AN ASSESSMENT OF THE ADHERENCE TO GUIDELINES FOR THE MANAGEMENT OF ASTHMA EXACERBATIONS IN SELECTED PRIMARY HEALTHCARE FACILITIES IN THE WESTERN CAPE

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Abstract

Introduction: Asthma is described as a chronic inflammatory disorder of the airways. Recurrent episodes of "acute attacks" or exacerbation may occur in susceptible individuals. The onset of these episodes maybe associated with external stimuli such as cold or pollen. Asthma could be a controllable disorder and most people with asthma should be able to lead a normal, productive life if their asthma is managed effectively. A review of literature recommend that adherence to uniform guidelines on asthma management can reduce the frequency of acute attacks. Guidelines for the management of asthma have been implemented in health care facilities in the Western Cape for more than a decade.

Objective: The objective of this study was to investigate the extent to which doctors adhere to the prescribed asthma guidelines.

Method: Record review.

Participants: Forty records were reviewed.

Setting: The study was conducted at four Primary Health Care (PHC) centres in the Western Cape.

Intervention: A review of patient records was done to examine adherence to the implementation of the recommended guidelines.

Results: The results are in line with the literature which shows that adherence to the asthma guidelines is sub optimal.

Conclusion: It is recommended that authorities should regularly follow health care facilities to evaluate to what extend guidelines are adhered to and ongoing training should be given to make health workers aware of these guidelines.

Introduction

Asthma can be defined by three characteristics: reversible airway obstruction, bronchial hyper-responsiveness, and inflammation (Berkow, Fletcher & Beers, 1997:646). It is an inflammatory process characterized by the infiltration of the bronchial airways with eosinophils and neutrophils and the production of inflammatory mediators. Asthma is currently a global concern as it is a serious health problem. It is one of the most common chronic diseases globally and the prevalence is on the increase

(Wieringa, Vermeire, Van Bever, Nelen & Weyler, 2001:422).

It is estimated that asthma affects 300 million people worldwide (Ehrlich & Bourne, 1992:195; www.ginasthma.com). The increase in the global prevalence of asthma has been associated with an increase in atopic sensitization and the rate increases as communities become more urbanized. It is estimated that a 100 million more people will be suffering from asthma by 2025 (www.ginasthma.com). South Africa is ranked the 25th highest in the terms of asthma prevalence in the world with about 7.6% - 10% of the population suffering from some form of asthma (www.ginasthma.com). The prevalence in the Western Cape is even higher than the average and an incidence of 23.7% has been reported in the Table View area (Ehrlich & Bourne, 1992:196).

There is also an unacceptably high morbidity and mortality rate associated with asthma (Lalloo, Bateman, Feldman, Bardin, Plit, Irusen, & O'Brien, 2000:540). Worldwide deaths from asthma or asthma related complications have reached over 180,000 annually, one in every 250 deaths worldwide (Ehrlich & Bourne, 1992:195; www.ginasthma.com). South Africa has a high number of deaths in relation to asthma prevalence and is ranked the 5th highest (18.5/100 000 asthmatics) for the number of deaths from asthma amongst the five to 34 year old age group (www.ginasthma.com).

The Asthma and Allergy Society of South Africa motivated for the production of guidelines for treating adult patients with the belief being that a more uniform approach will ensure that the greatest number of asthmatic sufferers will be offered the most effective and affordable management of their condition (Bateman, Boushey, Bousquet, Busse, Clark, Pauwels, Pedersen & GOAL Investigators Group, 2004:836). However, the need for a standard approach to asthma management is evident in the escalation of this disease globally coupled with the belief of many researchers in this field, that exacerbations of asthma are poorly managed by attending medical personnel.

There is evidence that asthma exacerbation rates decline when care givers and clients follow guidelines (Bateman et al., 2004:836). Edmond, Woodruff, Lee, Singh & Camargo (1999:321) showed improvement in asthma sufferers when physicians used these guidelines. They showed a reduction in the admission rate and fewer episodes of exacerbation were recorded when the casualty officers followed a guideline based asthma program. South African Thoracic Society claims that "the majority of asthmatics can be managed optimally in a primary health care facility provided the elements of the asthma guidelines are accommodated" (Lalloo et al, 2000: 540).

