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Change in the use of and attitude to peak flow measurement among general practitioners in Northern Ireland between 1989 and 1994

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SUMMARY

In 1994 we repeated a study first performed in 1989 to assess the change in general practitioners' use of and attitudes to peak flow measurement. Of 232 general practitioners surveyed, 199 (86%) and 192 (83%) responded in 1989 and 1994 respectively. The percentage who reported having patients using domiciliary peak flow monitoring rose from 58.3 (95% confidence limits 51.4 to 65.2)% to 97.9 (95.9 to 99.9)%. The percentage who reported 'usually' using peak flow measurements for the diagnosis and management of asthma rose from 81.9 (76.5 to 87.3)% to 93.2 (89.6 to 96.8)% and from 83.3 (78.1 to 88.5)% to 95.8 (92.9 to 98.7)% respectively. An unchanged proportion took peak flow meters on house calls. General practitioners have become more aware of the potential of peak flow measurements but are still unlikely to have a meter available to assess patients seen at home. They are therefore likely to be ill-equipped to manage acute exacerbations of asthma in this setting.

INTRODUCTION

Peak flow meters became available by National Health Service prescription in 1990. This was accompanied by considerable discussion of peak flow monitoring in the medical press. The British Thoracic Society included a firm recommendation for their use in its guidelines on the management of asthma as well as emphasising the importance of peak flow measurements for the assessment of acute asthma exacerbations.[1]

In 1989, a survey of a one in four sample of general practitioners in Northern Ireland showed that almost all had access to a peak flow meter and many were using them for the diagnosis and management of asthma.[2] Almost 60% of the sample had at least one patient using domiciliary peak flow monitoring although few practitioners took peak flow meters on house calls.[2] This survey has been repeated to determine whether these general practitioners' attitudes to and use of peak flow meters have changed between 1989 and 1994.

METHODS

The 1989 study was based on a one in four random sample of all general practitioners on the General Medical Services (GMS) list for Northern Ireland at the end of March 1989. The same general practitioners were surveyed in 1994 but those who were no longer on the list were replaced by a randomly chosen doctor practising from the same address. They were sent the questionnaire with two postal reminders to non-responders at four weekly intervals in late 1993 and early 1994. The questionnaire was initially tested amongst general practitioners in a large Belfast health centre.

The data have been analysed using *SAS* and *Arcus Pro-stat*. Responses have been converted into dichotomous variables ('yes' and 'sometimes/no' or 'very useful/useful' and 'of some use/of no use') and confidence limits for all responses have been calculated by the method of Armitage and Berry.[3] Exact confidence limits and P values for

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the change in paired responses have been calculated by the method described by Liddell.[4]

RESULTS

The original survey population was 232 general practitioners. One hundred and ninety nine (86%) were available for re-survey in 1994 and 33 replacements were identified. In 1989, 199 (86%) responded after one postal reminder and in 1994 192 (83%) responded after two postal reminders. Twenty three of the original respondents had left the GMS list by 1994 leaving a maximum of 176 possible pairs of responses of which 148 (84%) were obtained. 82% of respondents were male in 1989 and 79% in 1994. 94% and 90% of respondents were full-time general practitioners in 1989 and 1994 respectively.

General practitioners continue to report that they use peak flow meters more for the management and diagnosis of asthma than for chronic obstructive airways disease, and use them equally for the diagnosis and management of asthma (Table I). Although their reported use of the meters for diagnosis and management of chronic obstructive airways disease has not changed, it has increased for asthma (Table I). From the paired comparison, the likelihood of a respondent changing practice to 'usually' using peak flow meters for the diagnosis of asthma was 3.7 (95% confidence limits 1.2 to 15.5) and 5.7 1.6 to 30.2) for asthma management.

In 1989, 58.3 (95% confidence limits 51.4 to 65.2)% of practitioners reported that they had at least one patient who was using domiciliary peak flow monitoring and by 1994 this had risen to 97.9 (95.9 to 99.9)%, an increase of 39.6 (32.5-46.7)%. Respondents' estimates of the number of asthmatic patients using peak flow monitoring rose from a median (inter-quartile range) of 5 (2 to 10) to 30 (5 to 50) with a seven-fold increase in their estimate of the total number using peak flow meters at home.

Table II shows practitioners' attitudes to the usefulness of peak flow meters when used in the consulting room, and by patients for domiciliary monitoring. Most now feel that peak flow measurements in the consulting room are either 'very useful' or 'useful' for the diagnosis and management of asthma. The paired comparison showed that the likelihood of a respondent changing his/her opinion in 1989 that peak flow meters were of 'some use' or 'no use' for the diagnosis of asthma in the consulting room to their being 'very useful' or 'useful' in 1994 was 3 (95% confidence limits 1.04 to 10.6). The probability of a similar change in their opinion of the usefulness of peak flow meters for the

TABLE I

Percentages (95% confidence limits) of respondents who usually used peak flow meters in diagnosis and management of asthma and chronic obstructive airways disease (COAD) in 1989 and 1994

