ASTHMA CARE

An audit of asthma care in Khayelitsha Community Health Centre

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Asthma, which is the commonest chronic disease in both adults and children,[1] tends to be under-diagnosed, poorly assessed and under-treated[2]. Up to 10% of children can suffer from asthma and urbanisation is associated with an increased prevalence. Education about asthma and communication with asthma patients has also been poor. In 1995 the SA Pulmonology Society published clinical guidelines for the optimal assessment and management of asthma[3]. These act as a useful benchmark for auditing asthma care.

Audit

Sheldon defines audit as "the study of some part of the structure, process and outcome of medical care, carried out by those personally engaged in the activity concerned, to measure whether set objectives have been attained and thus assess the quality of care delivered".

An audit is a useful tool in primary care settings. The four stages of the audit cycle are well described:

1. The practice team must agree on criteria to be assessed and set target standards for these criteria
2. Data is collected and analysed
3. The actual performance is evaluated against the standards set and
4. Changes can then be planned and implemented to improve performance.

The audit cycle is then repeated to assess if these changes have made a difference. Audit is therefore an ongoing activity that involves and motivates the practice team to look critically at what they are doing and to try to improve their performance.

Self-audit is seldom done in the Community Health Services Organisation and it is hoped that this example will encourage others working in primary care to become involved in a variety of audit activities.

Setting

Khayelitsha was established in 1986 and has a population of approximately 800 000 people living on the periphery of the Cape Town metropole. The predominantly Xhosa-speaking population mostly live in informal settlements in both officially serviced sites and in unserviced areas.

In Khayelitsha the Community Health Services Organisation has two community health centres: Nolungile Community Health Centre, with only two doctors, and SiteB, which has a maximum of ten doctors when all posts are full. This audit was done at the SiteB Community Health Centre. There are about 15 private general practitioners.

The SiteB Community Health Centre runs an asthma clinic where approximately 400 patients are seen each month. These patients are seen by two clinical nurse practitioners who take a peak expiratory flow reading and a history from the patient, provide education and repeat the prescription, which is written for a three month period by the doctor. Patients are given a date to attend the clinic every four weeks. Patients in need of further assessment for poor control or other intercurrent problems are referred to the clinic doctor.

Disease Register

Preparatory to this audit the principal author, Dr Mash, established a disease register for the asthma clinic. The clinical nurse practitioner records attendance at the clinic in a book at every visit and the patients have monthly appointments. Using this book and taking five different months (April, May, June, July, November) during the course of 1995, a register was established of all patients attending the clinic.

The patient's name, date of birth, sex and folder number were recorded in a database. The register, which was sorted in numerical sequence using the patient's folder number, contains 408 patients. The age distribution is given in Table I and the male:female ratio is 1:2. Of the estimated 800 000 people in Khayelitsha these 408 patients can only represent a small fraction of the people with asthma. Further study would be needed to determine how the asthma patients who are not attending the clinic are receiving help.

Subjects and methods: Sampling

A systematic sample of the patients in the disease register was made, taking every second and every fifth patient. This systematic sample of two in five entries yielded a sample of 164 patients. Out of the sample of 164 patients the folder was missing in 16, giving a sample size of 148. Of the 148 patient folders remaining 28 had other diagnoses and this left 120 patients with asthma. The sampling method is shown in Fig. 1 and the other diagnoses are shown in Table II.

Target Standards

The clinical nurse practitioners and the principal author set target standards. The criteria were chosen to reflect either a good process of care or a good outcome of care.

A level of desired performance was arbitrarily agreed upon for each criteria and this gave six target standards of care for process

Family Medicine is similar in some aspects to other branches of medicine but unique in many others. We aim to promote original South African family medicine research and are committed to supporting and encouraging researchers new to the field.

Age (years)	n=408	%
0-9	7	2
10-19	24	6
20-39	155	38
40-59	169	41
>60	53	13

Table I. Age of patients attending the asthma clinic

and three for outcome (as listed in Table V and VII).

The SA Pulmonology Society Guidelines for assessment of severity (Table III) and appropriate drug treatment (Table IV) were used in setting the standards.