A review done by Krym, Crawford and MacDonald (2004:321) indicated that despite evidence – based clinical practice guidelines for the emergency management of asthma, substantial treatment variation exist and that compliance with the said guidelines even at a university-affiliated tertiary care teaching hospital was sub-optimal. Variation in clinical practice is important because of its potential implications for patient outcomes and the potential cost of the

variations to the public, which is funding the health system (www.dh.gov.uk/assetRast).

Al-Jahdali, Al-Omar, Al-Moamary, Al-Duhaim, Al-Hodeib, Hassan and Al-Rabegi (2004:1208) stated that the national protocol for asthma guidelines was released in 1995 in Saudi Arabia. They found that treatment in emergency units does not comply with the national guidelines and failure to implement these guidelines probably resulted in the in adequate care that the patients received. A study done in Singapore found that there was good compliance to guidelines for the initial treatment steps but the second line treatment was less satisfactory (Mahadevan, Jin, Manning & Lim, 2002:419)

From the literature is it clear that adherence to asthma guidelines is an international problem. This further supports the researcher's interest to evaluate the adherence to guidelines in local casualty departments

Background

Asthma is a global concern and every year the world celebrates an international World Asthma Day on the first Tuesday of May. The theme for 2004 emphasized the problem that "asthma is a severe disease that is very common...it is preventable and treatable, with the correct use of 'preventer' and 'reliever' medication..." (Franks, 2004; www.ginasthma.com). Poor asthma management skills, under treatment with corticosteroids, limited knowledge and poor medical and nursing care is associated with the increase of asthma morbidity and mortality rate.

The first "official" guidelines for the management of chronic persistent asthma in South Africa have been published by the South African Pulmonary Society (SAPS) during 1992 (Acute Asthma Working Group of the SAPS, 1994:332). The aim of the guidelines was to encourage a standardized approach to the management of asthma exacerbations. It is now a decade later and South Africa still has the fourth highest number of deaths from asthma in the world despite the availability of published guidelines for the treatment of asthma.

As mentioned above, the SAPS guidelines have been implemented in the health services of the Western Cape for more than ten years. The researcher is not aware of any assessment by the health department or health facility to evaluate the implementation and adherence to the guidelines. The researcher felt that regular assessment to evaluate the adherence to the guidelines is necessary, because the staff turnover in the health facilities is high. A further rational for regular assessment is that the results can gauge the need for education and training of medical and nursing personnel on the guidelines in order to reduce avoidable asthma mortality, which may occur due to under treatment of asthma exacerbations.

The problem that has been identified is that even though these guidelines were available it appears that doctors do not adhere to the guidelines when they treat patients who present with and asthma exacerbation at the primary health care facility. A further problem is that there is also no strategic plan in place, locally or at provincial level to evaluate whether these guidelines are followed even though it is visible on the clinic walls.

Objectives

The overall aim of this study was to evaluate whether patients presenting to selected, public sector primary healthcare emergency units in the metropolitan area of the Western Cape, with exacerbations of asthma, were treated according to the guidelines set out by the South African Pulmonary Society.

The specific objectives of the study were:

- To evaluate to what extend doctors adhere to the guidelines for management and treatment of asthma. The specific objective of the record review were to determine whether the doctors meet the prescribed measured of standard set at eighty percent (80%) in specific selected categories on the check list.

- To make recommendations on how to ensure that guidelines are implemented and followed by health care givers.

Methods

A quantitative approach using a review of records was used to gain the information for this study. This method was chosen, as it is an acceptable method to assess if guidelines were adhered to. Audits are regarded as being directed at the maintenance and achievement of quality in healthcare and consist of the review and monitoring of current practice and evaluation against standards.

Sample population

The researcher chose four sites within the Metropole district of the Western Cape to be audited. These sites were chosen because each site had a dedicated asthma clinic as part of the primary healthcare service they provide. The study sample consisted of available patient records that met the inclusion and exclusion criteria. Thus a purposeful sampling method was selected. The data to draw the files was gathered from the names that were entered into a general admissions register in the emergency room. The researcher reviewed the admission register, which revealed the patient's name, folder number, the patient's age (only at one site) and a diagnosis (predominantly nursing diagnosis of "tight chest" and occasionally a medical diagnosis of asthma). The records of patients that were diagnosed as: asthmatic and / or having a tight chest and / or nebulised, were extracted for the audit reviewed. The records, which met the inclusion and exclusion criteria, were entered into the pool of records for audit purposes. From this pool, the first ten files were selected and the data contained therein captured for the purpose of this study. A total sample of 40 files, 10 from each site, which met the inclusion and exclusion criteria were audited.

