The General Practitioner's In Asthma Group's XIIth Annual Scientific Meeting
Friday 4th June to Sunday 6th June 1999

Submission of papers on all aspects of asthma and other common respiratory conditions, are welcome for presentation at the GPIAG XIIth ASM and publication of the abstract in *Asthma in General Practice*. Membership of the GPIAG is not a prerequisite.

Abstracts must be submitted on the original form. The forms are available from Strategic Medical Publishing Ltd, please see the details on the inside back cover.

The research sessions will be planned by the GPIAG Steering Committee and the authors will be invited to present their work in either oral or poster format.

For more information about the Annual Scientific Meeting please contact the secretariat, MMI, whose details can be found on the inside back cover.

Deadline for submission of the abstracts is Friday 29th January 1999.

Asthma audit for enthusiasts and sceptics

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Abstract

Objective: To explore the possible link between audit activity and improved clinical outcome.

Method: Data was collected from two consecutive correspondence surveys of UK general practices. Eighty four practices completed both surveys, recording details on 2470 patients (audit cycle group), 141 practices participated in 1994 only and recorded details on 4262 patients (1994 comparison group), and 133 practices participated in 1995 only and recorded details on 3922 patients (1995 comparison group). General practitioner (GP) and nurse consultations, asthma symptoms, days lost from work or school, asthma attacks, and emergency hospital admissions and accident and emergency (A&E) attendances due to acute severe asthma were recorded in each group.

Results: In the comparison groups between 1994 and 1995 there were less GP consultations and less asthma attacks, but no other significant (at $p<0.01$) changes. The patients from the audit cycle practices experienced fewer GP consultations, more nurse consultations, fewer symptoms, fewer days lost from work or school, fewer asthma attacks and fewer A&E attendances.

Conclusion: Large primary care studies have problems with validity, choice of outcome measures and analysis. Audit enthusiasts will interpret the findings as showing that asthma audit improves patient care. Sceptics will claim that those practices who seek to improve patient care will enrol in audit packages.

Introduction

General practice care of patients with asthma has been criticised on the grounds of under-diagnosis, under-treatment, lack of resources and failure to comply with clinical guidelines.[1-4] Recent attempts to improve asthma care have included educational programmes,[5] audit facilitation,[6] integrated care[7,8] and small group workshops. Successful initiatives have been reported in single practices,[9,10] regional audits,[11,12] and amongst responders to national audit packages.[13] Administrative changes in the UK have given practices a financial incentive to organise asthma clinics and practice nurse training courses have led practice nurses to take a lead role in primary care asthma management.[14,15]

What constitutes 'good asthma care' is contentious but few would disagree that general practices should offer asthma patients regular assessment, follow up, access to peak expiratory flow meters and self-management plans.[16-18] It is assumed that modern well resourced primary care will lead to improvement in symptom control, less time lost from work or school, and fewer acute asthma attacks. This has yet to be proven. Improved primary care management could lead to reduced use of emergency hospital contacts but this has not been established.[6] It is also popularly assumed that clinical audit must be beneficial to patients. Despite local and national initiatives to encourage GPs to participate in audit there have been few studies which demonstrate a link between audit activity and improved clinical outcome.[19,20]

It is now pertinent to examine how asthma is managed within primary care and to explore whether or not clinical audit is associated with clinical outcome. This study was designed to compare those practices which voluntarily participated in one audit, with those who participated in a complete cycle of two audits interspersed with patient specific feedback and an educational input.

