

records of 294 children in the intervention group and 104 in the control group during year 2 (relative risk 2.83 (2.26 to 3.54)). A previous diagnosis of asthma was reaffirmed in the same year in 244 children in the intervention group and 187 in the control group (relative risk 1.30 (1.08 to 1.58)).

PRESCRIPTIONS

In year 2, 376 children in the intervention group received an inhaled bronchodilator compared with 310 in the control group (1.16 (0.93 to 1.45)). An oral bronchodilator was prescribed to 166 children in the intervention group and to 108 in the control group (relative risk 1.43 (1.06 to 1.94)) (table II). A total of 123 children in the intervention group received a prescription for inhaled cromoglycate compared with 78 in the control group (1.52 (1.02 to 2.25)). Corresponding figures for inhaled steroids were 151 and 150 (1.02 (0.71 to 1.47)). Prescription rates were similar in both groups for all other respiratory drugs (table II).

EFFECT OF PERIOD

Comparison of results in year 2 and year 1 showed an increased use of Tayside assessment stamps and increased rates of prescription for peak flow meters, inhaled bronchodilators, inhaled steroids, and oral steroids. There were decreases in rates of consultations for respiratory diseases other than asthma and in prescriptions for oral bronchodilators, theophyllines, antibiotics, and cough linctus (tables I, II, and III).

HOSPITAL CARE

During the 12 months of follow up (year 2) 25 children from the intervention group and 28 from the control group were admitted to hospital. The groups were unequal after randomisation at trial entry as 22 children from the intervention group and only 13 from the control had been admitted in the year before the study (year 1).

The total number of days spent in hospital were 152 in year 1 and 122 in year 2 in the intervention group compared with 69 in year 1 and 117 in year 2 in the control group. The number of children who attended an accident and emergency department (5:6) and outpatient clinics for asthma (80:67) were similar in both groups in year 2 and year 1 (table III). There were no asthma related deaths in either group during the study.

Table IV shows the costings used to price treatment in this study. The total cost of patient initiated consultations for asthma in year 2 was £3372 in the intervention group and £2892 in the control group (table V). The cost of practice initiated consultations (planned review by the doctor or nurse) was £3717 in the intervention group compared with £1624 in the control group. Prescriptions costs showed a rise in the intervention group from £24 873 in year 1 to £30 154 in year 2.

The total cost of hospital care in the intervention group fell from £25 406 in year 1 to £20 727 in year 2. Costs in the control group rose from £12 699 in year 1 to £19 650 in year 2.

An estimate of cost per child for asthma care in the intervention group was £35.03 in year 1 and £36.57 in year 2. The cost per child in the control group rose from £26.76 in year 1 to £30.48 in year 2.

Discussion

Diagnosis and treatment of childhood asthma in general practice were favourably influenced by the activities of an audit facilitator. Practices that seek to encounter the problem of underdiagnosis of childhood asthma have the option of using case record review to identify possible cases of asthma linked to systematic

or opportunistic clinical review according to a set protocol.^{30 31} This approach led to a rise in the number of new diagnoses and reaffirmed the diagnosis in a substantial proportion of children. The problem of undertreatment was tackled in the study practices, and a change towards inhaled therapy and a step approach to treatment, including prophylactic treatment, was seen.

AUDIT FACILITATION

The study represents one of the most comprehensive evaluations of the facilitator method of influencing primary health care. Not only is it feasible to evaluate the facilitator method in a controlled trial, but it is possible to do so in large numbers of children drawn from across one region. The results from over 3000 children participating in a controlled trial can be extrapolated to other regions. Although the study practices were not picked at random, they were selected to represent a wide range of practice characteristics and management strategies. The decision to randomise within practices and thus have children from intervention and control groups under the care of the same general practitioner might be a point of criticism in the trial design. The results can be interpreted as a comparison between raised awareness of asthma within a practice (control group) and an intervention by labelling records and listing certain children with asthma or suspected asthma. Study of outcome variables in the two years allows some of the effects of control contamination to be observed. Any effect will have reduced the magnitude of changes due to intervention.

OUTCOME MEASURES

Good outcome measures in childhood asthma are debatable. In the absence of a reliable marker of future morbidity most studies opt to measure attack rates, emergency treatments, and hospital contacts.^{7 17 18} The increased recognition and thus increased use of emergency treatments—for example, nebulisers and short courses of oral steroids—makes the interpretation of outcomes difficult. The study showed favourable trends in the process of asthma care but favourable changes in outcome can only be speculated from its results. A reduction in hospital attendances would be a desirable long term outcome, but in the short term an increase in the recognition of asthma could lead to a transient increase in hospital attendances of patients with diagnosed asthma. The intervention group showed a reduction in use of hospital services in year 2 compared with year 1, but this must be interpreted with caution because the hospital attendance figures in year 1 were unequal in the intervention and control groups. It may be that a desirable outcome in childhood asthma is increased recognition and treatment with a change of behaviour of the primary care health professionals. If so, then the project must be judged a success. If longer term biological outcome measures

Key messages

- Asthma is an important and increasing cause of illness in childhood; it is treatable, and with appropriate treatment sufferers can lead normal lives
- Controlled trial of an audit facilitator is feasible in primary care
- Intervention of an audit facilitator resulted in desirable changes in the diagnosis and treatment of asthma in children in general practice
- Such intervention may also have had an impact on the use of hospital resources and on health care expenditure

are to be evaluated then one must await a prolonged follow up of the study cohort.