Inclusion criteria

- Adults (ages between18 and 45 years: reason, increase in age, increases the airway hyper responsiveness and this appears to be associated with an increase in the rate of decline of lung function which may result in mis-diagnosis (Vergnen, 1992:190).

- Clinical diagnosis of asthma made by the attending medical officer, during this assessment or on a previous occasion as noted in the patient records

- All categories of asthma exacerbation (mild, moderate or severe) was included in the study as the asthma guidelines include management of all these categories.

- Patients who visited the site during the time period 01 June 2004 to 30 August 2004 (Time period of highest prevalence of asthma exacerbations in the Western Cape due to the seasonal environment).

Exclusion criteria

- Patients diagnosed with the following complicating medical conditions;
    - Chronic obstructive airway disease
    - Cardiac conditions
    - Sarcoidosis
    - Diagnosed carcinoma of the respiratory tract

Setting

Four primary health care facilities in the Western Cape situated in the Metropole district of the Western Cape.

Data collection and analyses

A pre-designed checklist was used to audit the records. The researcher reviewed every record that met the inclusion and exclusion criteria. Each patient visit was assessed as a separate entity. Thus if a patient visited the facility more than once in the specific time period, each visit was assessed as a unit of measure. The visit, which reflected the treatment the patient received during the medical management of the asthma exacerbation, was evaluated according to the treatment steps as contained in the checklist. The data of the visit was then transferred onto the checklist. Once a checklist has been completed, it was given a study number. The checklists were kept in a safe place until it was entered onto a spreadsheet for

analysis. The data was analyzed using Microsoft Excel 2000. Narrative description and bar charts were used to report on the descriptive results.

Ethical considerations

Written permission from the Director of Primary Healthcare Services of the region within which the Community Health Centres operates was obtained. Further written permission from the nurse and doctor in charge of each Community Health Centre selected as sites where the study was conducted were obtained. The title was registered and ethical permission to conduct the project was obtained from the Senate Higher Degree Committee of the University of the Western Cape.

Results

The aim of this study was to assess and to describe whether patients presenting to selected, public sector primary healthcare emergency units in the metropolitan area of the Western Cape, with exacerbations of asthma, are treated according to the guidelines set out by the South African Pulmonary Society. The researcher identified 23 critical actions from the check list that would be audited against the 80% adherence. An acceptable compliance would be if at least 80% of the critical items were adhered to 80% of the time.

The results will be presented in the sequential division as collected in the audit form:

- Initial assessment and treatment (contains steps relating to the initial assessment and treatment of the patient on admission)
- Review of vital signs during first two hours (contains steps relating to the

assessment of the patients vital signs during the first two hours after admission to treatment)

- Assessment of response to treatment (relates to the evaluation of the improvement of the patients vital signs after treatment given aimed at effecting a significantly positive change in the patients condition)

- Discharge home (relates to the prescribed discharge medication as well as contingency plans to achieve and maintain optimal health of the patient)

The youngest patient in the sample was 18 years of age and the oldest patient, 45 years of age with a mean age of 35 years of age. Twenty-four of the "units" folders were of female patients and 16 were of males. Medical history was recorded in less than half of the files (47.5% - 19/40). There was no difference (p = 0.423) between the PHC centres regarding the recording of a medical history. The clinic where history was recorded the most frequently was at CHC D (60% - 6/10) and the lowest was sites A & C (40% - 4/10). Not one of the clinics met the 80% standard of adherence. Two clinics showed that PEF was measured on admission (CHC B 70% - 7/10 and CHC C 60% - 6/10). PEF was not recorded in any of the patients at site A & D. Thus there was a significant difference in adherence between the sites (p = 0.0002). Only 32% (Site B and C) of the records showed that the PEF was measured, this is below the acceptable standard of 80%. Arterial blood gas was not recorded at any of the sites.

Eighty percent (8/10) at CHC A met the acceptable standard of 80% when the researcher evaluated whether high dose B_2 were administered at admission. An overall percentage of 62.5% (25/40) was achieved for this item on the checklist. There were no statistical differences between the groups (p = 0.410). There was no evidence in any of the folders that any of the patients received continued oxygen. Less than half (40% -16/40) of the patients received corticosteroids on admission. This difference were not statistical significant between the sites (p = 0.244). Only CHC A recorded that 60% (6/10) of the patients received corticosteroids. Not one of the sites met the 80% standard. Sedation was not administered to any of the patients. Thus the 80% standard was achieved as far as this item is concerned as sedation is contraindicated during an asthma attack.