Analysing medical records

The medical records of each asthma patient were then examined to determine the actual performance of the clinic. The diagnosis was taken from the problem-list whenever possible, otherwise the diagnosis was obtained by examining the patients' clinical records. Where a full assessment of severity was not available, the peak expiratory flow alone was used. The results were entered into an MS Office Database for further analysis.

When faced with a large number of patients at the same time, the tendency among clinic staff is to consult as fast as possible so as not to keep people waiting.

Results: Severity of asthma

Twenty eight (23%) patients were assessed as having mild chronic asthma, 27 (23%) moderate and 65 (54%) severe chronic asthma.

Audit of process

Looking at the process of care, only two target standards were achieved (as shown in Table V). In assessing whether treatment was appropriate for the severity of asthma, detailed information was obtained on the actual treatment given. (See Table VI.)

Diagnosis	n=148	%
Asthma	120	81
Chronic Obstructive Airways Disease	16	11
Bronchiectasis	4	3
Cardiac failure	6	4
Epilepsy	1	<1
Investigations for TB	1	<1

Table II. Diagnosis of patients attending the asthma clinic

Assessment	Mild	Moderate	Severe
Daytime wheeze	<2/week	>2/week	Almost daily
Night-time wheeze	<1/month	>2/month	>2/week
Peak Expiratory Flow	>80%	60%-80%	<60%

Table III. Assessment of severity of chronic asthma

Severity	Inhaled Beta 2 agonist	Inhaled steroids
Mild	PRN	Not required
Moderate	PRN	200mcg BD
Severe	PRN	400mcg BD

Table IV. Minimum recommended treatment for different severities of asthma

Audit of outcome

Looking at the outcome measures, only one target standard was achieved (as shown in Table VII).

Discussion

The audit demonstrates that the Khayelitsha Asthma Clinic has not achieved the target standards set, or the quality of care desired by the clinic staff. The audit implies the need for changes in the process of care in order to improve the quality of care offered by the clinic and ultimately the degree of asthma control in patients. The results of the audit have led to a number of planned changes in the asthma clinic which must now be implemented. These changes are discussed below.

1. Appointment system

The clinic can see up to 100 patients in a day and the majority arrive when the clinic opens in the morning. When faced with a large number of patients at the same time, the tendency among clinic staff is to consult as fast as possible so as not to keep people waiting. In order to create more time for each patient, an appointment system will be introduced with blocks of patients booked on the hour from 07h00 to 15h00. The number of patients sitting waiting to be seen at any one time should therefore be reduced, as will the waiting time, and thus the time pressure on the staff should be relieved. Each patient should then receive more effective attention from the clinical nurse practitioner and doctor.

2. Assessment of patients

There is a need for a more systematic approach to the assessment of each patient by the clinical nurse practitioner and doctor. Questions about night-time and day-time symptoms, frequency of beta2 agonist use and peak expiratory flow readings should be used routinely to evaluate severity and response to treatment. Simply recording "no complaints" is not sufficient. Many of the severe asthma patients are under-treated because they are not recognised as severe and they may have come to accept their poor control as normal. Printed guidelines on the assessment criteria will be introduced in the clinic.

3. Re-organisation of medical records

A problem-list should be completed for each patient and it should include information on the patient's diagnosis, predicted and best peak expiratory flow, smoking status and inhaler technique. The doctor is responsible for the initial diagnosis and each new patient