Methods

Practice recruitment and sample size

Previous work showed that 30 patients is a manageable size for UK general practices to assess and audit.[13] Using asthma attack rate per year as the primary outcome measure then at least 6000 patients, and 200 practices, would be required to show a 3% reduction with power 0.9, $p<0.01$, with allowance for the effects of clustering.[21] Invitations to practices to participate in interactive research or audit programmes typically attract an enrolment and completion rate of 4-5%.[4] In order to obtain a sample of practices from all regions of the UK, a medical mailing

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agency sent invitations to participate in an audit to a random sample of 5000 GPs. The audit was linked to a distance learning package accredited for Post Graduate Educational Allowance (PGEA) and a practice nurse educational package.[22] Respondents were sent a distance learning package incorporating a data recording booklet and the Tayside Asthma Group assessment stamp.[6] They were invited to state their partnership size and geographical locality. In 1995 an identical exercise was conducted with a different 5000 practitioners. Practices who had completed the 1994 study were invited to participate in 1995. The materials in 1994 and 1995 were identical.

Patient recruitment

Each participating practice was given written instruction, supported by a telephone helpline, in how to select a representative sample of 30 patients with asthma:

- list in alphabetical order patients of all ages receiving bronchodilator therapy for asthma within the past year;
- divide this list into bands of 10 names and number each name within each band 1-10;
- apply a pre-determined random number sequence issued by the research unit to each band to select one name from each band;
- scroll on to the beginning of the register and continue to apply the random numbers sequence until 30 patients are selected.

Practices who completed the audit cycle were asked to review the same 30 patients one year later replacing any who had left the practice, or were no longer on the asthma register, with new patients picked using the same random number procedure. Practices were advised to invite by letter or telephone all 30 patients on this list to attend for a clinical assessment.

Measures of process and clinical outcome

There is debate as to what variables constitute measures of process or clinical outcome in asthma so we elected to study a broad range of measures of clinical activity and healthcare utilisation by patients. These were determined at clinical assessment and from inspection of case records relating to the previous 12 months.

Variables studied

- Consultations for asthma with the GP.
- Consultations for asthma with the practice nurse.
- Presence of asthma related symptoms at clinical assessment.
- Days lost from work or school due to asthma.
- Asthma attacks (GPIAG definition).[4]
- Attendance's at A&E due to acute asthma.
- Hospital admissions due to acute asthma.

Feedback

On return of their recording booklets practices were sent an audit critique of their management. A detailed series of non-judgmental comments and suggestions on management, based on the BTS guidelines,[23-25] were prepared and sent on every patient (see box). Practices were asked to insert these comments into each set of patient records. When each patient was reviewed again, individual feedback based on guidelines was thus available.

Quality control

Responses from practices were mapped to check returns were representative of all UK regions. Practices who required clarification of the protocol had access to a telephone helpline. Eight local practices, selected for pragmatic reasons, were visited and inspected. In each case they had complied with the study protocol (see page 24).[26] Patients who did not attend (DNA) their assessment appointment were included in the patient sample and in analysis.

Typical comments included:

- 'Have you considered issuing a self-management plan?'
- 'Guidelines suggest patients taking excessive amounts of β_2-agonists should have a step-up in medication.'
- 'High level of symptoms may indicate the need to increase maintenance therapy.'
- 'Well controlled patients can have their treatment stepped down.'

Summative comments on the practice were included:

- 'Regular audit should be undertaken to allow the practice to set its own targets and decide on which changes to implement.'

Educational input

Participating GPs and practice nurses thus learned; to review their register of asthma patients; about case selection procedures using a random numbers sample frame and to clinically assess patients according to an established protocol. They received personalised feedback on each patient and a copy of current guidelines on asthma management. They formulated their views of their practices' strengths and weaknesses in asthma care, and compiled an 'action plan' for change.

The impact of this package on patient care was measured. No attempt was made to separate out the influence of each component, although related work suggests receipt of patient specific feedback may be the strongest influence on GP behaviour.[27,28]

Audit cycle, 1994 and 1995 comparison groups

Participating practices and their patients were classified into three groups. The 'audit cycle' practices were those who enrolled in 1994, received feedback and educational input and enrolled again 1995. The '1994 comparison group' were those practices who enrolled in 1994 but not in 1995. The '1995 comparison group' consisted of those practices who were invited and enrolled for 1995 only. The 1994 and 1995 audit packages were separated by exactly one year.