Less than a third (30% - 12/40) of the patients' vital signs were monitored (recorded) at 15 and 30 minutes. Site C did record the vital signs in 60% (6/10) of the patients, but none of the patients' vital signs were recorded in site A. Thus there is a statistical significant difference between the sites (p = 0.035) and not one site reached the standard of 80%. Vital signs were recorded in very few patient folders (17.5% - 7/40) at 60 minutes. The highest was at site C where the vital signs were recorded in only 40% (4/10) of the patients. The difference were not significant (p = 0.108) as all four sites performed poor and not one reached the standard of 80%. Slightly more than half (52.5% - 21/40) of the records showed that a sustained response was recorded 60 minutes after the last treatment. Two of the site achieved above 50% (Site A, 70% - 7/10 and Site D, 60% - 6/10). The

difference was not significant and the 80% standard was not achieved at any of the sites.

Physical examinations were also recorded extremely poor at all the sites with an overall of 15% (6/40). Two sites did not record any physical examinations. Site D did record physical examinations in 50% (5/10) of their records. There was a statistical difference between the sites (p = 0.003) and not one site reach the 80% standard. Recording of the second PEF > 75% was just as poor in all the sites. Only 22.5% (9/40) of the records showed that the PEF was done after and hour. Site A and D had no recordings of re-evaluation of PEF. At least half of the records at site C showed that PEF has been re-evaluated (50% - 5/10). The difference between the sites did reach a statistical difference but despite the difference between the sites did not one site reach the 80% acceptable standard of practice.

More than half of the sites (57.5% - 23/40) did make a note on the level of distress experience by the patients. There was no difference (p = 0.958) between the sites and most of them recorded distress levels in at least half of the patients records. It is alarming that less than 50% (42.5 – 17/40) received a B_2 via MDI on discharged. At least 60% (6/10) patients at site B did receive this medication. There were no statistical difference between the sites (p = 0.584) and not one site reached the 80% standard. Even fewer received oral corticosteroids on discharge (30% 12/40). Site D prescribed oral corticosteroids to at least 50% (5/10) of their patients. This difference between the sites was not statistical (p = 0.414) as all of them had a poor adherence and not one reached above 50% adherence. Patient education regarding how to take the medicine, an action plan for relapse and information regarding the avoidance of precipitating factors were very poorly adhered to at all the sites. Very few patients received letters of referrals and not one patient received a PEF chart. It is clear from these results that the selected clinics evaluated during this study on 23 critical items, does not adhere to prescribe guidelines and that patients are not afforded the care prescribed and advocated by such guidelines.

Table 1. Adherence to guidelines according to checklist

		CHC A	CHC B	CHC C	CHC D	ALL	P value
1	History Taken by medical officer	4/10 40%	6/10 60%	5/10 50%	4/10 40%	19/40 47.5%	0.423
2	PEF	6/10 60%	0/10 0%	7/10 70%	0/10 0%	13/40 32.5%	0.0002
3	Arterial blood gas or SaO_2	0/10	0/10	0/10	0/10	0/10	
4	Inhaled high dose B_2 every 20 minutes for 1 hour	5/10 50%	7/10 70%	5/10 50%	8/10 80%	25/40 62.5%	0.410
5	O_2 to achieve $SaO_2 > 90\%$	0/10	0/10	0/10	0/10	0/40	
6	Systemic corticosteroid used	2/10 20%	5/10 50%	3/10 30%	6/10 60%	16/40 40%	0.244
7	Sedation is contraindicated	0/10	0/10	0/10	0/10	0/40	
8	Assess vital signs (e.g. pulse, resp, BP, PEF) at 15- 30min	6/10 60%	3/10 30%	3/10 30%	0/10	12/40 30%	0.035
9	Assess vital signs (e.g. pulse, resp, BP, PEF) at 60min	4/10 40%	1/10 10%	2/10 20%	0/10	7/40 17.5%	0.108
10	SaO_2 and other test	0/10	0/10	0/10	0/10	0/40	
11	Response sustained 60 min after last Rx	5/10 50%	6/10 60%	3/10 30%	7/10 70%	21/40 52.5%	0.319
12	Physical exam normal (vital signs stable)	0/10	5/10 50%	1/10 10%	0/10	6/40 15%	0.003
13	No distress	5/10 50%	6/10 60%	6/10 60%	6/10 60%	23/40 57.5%	0.958
14	$SaO_2 > 90\%$	0/10	0/10	0/10	0/10	0/40	
15	Continue inhaled B_2 – agonist via MDI	3/10 30%	4/10 40%	6/10 60%	4/10 40%	17/40 42.5%	0.584
16	Oral corticosteroid booster dose : prednisilone 40mg daily for 7 days after symptoms disappear	2/10 20%	5/10 50%	2/10 20%	3/10 30%	12/40 30%	0.414
17	How to take medicine	0/10	0/10	0/10	0/10	0/40	
18	Action plan for relapse	1/10 10%	0/10	1/10 10%	0/10	2/40 5%	0.550
19	Avoid precipitating factors	0/10	0/10	1/10 10%	0/10	1/40 2.55	0.379
20	Arrange medical follow – up	0/10	2/10 20%	2/10 20%	1/10 10%	5/40 12.5%	0.472
21	Letter to patient's doctor	0/10	0/10	1/10 10%	1/10 10%	2/40 5%	0.550
22	PEF chart	0/10	0/10	0/10	0/10	0/40	