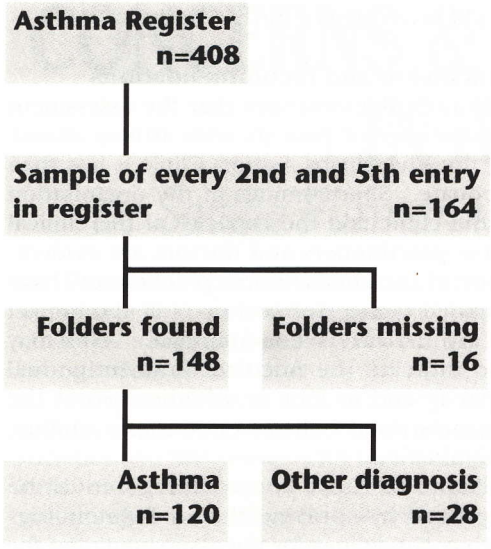

Figure 1. How the sample of asthma patients was selected

must be carefully assessed before acceptance into the clinic. The problem-list will help identify patients with asthma, facilitate the assessment of asthma severity and prompt necessary health education. The clinical nurse practitioner is in an ideal position to individually teach inhaler technique and, where necessary, prescribe a spacer. Advice and motivation to stop smoking can also be given by the clinical nurse practitioner.

The use of a bound booklet and not loose sheets of paper for the continuing notes would enhance continuity of care and assessment of response to treatment.

4. Health education

Printed material in Xhosa on the diagnosis, trigger factors, use of medication and inhaler technique will be introduced. This printed material will also reinforce the difference between reliever and preventer medication. If possible, this material should be developed in a participatory way by the patients and clinic staff.

5. Coding of asthma medicines

The audit shows that most patients with severe asthma are receiving poor preventative treatment. The provision of adequate inhaled steroids at a minimum of 400mcg BD for severe asthma patients is recommended by the SA Pulmonology Society but this is prevented by the coding of drugs for general use in the Community Health Services Organisation. At present only a maximum of 100mcg BD is allowed to be prescribed. The National Essential Drugs List and Standard Treatment Guidelines for Primary Health Care also restrict the availability of inhaled steroids to a maximum of 200mcg a day[5]. Patients requiring more than this would need to be referred for a specialist opinion or prescribed oral steroids.

The specialist clinics would not cope with the number of referrals if all these severe asthma patients were referred and therefore the alternative is to prescribe oral steroids. The effects of this in the long-term are likely to include problems of hypertension, fluid retention, glucose intolerance, osteoporosis and other side effects which may negate the short-term financial savings. In addition, the money saved by restricting the use of inhaled steroids may be negated by the money spent in managing a large number of acute attacks. There is a need to motivate the Community Health Services Organisation and the Essential Drug Programme for a more helpful coding of asthma drugs which supports the appropriate treatment of asthma patients at the primary care level.

Many of the severe asthma patients are under-treated because they are not recognised as severe and they may have come to accept their poor control as normal.

The provision of alternative delivery systems for children and some adults is also important, at least in the form of a widely available spacer device. It is worth noting as well that the Essential Drug List does not include long acting theophyllines which this audit shows are a commonly prescribed medication.

Recent evidence suggests that long-acting theophyllines have an anti-inflammatory action and that they should play a more active role in treating asthma[6]. In addition, the clinic staff must be made aware of the appropriate minimum treatment required according to the SA Pulmonology Society Guidelines.

In the light of the poor clinic performance, it is not surprising that the target standards for outcome were not achieved.

There is a need to motivate the Community Health Services Organisation and the Essential Drug Programme for a more helpful coding of asthma drugs which supports the appropriate treatment of asthma patients at the primary care level.

Standards of Process	n	Result No	Result (%)	Standard achieved
The diagnosis should be recorded in the problem-list in 100% of all patients	148	105	71	No
More than 80% of the patients attending the clinic should have asthma as a diagnosis	148	120	81	Yes
Inhaler technique should have been recorded during the last year in 100% of asthma patients	120	79	66	No
Smoking status should have been recorded during the last year in 100% of asthma patients	120	63	53	No
A full assessment of asthma severity should have been made during the last three visits in 100% of asthma patients	120	59	49	No
Treatment of >80% of mild asthmatics should meet the recommended minimum requirements	28	28	100	Yes
Treatment of >80% of moderate asthmatics should meet the recommended min requirements	27	20	74	No
Treatment of >80% of severe asthmatics should meet the recommended min requirements	65	21	38	No

Table V. Audit results for the standards of process in the asthma clinic

References
1. Luyt D. *National Asthma Education Programme*. SA Respiratory Journal 1995; 1(1):6-7.
2. Danilewitz D. *The Management of Asthma in the '90s*. S Afr Fam Pract 1991;12:13-18.
3. *Guidelines for the Management of Asthma South Africa*. SAMJ 1992;81:319-322.
4. Lawrence M, Schofield T. *Medical Audit in Primary Care*. Oxford University Press 1993.
5. *South African Standard Treatment Guidelines and Essential Drug List for Primary Health Care*. Department of National Health, 1996.
6. Morris A. *The emerging anti-inflammatory role of theophylline in the treatment of asthma*. S Afr Fam Pract 1996;17:280-284.

