

helping me revise the paper. The Norfolk and Norwich Bicentenary Trust kindly provided a grant.■

References

1. Hand C. Adherence and asthma. In: Myers L B and Midence K, eds. *Adherence to treatment in medical conditions*. Amsterdam, Harwood Academic Press, 1998; 383-421.
2. Britten N. Patients' ideas about medicines: a qualitative study in a general practice population. *Br J Gen Pract* 1994; **44**: 465-8.
3. Conner M, Norman P, eds. *Predicting health behaviour*. Buckingham, Open University Press, 1996.
4. Hibbert D. Professional and user perspectives on asthma care and inhaler therapy [PhD thesis]. Manchester, Manchester University Press, 1997.
5. Kibble K T. A qualitative study of patients' attitudes to their asthma and its treatments. *Asthma in Gen Pract* 1997; **5**(2): 25-6.
6. Hall J A, Roter D L, Katz N R. Meta-analysis of correlates of provider behavior in medical encounters. *Medical Care* 1988; **26**: 657-75.
7. Hand C H, Bradley C. Health beliefs of adults with asthma: toward an understanding of the difference between symptomatic and preventive use of inhaler treatment. *J of Asthma* 1996; **33**: 331-8.
8. Ley P. Satisfaction, compliance and communication. *Br J Clin Psychol* 1982; **21**: 241-54.
9. Barritt P W, Staples E B. Measuring success in asthma care: a repeat audit. *Br J Gen Pract* 1991; **41**: 232-6.
10. Osman L M, Russell I T, Friend J A R *et al*. Predicting patient attitudes to asthma medication. *Thorax* 1993; **48**: 827-30.
11. National Asthma Campaign. *The impact of asthma*. London, NAC, 1996.
12. Tabachnick B G, Fidell L S. *Using multivariate statistics* (3rd edition). New York, HarperCollins, 1996.

Table 3: Correlations between beclomethasone dipropionate and salbutamol factors (Spearman's rho) with two-tailed significance levels

	S1	S2	S3	S4	S5	S6	S7	B1	B2	B3	B4	B5	B6
S1	1.000												
S2	0.071	1.000											
S3	0.033	0.025	1.000										
S4	0.033	-0.113	0.083	1.000									
S5	0.087	0.045	0.022	-0.060	1.000								
S6	0.022	-0.004	0.048	0.031	0.019	1.000							
S7	-0.43	-0.13	0.013	0.002	-0.059	0.067	1.000						
B1	-0.652**	-0.47	0.123	-0.017	-0.188	-0.264	0.029	1.000					
B2	0.019	0.182	0.163	0.190	-0.057	-0.016	0.107	0.030	1.000				
B3	0.085	0.324*	-0.127	0.168	-0.076	0.096	-0.020	0.144	-0.055	1.000			
B4	0.067	0.061	0.164	-0.094	0.141	-0.294	-0.163	0.062	0.060	0.073	1.000		
B5	0.122	0.211	-0.379*	-0.168	0.537**	0.072	0.245	-0.110	0.107	-0.084	-0.232	1.000	
B6	0.088	0.213	-0.244	-0.489**	-0.131	0.161	-0.083	-0.083	0.105	-0.048	-0.040	0.094	1.00
	** P<0.001												
	* P<0.05												

Summary of statistical terms

- Spearman's correlation co-efficient (rho): a measure of association between two variables that are not normally distributed (non-parametric test).
- Cronbach's alpha: a measure of internal reliability or consistency of a multiple-item scale that relies upon the associations of each item with each other (inter-item correlation).
- Factor analysis: a complex statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables. It is usually done in four steps:
 - Correlation: variables that do not appear related to other variables are identified.
 - Factor extraction: the number of factors needed to represent the data is determined.
 - Rotation: the factors are transformed to make them more interpretable.
 - Factor scoring: scores for each factor are computed for each case.