Discussion

The researcher stated that "It is hypothesized that doctors treating asthma patients do not adhere to asthma guidelines in selected clinics in the Western Cape". The hypothesis is accepted as the results showed that the adherence was very poor and the acceptable standard of 80% was hardly ever reached.

Several international studies have been conducted to assess the method and degree of implementation of asthma guidelines. "Clinicians in general have not widely and consistently used asthma guidelines in their practices around the world" (Stanislaus, 2002:330). Sarrell et al. (2002:403) aimed at investigating the compliance of primary care physicians with clinical guidelines for asthma treatment, in Israel. The results revealed that 75% of respondents had read and consulted the guidelines but only 29% had participated in an educational program on asthma management in the last 12 months. Furthermore, 40% of respondents indicated that they had modified their treatment strategies after consulting the guidelines.

A study by Legorreta, Christian-Herman, O'Connor, Hasan, Evans & Leung (1998:464) in California, USA, aimed to compare the current status of asthma disease management among patients in a large health maintenance organization (HMO) with the NAEP (National Asthma Education Programme) guidelines and to identify the factors that may be associated with poor medical care. The results of the study indicated, "although the NAEP guidelines were published seven years ago, compliance with the guidelines was low. It was especially poor for use of preventive medication and routine peak-flow measurement. Furthermore, the results showed that asthma specialists provided more thorough care than did primary care physicians in treating patients with asthma".

A study conducted in Greece by Gourgoulianis et al. (1998:18), of which the purpose was to evaluate the extent of dissemination of asthma guidelines among primary health care physicians in that country concluded that considerable variation in the treatment of asthma was noted during the review of the management of asthma. The researchers recommended "better dissemination of guidelines among specialists and primary health care physicians will hopefully make asthma management optimal".

In Taiwan, asthma guidelines were published in 1995. A study was performed to assess the implementation of the guidelines. The two arms of the study focussed on reviewing medical records of 230 stable asthmatic patients cared for by 23 pulmonologists in four medical centers and face-to-face questionnaires to 246 asthmatic patients at the outpatient clinics. The conclusion of the said study was that "the adherence to asthma guidelines was sub-optimal for pulmonologists in the medical center". The researchers suggested that the poor adherence to asthma guidelines might have been "due to doctors' behaviour and patients' attitudes" (Kuo, 2002:1).

The results of our study showed that asthma exacerbations in primary healthcare centres in the Cape Town of the Western Cape are not managed according to the guidelines advocated by the SAPS.

The above studies support the conclusion that there is a lack of adherence to guidelines and that authorities must take steps to evaluate the implementation of policies or guidelines on a regular and ongoing basis.

History taken by medical officer

In our evaluation compliance to the guidelines ranged from 40% to 60% (mean 47.5%) regarding the initial process of admission and history taking of the patients. This is way below the 80% of standard acceptance of adherence. Similar results were find in a retrospective audit of 150 records in a hospital in Saudi Arabia where less than half of the doctors recorded the patients medical history or history related to the attack (Al Jahdali et.al., 2004:1208).

In contrast to the above, two studies show that when in service education is maintained medical officers tend to take a medical history. Milks, Oppenheimer and Bielory (1999:208) reviewed 181 records in a hospital in the USA and showed that history was documented 70% of the times. Even though this is better than our results it is still below standard. Montealegre, Chardon, Vargas, Bayona and Zavala (2004:472) did a review of 6002 records in hospitals in Puerto Rico and there results did meet the standard as they recorded that 82.2% records showed that the history was documented.