More than half the patients (54%) were classified as severe despite receiving treatment, and the treatment itself was inadequate in 62% of the patients.

The number of referrals to hospital, while it meets the target standard set, may not reflect the true need for referral. The management of acute asthma attacks has not been audited, but it is suspected that the number of people who would warrant referral according to the guidelines for acute asthma is much higher than the number actually referred. Therefore, this result may be falsely reassuring.

The high number of patients attending for acute attacks also reflects the poor control and under-treatment of patients. Out of a total of 63 acute attacks eleven were experienced by mild asthma patients, twelve by moderate and 40 by severe asthma patients. This implies that some patients classified as mild or moderate by their peak expiratory flow may in fact be in a more severe category. The high number of acute attacks implies that the assessment of asthma severity may be an underestimate of the real picture.

The audit has wider implications for the Community Health Services Organisation. The question remains as to whether better care is offered by a dedicated asthma clinic or by seeing asthma patients within normal consultations. While the results of the audit show asthma care at present has many deficiencies within the dedicated clinic, it is expected that patients seen outside of a systematic approach will receive care of an even lower standard.

A comparative audit to examine this would be an area of further study.

Conclusion and recommendations

This audit demonstrates that the assessment and the care of patients with asthma attending the Khayelitsha Asthma Clinic is less than adequate. Shortcomings in the organisation of the clinic and the capacity of the clinical nurse practitioners and doctors are evident. Many of the clinical nurse practitioners have attended courses on asthma, but the impact on asthma care seems minimal. This may also indicate the need to build individual capacity and to look at whether or not the organisational culture encourages change and initiative.

Some of these shortcomings could be improved by applying the SA Pulmonology Society Guidelines for the assessment and the treatment of asthma by the re-organisation of medical records, by improved health education and by the introduction of an appointment system. The coding of asthma medications must also be addressed at a regional level in order to allow the minimum recommended dosages to be prescribed.

The audit process is a continuous cycle and this audit has provided a useful benchmark for comparison with future audits once the implications have been discussed and the necessary changes have been introduced into the asthma clinic. The audit has been a catalyst for change and improved teamwork at a primary care level. The audit has also highlighted areas of further study and contributed to broader debate within the Community Health Services Organisation on the best approach to asthma care. ●

Treatment	Severity of asthma		
	Mild n=28	Moderate n=27	Severe n=65
Inhaled beta 2 agonist [1]	28	27	65
Long Acting Theophylline	18	25	61
Inhaled steroid 400mcg/day [2]	9	18	33
Inhaled steroid 400mcg/day and low dose oral steroids [3]	1	0	4
Inhaled steroid 400mcg/day and high dose oral steroids	0	1	0
Inhaled steroid 800mcg/day	0	0	10
Inhaled steroid 800mcg/day and low dose oral steroids	0	0	4
Inhaled steroid 800mcg/day and high dose oral steroids	0	0	2
Low dose oral steroids	1	1	1
Inhaled sodium cromoglycate	0	1	0

[1] Either salbutamol or fenoterol [2] Beclomethasone preparations only
[3] Low dose refers to a maximum 15mg alternate day prednisolone and high dose to daily treatment of 10mg or more

Table VI. Treatment of patients in the asthma clinic

Standards of Outcome n=120	Result No	(%)	Standard achieved
<25% of patients should be assessed as having severe chronic asthma	65	54	No
<20% of patients should have attended the clinic for acute attacks during the last six months	36	30	No
<5% of patients should have been referred to hospital for acute attacks during the last year	4	3	Yes

Table VII. Audit results of standards of outcome for the asthma clinic