Analysis

Returned booklets were analysed by patient on an 'intention to treat' basis. Analysis was conducted cross sectionally between patient variables from the 1st year results of the audit cycle group and the 1994 comparison group. There were no significant differences between groups at 'baseline' and so a longitudinal analysis was then conducted for patient variables in the audit cycle group between 1994 and 1995. The 1994 comparison group was then compared to the 1995 comparison group. Finally a cross sectional analysis between the 2nd year results of the audit cycle group and 1995 comparison group was conducted. For each measure an Odds Ratio and 95% Confidence Interval was calculated. Only those results with $p<0.01$ are reported as significant.

Results

Characteristics of practices and patients

Two hundred and twenty five practices (4.5% recruitment rate) participated in 1994 consisting of 84 practices and 2545 patients (one practice submitted details on 60

patients) in the audit cycle group and 141 practices and 4187 patients in the 1994 comparison group. The 217 participating practices in 1995 comprised the audit cycle group practices and patients and in addition 133 practices and 3922 patients who formed the 1995 comparison group. The discrepancy in patient to practice numbers was due to a number of practices providing insufficient data on a patient. Materials from one practice, 30 patients, were not satisfactory and were not included for analysis.

The partnership size and geographical location was broadly similar in all groups and comparable to UK average figures. The patient male:female ratio was identical (1:1.02) in each group.

Audit cycle group in 1994 and 1994 comparison group

There were no differences between groups' 'baseline' for consultations, symptoms, attack rates or emergency hospital utilisation.

Audit cycle group in 1994 compared to 1995

The proportion of patients who received one or more GP consultations for asthma fell from 64% in 1994 to 50% in 1995 with a corresponding rise in practice nurse consultations from 56% to 72%. The number of patients with asthma symptoms (cough, wheeze or breathlessness) within the past month was 71% in 1994 and reduced to 55% in 1995. There was a reduction in the number of patients reporting days lost from work or school (within the month prior to clinical assessment) from 12% in 1994 to 8% in 1995. The rate of asthma attacks (within the past 12 months) declined from 22% to 15%. Hospital admission rates remained constant at 3% per year but attendance at A&E due to acute asthma declined from 3% in 1994 to <1% in 1995.

1994 comparison and 1995 comparison groups

The rate of GP consultations fell from 67% to 60% but the practice nurse consultation rate was similar (55%, 54%). There were no significant differences in the number of patients with symptoms or in reported days lost from work or school. The asthma attack rate fell from 24% in 1994 to 21% in 1995. A&E attendance and hospital admission rates were similar in each year.

Audit cycle group in 1995 and 1995 comparison group

The audit cycle group received fewer GP consultations, (50% vs 60%) but more practice nurse consultations (72% vs 54%). Within this group fewer patients reported symptoms at clinical assessment (55% vs 70%) and days lost from work or school (8%, 13%). The asthma attack rate was only 15% in this group compared to 21% in the 1995 comparison group. Hospital admission rates were similar but there were fewer patients in the audit cycle group who attended A&E with an acute asthma attack (<1%, 3%).

There were 421 (17%) patients who did not attend for a clinical assessment in the 1994 audit group, 401 (16%) in the 1995 audit group, 854 (20%) in the 1994 comparison and 928 (24%) in the 1995 comparison group.

Discussion

Validity

The validity of this study rests on the representativeness of participating practices and their patients. The recruitment in 1994 and 1995 relied on self selection and therefore all participating practices were sufficiently interested in asthma to complete a study. The participants are not an expert group, but an 'interested' group.[13] Although the participants had partnership size and geographical distribution characteristics typical of the UK, they must be considered atypical in that they responded to an invitation to review their care of patients with asthma.