PEF

Initial measurement of PEF significantly differed at the four sites varying from 0% at two sites to 70% at one site and an overall adherence of 32.5%. Similar poor results were found to be of below standard in other studies such as Emerman, Cydulka and Skobeloff (1996:594)

who found that only 34% out of 416 questionnaires sent to doctors showed that they record a pre treatment PEF reading. Reid, Marciniuk and Cockcroft (2000:255) who reviewed 130 records in Canadian clinic found that the adherence were only 44%. Al Jahdali et al., (2004:1208) reviewed 50 records and showed that less than half of the patients had an admission peak flow rate recorded. Milks et al., (1999:208) in the USA found slightly higher results in that 64% of the 181 records that they reviewed showed that PEF was done.

The adherence can be improved by education as shown by Edmond et al. (1999:321) who did a before and after education study in two groups. Before the intense education only 20% of the 51 records showed that PEF was measured. This increased to an acceptable standard of 82% in the 145 records that were reviewed after the education program.

Arterial blood gas or Sa0$_2$

One can only assume that due to financial constraints at the CHC's there were no machines were available to do arterial blood gasses, which is an essential component of the evaluation of an asthma patient. Not one of the clinics did oxygen levels as per arterial blood gas in this study.

Inhaled high dose B$_2$ every 20 minutes for 1 hour

One of the sites reached an acceptable standard of 80% (CHC A) the overall percentage achieved was (62.5%) and the lowest adherence was at site B & C who both only achieved 50%.

Studies reviewed showed that adherences to administering B_2 inhalents vary between 50% and 97%. Mahadevan's et al. (2002:419) retrospective audit of 344 records showed that nearly all the patients (97%) received a B_2 nebuliser on admission. The acceptable standard of 80% was not reached in the Puerto Rico study where only 72.1% of patients received a B_2 nebuliser on admission (Montealegre et al., 2004:472).

0_2 to achieve $Sa0_2 > 90\%$

None of the records in this audit showed that the patients received oxygen via a facemask or a nose canulla. Saturation was also never recorded. Few studies report on the use of oxygen and Montealegre et al. (2004:472) showed that saturation was only recorded in 23.2% of the records.

Systemic corticosteroid used

The overall prescription of systemic corticosteroids was low in our review (40%). Seven studies reported on the use of systemic corticosteroids on admission. The results varies from as low as 46% in the USA (Milks et al., 1999:208), till as high as 84% in Puerto Rico (Montealegre et al., 2004:472). Mahadevan et al. (2002:419) in their retrospective audit of 344 records also found a 82% adherence as far as systemic corticosteroids are concerned. In a questionnaire survey among medical practitioners did only two thirds (75%) of them claimed that they do prescribe systemic corticosteroids to their clients on admission (Emerman et al., 1996:594). Other studies showed a lesser compliance to the administering of corticosteroids, 60% by Grant et al. (999:145s), 59% in Canada by Reid et al.

(2000:255) and as low as 46% in the study done by Al Jahdali et al. (2004:1208).

Sedation is contraindicated

This is the only criteria that were applied. According to the audit did none of the patients receive any sedation during admission. No evidence regarding sedation could be found in the literature search.

Assess vital signs (e.g. pulse, resp, BP, PEF) at 15-30min and 60 minutes

Simple basic recordings such as vital signs were very poorly done at all the sites. The overall percentage was 30% at 15 and 30 minutes and 17.5% at 60 minutes. This is extremely worrying as it directly shows that the nursing care these patients received is far below normal acceptable nursing care standards.

Response sustained 60 min after last Rx

Only half (52.5%) of the medical practitioners went back to reassess their patients to evaluate if the patient had responded to the treatment and sustained an acceptable respiratory status.

Physical exam normal (vital signs stable)

Similar to the findings of Reid et al. (2000:255) who stated that physical examinations were done infrequently on patients was the physical examinations in the review hardly ever done (15% recorded).

PEF > 75%

Not only do medical practitioners not return to their patients to assess whether they responded to treatment or to record their vital signs but also do not do another PEF evaluation (22.5%).

Evidence from literature show this is done poorly in other sites as well. Al Jahdali et.al. (2004:1208) had an adherence rate as low as 29% and Emerman et al. (1996:594 416) as low as 38%.