SUBGROUPS

Analysis of subgroups showed that the changes were most apparent in children not already receiving treatment for asthma—that is, new or previously unrecognised cases—and in younger children (aged 1-4 and 5-9). Although the study was initiated before the publication of the British Thoracic Society's guidelines,²⁴⁻²⁸ it is worth noting that the prescription of inhaled prophylactic drugs increased in a stepwise fashion. The step up to inhaled cromoglycate (1 to 2) occurred more often in the intervention than in the control group whereas the step up to inhaled steroids (2 to 3) occurred equally in both groups. The facilitator seems to have influenced the management of younger children with mild or previously unrecognised disease rather than that of children with asthma receiving regular treatment.

Practices that wish to address the problem of unrecognised asthma in young children might consider using the facilitator method. Changing the care of children with moderate to severe asthma who are already receiving regular treatment probably needs a more intensive "individual patient" approach.

ECONOMICS

The cost estimates presented in this study raise the intriguing prospect that desirable changes in the diagnosis and treatment of childhood asthma lead to increased general practice costs, increase in prescribing cost of respiratory drugs, and a decrease in hospital costs. This must be interpreted with caution. The general practice costs estimated were "opportunity costs" based on the item of service model. Hospital costs were a "global" estimate. The costs of the facilitator's salary was not included. A further problem is that hospital inpatient days dominate the economic calculations, yet the number of inpatient days was unequal in the intervention and control groups in year 1. Changes in hospital care—for example, reduced number of referrals and less inpatient days—may take more than one year to become apparent and thus prolonged follow up with an economic evaluation would be useful.

CONCLUSION

In conclusion, an audit facilitator working with 12 representative practices from Tayside region led to favourable changes in the process of care of childhood asthma. These changes may be associated with improved clinical outcome but lack of agreed objective outcome measures is a problem. Changes in general practice care lead to increased primary care costs and may decrease hospital costs.

TABLE V—Costs of asthma care based on prices in table IV (£)

	Intervention group (n=1585)		Control group (n=1563)	
	Year 1	Year 2	Year 1	Year 2
Care in general practice:				
Total	30 118	37 243	29 131	27 990
Patient initiated consultations for asthma*	3 351	3 372	3 842	2 892
Practice initiated review consultations	1 894	3 717	1 760	1 624
Prescriptions for asthma treatment	24 873	30 154	24 029	23 474
Care in hospital:				
Total	25 406	20 727	12 699	19 650
As inpatient	22 952	18 422	10 419	17 667
Attendance at accident and emergency	348	145	174	174
As outpatient	2 106	2 106	2 106	1 809
Total cost	55 524	57 970	41 830	47 640

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A MEMORABLE PATIENT

Resuscitation—to a better life to come?

I was working as a member of a British Red Cross team in a refugee camp on the Thai-Kampuchean border. At two in the morning we awoke to the rasping sound of crunching gravel as a vehicle sped up to the front of the bamboo built hospital. A brief exchange of frenetic voices ensued.

She was in her early 20s, with her ragged clothing caked in mud and blood. A landmine had blown off her lower legs. No one knew how many hours she had lain suffering before she was rescued. The armed men, who had picked her up and dropped her off, had driven off into the night as quickly as they had arrived. She was brought inside, intubated, and treated aggressively with intravenous fluids and adrenaline. Her blood pressure returned. Her wounds were debrided and she was given antibiotics. Some days later formal amputation stumps were fashioned. Somewhat to our surprise, she made a complete recovery with no apparent ill effects.

There is nothing unusual about this case. Many doctors have seen far worse tragedies, and resuscitation from hypovolaemic cardiac arrest should be regarded as readily achievable in most cases. But it was one of the most moving episodes in my medical career. It also epitomised the value of a team approach to resuscitation. Later I wondered what sort of life this girl had been brought back from the brink to face. In the building opposite was another aid agency. The staff made some remarkable quality prostheses with the limited equipment and

materials available. Even so, life in the refugee camp was hard enough without the handicap of losing both legs and with no family around to offer support. Many others, of course, had suffered a similar fate. Landmines were the commonest cause of these conflict injuries—though few had the misfortune to lose both legs. Indeed, on one occasion a patient had his wooden leg blown off in a second such incident.

Medicine might be able to patch up the body, but it could not excise the memories. Many of the refugees were psychologically exhausted, having witnessed so much death and suffering. A lucky few would be resettled to a third country, but most would face an uncertain future, with years of enclosed camp life. Being in a camp was no guarantee of an improvement in quality of life, but at least the refugees' Buddhist faith provided some solace. The greater the conquest of suffering in this life, the better they believed it would be in their next reincarnated one.

This girl typified the resilience of the Khmer people. Like so many who come to expect so little, they were immensely grateful when any crumb of humanity was shown to them. The practice of medicine was one such crumb. I shared their sorrow without being able to comprehend its enormity, but I like to think that in some small way the provision of medical care by the international aid agencies helped to keep their flicker of hope alive.—MICHAEL DUDLEY is a senior registrar in accident and emergency medicine in Sheffield