Short Paper

Concerns and misconceptions regarding steroid therapy in asthma: findings and impact of a public meeting

D Price, J Hobbs, S Watkins, M Duerden and H Darby

SUMMARY

Anxiety concerning long-term steroid therapy may be translated into non-compliance with prescribed asthma treatment; this was addressed at a public meeting. Questionnaire responses indicated an immediate, positive impact on participants' attitudes to, and misconceptions of, anti-asthma steroid therapy.

INTRODUCTION

Patient non-compliance is one factor limiting the efficacy of inhaled steroids in asthma management.¹ Whilst many factors can contribute to patients' non-adherence to therapy, one key element is anxiety about steroid side-effects.² Media reports constantly fuel fears and patients often present with 'scare stories'. Following one particular television programme some patients in a Norwich practice reduced, and others even suspended, steroid therapy.

Collaboration between the local Health and Health Education Authorities, the local branch of the

National Asthma Campaign, general practices, secondary carers and patients brought the problem into focus. A group approach can be as effective as asthma education programmes conducted on a one-to-one basis³ and its adoption would reap benefits in terms of resources management. A decision was therefore taken to tackle steroid phobia 'en masse' and hold a public meeting where the concerns of patients, parents and others could be addressed.

METHODS

Feedback from a Norwich 'asthma awareness' day laid the foundations for the meeting, which was advertised across the city via local newspapers, television and radio. On arrival at the meeting, participants were invited to complete a questionnaire which examined their attitudes to asthma treatment, perceived benefits and side-effects of steroids, degree of concern regarding side-effects and perceived impact of media reporting, using a mix of open questions and Likert scales. Additional space to list queries and concerns was provided. One parent

Table 1: Changes in patients' and parents' response to open questions regarding inhaled steroid benefits and side-effects before and after the meeting

Statements from patients regarding inhaled steroids	Group	Pre-meeting Proportion (number responding)	Post-meeting Proportion (number responding)	Difference	Yates corrected χ^2 (*= $p<0.05$)
They help prevent asthma attacks.	Patients	45% (n=38)	64% (n=25)	19%	p=0.215
	Parents	46% (n=35)	79% (n=24)	33%	p=0.022*
They have less side-effects than oral steroids.	Patients	3% (n=38)	32% (n=25)	29%	p=0.004*
	Parents	9% (n=35)	37% (n=24)	28%	p=0.018*
They have no or negligible side-effects.	Patients	8% (n=38)	35% (n=25)	27%	p=0.016*
	Parents	17% (n=35)	53% (n=24)	36%	p=0.007*

Table 2: Changes in reported median levels of concerns amongst the different groups attending the meeting (scores ranged from 0=not concerned to 6=very concerned)

Group	Pre-meeting Median score (IQR), n	Post-meeting Median score (IQR), n	Mann-Whitney-U Test
Patients	3 (2 to 3), 52	2 (2 to 2), 48	p<0.01
Parents	4 (3 to 6), 49	2 (1.5 to 2), 33	p<0.01
Others	3.5 (2 to 5), 22	1 (1 to 2), 15	p<0.05

David Price

General Practitioner and
Honorary Senior Lecturer

Helen Darby

Medical Researcher

Thorpewood Surgery,
Woodside Road, Thorpe,
Norwich NR7 0EF, UK.

Jane Hobbs

Paediatric Asthma Liaison
Sister

Royal Alexandra Hospital
for Sick Children,
Brighton,
Sussex BN1 3JN, UK.

Simon Watkin

Consultant Physician

Department of Respiratory
Medicine, Norfolk &
Norwich Hospital,
Norwich NR1 3SR, UK.

Martin Duerden

Joint Medical Director

National Prescribing
Centre, 70 Pembroke
Place, Liverpool L69 3GF,
UK.

Correspondence to:

Dr D B Price
General Practitioner

Manor House, 12
Yarmouth Road,
Thorpewood St Andrew,
Norwich NR7 0EF, UK.

Date received: 18/09/98
Date accepted: 10/11/98

Asthma in Gen Pract 1998;
6(3): 43-44.

completed a questionnaire on behalf of both parents regarding their child or children; children under the age of 12 did not complete questionnaires.