No distress

More than half (57.5%) of the records showed that doctors do record the level of patient distress to enable them to make a proper diagnosis of the grade of the asthma attack.

Continue inhaled B_2 – agonist via MDI

Although 62.5% recorded that they do administer B_2 nebulisers to the patients on admission did only 42.5% valued the need to prescribe a continuation of the medication via a MDI.

Oral corticosteroid booster dose prednisilone 40mg daily for 7 days after symptoms disappear

Oral corticosteroids on discharged were poorly prescribed. The review showed that only 30% of the patients went home on oral corticosteroids. This is in contrast with literature which shows that medical practitioners generally adhere to this criterion. Three studies reported on this criterion and two had an acceptable standard of above 80% of adherence. Gervais Larouche, Blais, Fillion and Beauchesne (2005:219) reported a 95% adherence and Mahadevan et al. (2002:419) reported a 94% adherence. The third study showed a slightly less adherence of 75% (Emerman et.al.,1996:594).

Education

How to take medicine, Action plan for relapse, Avoid precipitating factors, Arrange medical follow – up, Letter to patient's doctor.

There was no evidence in any of the records that patients were educated on how to take their medication. Only 5% of the records showed that doctors discussed action plan with patients in case they would experience a relapse. Only 2.5% of the records showed that patients were informed to avoid precipitating factors. Medical follow up visits were arranged in 12.5% of the records and referral letters were written in 5%. Not one of the patients had a PEF chart.

It appears that patient education is not well recorded in any of the studies in the literature. Gervais et al. (2005:219) showed that only 8% of their patients received a management plan at discharge and that a medical follow-up was recommended in only 60% patients. Al Jahdali et al. (2004:1208) also showed that 64% of their patients were given follow up appointments.

Follow up plans on how to deal with a relapse was also poorly recorded in other sites according to the literature. Reid et al. (2000:255) in their study in Canada and Grant et. al.(1999:145s) in Chicago showed that specific follow up plans were infrequently documented and the records showed that only 37% and 47% respectively received information regarding follow up plans.

Doctors are also reluctant to refer patients to specialist or for follow up visits. Only a third (32%) of the records reviewed by Milks et al. (1999:208) showed that patients were referred to specialist for follow up appointments. Montealegre et al. (2004:472) had a slightly better (64.8%) follow up appointment rate but the referrals were low (5.3%).

Conclusion

Oxygen is available at all the sites. The most disturbing phenomena where that in not one of the records were there any evidence that oxygen therapy was administered to patients even though the asthma guidelines prescribe oxygen therapy to achieve oxygen saturation > 90% as a first line treatment for an asthma attack. A Beta 2 stimulant via MDI or nebuliser was given to the patients in most instances but the dosage interval of every 20 minutes for one hour was completely ignored. Observations were extremely poor, even in the absence of oxygen saturation, at least a PEF measurement, blood pressure, pulse or respiratory rate to confirm respiratory sufficiency should have been recorded. The discharge of patients was as poorly recorded and presumably performed as the admission of the patient. Health education as a tool in eradicating disease was scarcely applied when discharging patients from treatment for acute exacerbations. It is thus clear from this data that medical practitioners do not adhere to the prescribe asthma guidelines.

Recommendations for practical implications

The presence of poor asthma management treatment indicators as derived from the results is indicative of the fact that non-compliance to asthma guidelines still prevails in many primary healthcare centres, and therefore still constitutes one of the most significant attributes to poor asthma control in South Africa today. It is also clear that there is a dire need for structured and co-ordinated guidelines awareness programmes to be implemented, if any attempt at resolving this problem is to be made.

From the research, several elements have emerged, which may assist in informing the nature of such interventions. At a discursive level, the ill application of asthma guidelines, contributes to the perpetuation of a poor approach to asthma management and ultimately the inability to reduce morbidity and mortality associated with asthma. Any intervention would therefore have to pose alternative discursive practices to this significantly poor practice, given that one of the primary objectives of the global strategy for asthma is to acknowledge this disease as a serious global health problem with a significant burden not only in terms of health care costs but also of lost productivity and reduced participation in family life.

At the level of non-discursive practices, it is also apparent from the study, that individual approaches to asthma management could exacerbate the degree of non-compliance to asthma treatment by both medical personnel and patients, if the scientifically approved guidelines are not implemented in a "carte blance" exclusive manner. Rather, implementation of the asthma guidelines on the basis of uniformity, appears to be a more viable and equitable approach to redressing historical poor practice in asthma management.