	ALL RESPONDENTS			
	1989		1994	
	n	% (95% Confidence Limits)	n	% (95% Confidence Limits)
Peak flow meters 'usually' used in the				
A. Diagnosis of:				
Asthma	199	81.9 (76.5–87.3)	190	93.2 (89.6–96.8)
COAD	189	68.1 (62.1–75.4)	187	78.1 (72.1–84.1)
B. Management of:				
Asthma	198	83.3 (78.1–88.5)	189	95.8 (92.9–98.7)
COAD	185	61.1 (54.0–68.2)	185	69.2 (62.5–75.8)

TABLE II

Percentage (95% confidence limits) of respondents who felt that peak flow measurements were 'very useful' or 'useful' in the consulting room and the patient's home for the diagnosis and management of asthma

	ALL RESPONDENTS			
	1989		1994	
	n	% (95% Confidence Limits)	n	% (95% Confidence Limits)
Used in consulting room for:				
Asthma diagnosis	199	86.0 (81.2–90.8)	191	94.7 (91.5–97.9)
Asthma management	198	89.4 (85.1–93.7)	190	96.4 (93.7–99.1)
Used in patients' home for:				
Asthma diagnosis	198	63.6 (56.9–70.3)	191	74.9 (68.2–80.6)
Asthma management	198	78.8 (73.1–84.5)	190	85.8 (80.7–90.9)

management of asthma in the consulting rooms was 4.3 (95% confidence limits 1.2 to 23.1). Similar numbers of practitioners perceive the meters to be useful for the diagnosis and management of asthma in the consulting room but more perceive that domiciliary monitoring is more useful for management than diagnosis. Similarly, more practitioners perceive that peak flow meters are more useful when used in the consulting room than in the patient's home.

We have reported elsewhere[5] that an unchanged minority of practitioners (31.8 (25.2-38.3)% in 1989 and 34.6 (27.8-41.4)%) in 1994 reported that they usually took peak flow meters on home visits.

DISCUSSION

General practitioners have an important role in the diagnosis and management of asthma.[1] They will see most patients at their initial presentation, provide total care for the majority and make decisions on both acute and elective referral to secondary services for an important minority. Each of these aspects should be optimised. In the past however there have been significant delays in the diagnosis of asthma by general practitioners.[6] Similarly, the accuracy of clinicians' subjective assessments of asthma is poor[7,8] and patients who die of asthma are less likely to have had their peak flow measured in their final illness than controls who suffered a severe asthmatic exacerbation.[9,10] General practitioners therefore have to avail themselves of appropriate diagnostic and management aids to optimise asthma care.

Peak flow measurements may reduce diagnostic delay and improve decision-making in asthma by providing an objective assessment of air flow and hence an opportunity to identify the airflow variability which is pathognomonic of asthma and to objectively assess its severity. Although the role of peak flow measurements in the management of asthma has long been discussed there is little objective evidence to support the adoption of widespread peak flow monitoring by patients [11,12,13,14] but monitoring may have a role to play in its diagnosis.[15] Repeating the 1989 survey provided a unique opportunity to assess change in attitudes of general practitioners in Northern Ireland towards peak flow measurements during a period of considerable professional interest in the topic.

More than 90% of general practitioners report that they now use peak flow measurements for both the diagnosis and management of asthma. This, in conjunction with the almost universal possession of nebulizers by practices in Northern Ireland,[5] suggests that asthma care should have improved. This may be reflected in decreased diagnostic delay and increased diagnostic

accuracy, more accurate assessment of asthmatic exacerbations and the delivery of prompt and effective treatment. Although general practitioners' perception of the usefulness of domiciliary peak flow monitoring of asthma has not changed, almost all have some patients who are using the technique. Indeed, there has been a seven-fold increase in their estimate of the number of patients using domiciliary peak flow monitoring. This may reflect patient pressure since respondents' perceptions of its usefulness have not changed.

The majority of acute asthmatic exacerbations will occur outside routine general practice consulting hours.[16] It is therefore important that practitioners have peak flow meters available when working out-of-hours so that they can objectively assess the severity of acute asthma exacerbations. Unfortunately there has been no increase in the number who report taking peak flow meters on home visits, which will include most out-of-hours consultations. Thus many will be unable to objectively assess asthma at this time. Future education of general practitioners should therefore address this issue.

These data need to be interpreted with caution. They may represent a socially acceptable response set with an apparent increase in use of peak flow meters because of increased awareness by general practitioners of "how" they should answer. This is unlikely because there was no reported change in the use of peak flow meters for the care of chronic obstructive airways disease, nor any increase in the proportion of general practitioners who claimed that they take peak flow meters on home visit, which would have been expected with a response bias. We did not define peak flow assisted management and diagnosis for the original survey and, as we wished to measure change, could not do so for the repeat study. The data represents what general practitioners believe that they do and may therefore represent an overestimate of ineffective activity. Nevertheless this data demonstrates an increased awareness of the potential of peak flow measurements among general practitioners in Northern Ireland which, although it cannot be directly attributed to any single intervention, represents important changes. It is interesting that the unproven intervention of routine domiciliary peak flow monitoring has not gained increased acceptance although most practitioners have patients using it. The potential for using domiciliary peak flow records for the diagnosis of asthma needs to be explored and, if found useful, its use could be increased. Finally, more general practitioners should take peak flow meters with them on house calls so that they have the means to objectively assess acute asthma exacerbations when they are encountered.

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