A potential problem with studies of this nature may be the imposition of recruitment bias by the participating practices. Participants were given clear instructions to include patients according to a set procedure but it is possible practices may have included or excluded certain patients. Although we must rely on the integrity of our general practitioner and nurse colleagues for the quality of the data,[13] no evidence of failure to follow the instructions was found in the practices visited.[26] Some patients with mild or undiagnosed asthma will not appear in the practice asthma registers, and thus would not be included in this study. We opted to use the same criteria as the UK Department of Health when defining asthma i.e. recent bronchodilator prescription. We made no attempt to question appropriateness of diagnosis.

A target recruitment total of 200 practice and 5000 patients was set and exceeded in 1994 and 1995. We neither expected nor sought more than 4% of mailed practices to enrol. This compares favourably with comparable education and audit initiatives. Data on each patient relates to one full year and so there are no seasonal influences on asthma symptom or morbidity rates.

Process and Outcome Variables

There is debate as to how to measure the process and clinical outcome of patients with asthma. We opted to include a mix of primary care measures of process of care, symptom control, impact on lifestyle (days lost from work or school), attack rates and emergency hospital utilisation. These measures are easy to compare between practices and reflect the impact of asthma on patient's lives and on the health service. There is no ideal or gold standard for each of these measures but common sense suggests that improved symptom control, fewer days lost, fewer attacks and reduced emergency utilisation of hospital resources is desirable. We accept that some patients need to, and should, receive emergency hospital care but one would expect fewer patients to need emergency hospital care if general practice care of asthma improved. Perhaps ideal asthma care represents a change in the pattern of a broad mix of process and outcome measures rather than a simple reduction in one key variable.

Analysis of groups

This study was not a randomised controlled trial of audit versus non audit practices. It was an attempt to compare what happened to those patients managed by practices motivated to enrol in both years with those from practices motivated to enrol once. In 1994, at 'baseline' the variables were similar in the audit cycle and 1994 comparison group and so we felt justified in proceeding with analysis longitudinally between 1994 and 1995 and then cross sectionally between each

group in 1995. Unlike a controlled trial where one can infer cause and effect, our methodology allows merely the inference of association. Changes seen in patient outcomes might be associated with practice audit activity but not necessarily caused by it. A further weakness in study design was that because audit cycle practices studied the same patients twice, these patients will have aged by one year relative to their contemporaries in the comparison groups. We have no evidence that this affected patient variables. Multifaceted interventions which include audit and feedback, consensus guidelines, and regular communication and support, have been shown to promote behavioural change among health professionals.[29] Patient information without a strategy for change does not.[30] The data gathered for this study was based on patient records and a clinical assessment of current asthma status, we have no reason to believe that the data was unreliable.[26] The intervention, while in keeping with the principles of audit, was on a more holistic level comparing management with recommended guidelines, encouraging a review of practice management protocols and strategies.

Implications

In the early 1990s UK practices have been subjected to unprecedented administrative change with the New Contract in 1990, fundholding, and the 1993 FHSA regulations on Chronic Disease Management. Guidelines on asthma management have been published and widely distributed. Against this background of change and opportunity practices which wished to alter their management of asthma will have employed nurses with special training in asthma. This study was not designed to test whether nurse led care improved outcome, but the findings provide circumstantial evidence to suggest that it might. Nurse led care leads to more patients being issued with peak flow meters, more checking of inhaler technique and consequent improvement in compliance and more use of guided self-management plans.[13,16,31,32] A further consequence of change and opportunity in general practice in the early 1990s is that many practices have become receptive to initiatives such as clinical audit. The main finding from this paper is that patients from practices which completed an audit cycle had significantly fewer symptoms, days lost from work or school, fewer asthma attacks and fewer A&E attendance's for acute severe asthma. Enthusiasts for audit will conclude that general practice asthma audit improves patient care and reduces morbidity. Sceptics will conclude that those practices which were about to improve their asthma management also enrolled in an audit programme.

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