Asthma management interventions should also focus on continuous education of medical personnel, as a broader limiting issue, which permeates most of the entire medical environment in primary healthcare, centres, rather than assuming that the mere dissemination of the guidelines suffices the need for updating medical personnel on new trends in asthma management. Allowing the current

trends in asthma management to continue unchallenged, would result in a defeat in the battle to control asthma, optimally.

Even though the proposed asthma education programmes should be geared towards all sectors and layers of healthcare providers, the research tends to indicate that one of the less receptive areas of healthcare delivery could potentially be the primary healthcare centres. This is partly because of the absence of pulmonary specialist at these centres coupled with a general lack of enforcement of guidelines by standards commitees (if any).

Recommendations for future research

Three main areas emerged from the study with regard to the implications for future research. Firstly, the contention that record keeping principles are poorly applied in CHC's deserves further investigation. Record keeping at the research sites was appalling. Inscriptions were not dated, some without signatures, some illegible, some not filed in chronological order and most of all missing information, which could directly imply that it was not done. The internalisation of the importance of adequate record keeping would not only have significant consequences for the management of asthma, but also on any attempts to promote a transition towards a professional culture of good information management.

Secondly, the dosage and route of the administration of medication must be investigated. The indirect outcome of the research suggested that there exist a vast difference in the use of medication in the different centres and further more between the different medical practitioners. Evidence hereof is the variations in the dosage of medications e.g. the dosage of Beta 2 stimulants in combination with saline (Beta 2: saline) ranged from 1:3, 2:2 to 1:4. The prescription of a short course of oral prednisone in terms of the guidelines is 40mg daily until seven days after the patient's symptoms subside. In practice, prednisone is prescribed as a 40mg daily dose for five to seven days.

Lastly, in line with the idea of not problematising the phenomenon of poor compliance to asthma management guidelines in the public sector of the Western Cape and in particular, primary CHC's, it would be useful to explore whether this problem is as prominent in secondary and tertiary healthcare settings as well as in the private healthcare sector. This would allow for the development of a more holistic perspective, with which to understand the reasons for poor practices amongst healthcare providers, and would also contribute to more effective and more informed asthma education interventions.

Summary

As the South African Pulmonary Society guidelines are national guidelines, there should be no "scientific" reason why variations in treatment exist. It is easily deducted from the literature reviewed during this research process that the aim of providing medical treatment to asthmatic patients is to offer the patient the best possible care. It appears that the aim of the SAPS is to create such a platform by providing medical personnel with a step by step approach to managing asthma. This initiative could be advanced in a collaborative effort by both the government and private sectors on provincial as

well as local levels through establishing problem-based workshops and case-based reviews. Specialist physicians and specialist nurses can complement these efforts by conducting teaching rounds at lower level facilities/units/wards. Continuous medical education should focus on the practical day-to-day issues relating to the management of asthma patients, i.e., appropriate and early diagnosis, commencement and maintenance of stabilising-treatment and appropriate referral protocols.

Specialist to whom these patients are referred should give feedback on referrals from primary and secondary healthcare institutions. Opinion leaders in the field of asthma should be engaged to document and review the treatment administered to the patient prior to their intervention. This form of documented review could be used to demonstrate poor and best practices and so doing alert medical personnel to deficiencies in treatment of the asthmatic patient.

This study did not investigate the effect of non-compliance to asthma guidelines, on patient outcomes but identified the degree of poor compliance, which would logically relate to less optimal patient outcomes. There is thus a need for further study to evaluate the effect of non-compliance to the guidelines on patient outcome. Ongoing audit and reviews by all stakeholders, including but not limited to, the South African Pulmonary Society, specialist academic pulmologist, nurse educators and government quality "assurers", may add significant value to the aims of the pulmonary society in managing asthma "most appropriately".

In conclusion the reader is alerted to the fact that there is no cure for asthma at this point in time. A significant portion of our communities lives with the threat of a debilitating asthma attack to themselves, their families or their friends. Even though we do not know how to eradicate the asthma disease completely, we do know how to manage it optimally. Our immediate challenge is thus not one of "ridding" our communities of asthma, but one of working together to control it more effectively.

The management of asthma remains suboptimal in selected clinics in the Western Cape despite the implementation of recommend SAPS guidelines a decade ago. Failure to implement asthma guidelines probably results in inadequate care of asthmatic patients and raises the urgent need for a national education program.

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