Invited speakers gave a series of short talks covering different aspects of asthma. A question and answer session incorporated input from the questionnaires – collated during the meeting. This promoted the airing of concerns that might otherwise not have been raised, through personal embarrassment. The initial impact of the meeting was assessed using a 'close of meeting' questionnaire based on the questionnaire used at the start of the meeting. Free text fears and perceived benefits were compared using Yates corrected χ^2 tests (SPSS – unpaired data as not all attendees answered all questions). The level of concern regarding inhaled steroids on a scale of 0 to 6 was compared using the Mann-Whitney U test.

RESULTS

Approximately 200 people attended – including patients, parents and families, pharmacists, practice nurses, teachers and doctors. One hundred and twenty three questionnaires were completed by patients (n=52), parents (n=49) and others (n=22). Not all respondents answered all the questions; particularly the open questions regarding benefits and side-effects of inhaled steroids.

Major findings

- Eighty two per cent of patients disliked taking oral steroids; 12% stated that they refused to take them.
- Forty four per cent of patients disliked using inhalers in public; three per cent stated that they refused to do so.
- Most frequently cited concerns were weight gain associated with oral steroid therapy (58% patients, 33% parents) and local oral side-effects from inhaled steroids (54% patients, 27% parents).
- A major fear was that inhaled steroids caused growth retardation (30% parents).

- Common misconceptions were that inhaled steroid use caused weight gain (19% patients, 10% parents) and dependency (12% patients).
- Patients (31%) and parents (10%) confused β_2 -agonist effects (tremor, tachycardia) with steroid effects.
- The GP was the main information source for both patients and parents, with media the second most cited source (equal second for patients, alongside their hospital doctor).
- Media reports worried parents (71%) more than patients (39%) ($\chi^2(p<0.001)$). Thirty nine per cent of others completing the questionnaire (the group which included health professionals) had also been influenced by the media.

Impact of the meeting

The major immediate impact of the meeting regarding attitudes to inhaled steroids found in response to open questions regarding benefits and side-effects of inhaled steroids are summarised in Table 1. Impact in terms of overall levels of concern is shown in Table 2.

DISCUSSION

The questionnaires completed at the meeting revealed two widespread misconceptions amongst respondents regarding inhaled steroid therapy: weight gain and the attribution of β_2 -agonist side-effects to the use of inhaled steroids. Patients with asthma (and/or their parents) who attended the meeting (and completed questionnaires) may be considered to have stronger reservations regarding steroid therapy than the asthmatic population as a whole. However, it is possible that the same concerns and misconceptions exist in the wider population. We re-emphasise the importance of discovering patients' own attitudes and concerns when commencing therapy, rather than using fixed education for all patients.⁴

The public format allowed patients' families and friends (known to have a strong and positive influence on adherence to treatment)⁵ to participate and promoted patient (and doctor) interaction, and 'safety in numbers' may well have prompted a greater airing of individual anxieties. The close of meeting questionnaire responses indicated an immediate positive impact on concerns and misconceptions. We cannot speculate whether there was a long-term impact from the meeting in terms of attitudinal change. It would be useful in future to incorporate some long-term assessments of patients' attitudes and adherence to asthma therapy in a such a study.

ACKNOWLEDGEMENTS

The local Health Authority met costs incurred in holding the meeting. ■

References

1. Osman L M, Russell I T, Friend J A R *et al*. Predicting patients attitudes to asthma medication. *Thorax* 1993; **48**: 827-30.
2. Price D. Steroid phobia. *Resp Dis Pract* 1994; **11(3)**: 10-3.
3. Wilson S R, Scamagas P, German D F *et al*. A controlled trial of two forms of self-management education for adults with asthma. *Am J Med* 1993; **94**: 564-76.
4. Ley P. Selecting the Content of Communications. Communicating With Patients. Improving Communication, Satisfaction and Compliance. *Psychology & Medicine Series* 1988: 141-56.
5. Taggart V S. Implementation of the guidelines: a patient's perspective. *Eur Respir Rev* 1995; **5(26)**: 112-5.