

1999 REVIEW PLAN

ASTHMA

1.0 TASK RATIONALE

Asthma, a common chronic disease of children and adults, should rarely lead to hospitalization if managed properly. Yet, it is a frequent cause of emergency department (ED) visits and a prominent cause of hospitalizations in the United States. For this reason, the DoD Military Health Service (MHS) chose the management of asthma as one of the clinical topics to be studied in the 1999 NQMP Special Studies.

The current study is the third review of asthma management in the Military Health Service. The previous reviews only included children (< 18 years of age) and focused on adherence to national guidelines (National Heart, Lung, and Blood Institute, NHLBI) in the treatment of pediatric asthma. The current study will also include the adult asthmatic population because asthma is a chronic disease that may have a significant impact on a patient's health as well as increase utilization of the healthcare system. An estimated 14 million Americans are afflicted with asthma, at a cost of \$ 6.21 billion per year. More than one-half of the direct costs are due to hospitalizations and ED visits.

The earlier two pediatric Asthma Reviews showed that asthma patients experienced delays from ED presentation to both the first bronchodilator treatment and the first corticosteroid treatment. The delays were associated with adverse outcomes including a higher than expected rate of hospitalization. The 1999 Asthma Review will focus on the outpatient management of asthma among a high-risk group of patients. Patients will be identified as high-risk on the basis of hospitalization for asthma-related respiratory distress during the preceding two years. High-risk patients are believed to be those most likely to benefit from adherence to practice guidelines.

2.0 STUDY GOALS

The goal of the 1999 Asthma Review is to evaluate the quality of asthma patient care management. It is a continuation of previous Asthma Reviews with the addition of patients over 18 years of age and a change in focus to the ambulatory setting. The Review will consist of two separate but related phases. Phase I will assess the feasibility of obtaining reliable and complete ambulatory asthma data from DoD ambulatory databases and the availability of outpatient medical records. It is anticipated that the information collected on patient characteristics, therapy compliance with guidelines, and outcomes will become the baseline for any further study of asthma in the outpatient setting.

Phase II will assess quality of care as measured by adherence to national guidelines for patients treated in outpatient clinics of selected MTFs.

The objectives of Phase I, the Feasibility Study are to:

- Identify the data required (e.g., medications, radiology, laboratory data) in order to conduct a valid study of asthma;
- Determine the availability and completeness of such data in the DoD ambulatory databases, including the Standard Ambulatory Data Record (SADR) and CEIS-IDBs;
- Determine the availability and completeness of medical records at clinics and MTFs for a cohort of high-risk asthma patients;
- Describe variations among sites as well as levels of effort involved in obtaining these records;
- Describe any characteristics or demographic differences between patients with and without available medical charts;
- Develop a list of specific variables for use in asthma studies that can be reliably and consistently collected from DoD databases and charts.

The objectives of Phase II, the Quality of Care Study are to:

- Document compliance with the national standard for the care of asthma patients;
- Evaluate outpatient management of asthma by measuring practice patterns and clinical outcomes including functional status, symptom-free days, quality of life, resource utilization, hospitalization rate, and ED visit rate;
- Determine the association, if any, between outpatient care, hospital admissions and patient quality of life.

2.1 STUDY LIMITATIONS

This study is subject to a number of limitations. The most important limitation is the ability to monitor the population using the current DoD ambulatory data systems. Patients presenting as clinic and ED patients will need to be identified accurately and completely in order to accurately characterize outpatient management. In addition, information regarding testing, treatment, and medications will be needed to evaluate practice patterns. The SADR has not captured CPT codes completely in the recent past, and these are required to complete the study.

We will be using clinical follow-up assessments to identify functional status and impact of therapy on patients. The study is potentially subject to bias arising from selective responses. We have found that respondents tend to be older and of higher rank than non-respondents. We will attempt to control for this bias in the analysis, modeling, and presentation of study results.

3.0 PROJECT DESIGN

3.1 Development

Development activities will include several steps:

- 3.1.1. Develop sampling and analytic plans;
- 3.1.2. Identify clinical and health outcome measures, and processes of care relevant to asthma;
- 3.1.3. Revise the comprehensive data dictionary to capture patient characteristics, severity of disease, treatment processes and interventions, outcomes, and resource utilization relevant to outpatient management of asthma;
- 3.1.4. Revise the facility information form to include information about existing critical pathways addressing asthma, educational support programs, case management efforts, and staffing patterns;
- 3.1.5. Select a standard, validated outpatient clinical follow-up questionnaire, specific to the asthma population, and that includes questions on functional status, symptom-free days, quality of life, and medication use.

3.2 Population and sample

Both phases of the 1999 Asthma Review will be based on a cohort of high-risk asthma patients. High-risk patients will be defined as any with inpatient admissions during calendar years 1996 and 1997. We will identify all inpatients with principal asthma ICD-9-CM diagnosis codes (i.e., 493.00 to 493.91) or a principal diagnosis code of 518.81 (respiratory failure) with a secondary diagnosis of 493.91. Cohort members will be those high-risk patients aged over 5 years and enrolled in Tricare Prime between January 1, 1998 and December 31, 1998. The DoD databases will be searched to identify all asthma-related visits (involving a principal or secondary diagnosis of asthma) between January and August 1998. The eight month time period will allow for the identification of management activities carried out on a semiannual basis. In particular, it will enable identification of preventive management carried out prior to the onset of the heavy asthma season (September to December).

Approximately 25 MTFs with Emergency Departments, including the eleven MTFs studied in the 1997 and 1998 reviews will be selected. All branches of the service and all types of facilities (i.e., medical centers and community facilities) will be represented. Records for all cohort members selecting these facilities as primary care managers will be sought electronically through SIDR, SADR and CEIS-IDs. In addition, all asthma-related outpatient records referenced by these electronic sources will be sought for medical record abstraction.

3.3 Metrics

Quality indicators for the care of asthma patients will include adherence to NHLBI guidelines as well as standard outcome measures. The following are metrics that will be studied, pending the data quality assessment of Phase 1:

- Outcome measures including the following:
 - Functional status
 - Symptom free days
 - Peakflow

- Asthma-related symptom occurrences: breath-limiting attacks and night-time symptoms
 - Quality of life
 - Hospitalization rate and ED visit rate
- A Compliance Index calculated for each patient and based upon adherence to guidelines focused on (unless otherwise stated, denominator is patients with abstracted medical records):
 - High-risk patient received at least one asthma-related visit (denominator is all high-risk cohort members)
 - Use of objective measures of pulmonary function such as spirometry and Peak-flow Meter
 - Prescription of severity-appropriate short- (acute) and long- term (chronic) medication
 - Provision of patient education
 - Action plan documented
 - Triggers addressed in history
 - Environmental control addressed
 - Allergy tests for moderate/severe asthma
 - A relative cost measure, developed for each MTF that includes the frequency of tests and procedures as well as inpatient admissions and ED encounters to assess cost variations.

3.4 Data collection

A data dictionary for manual record abstraction will be designed that consists of items that reflect the NHLBI guidelines, well established risk factors, patient outcomes, and utilization measures.

- The data collected will include information about:
- Socio-demographic information
 - Medical history, including presenting signs and symptoms, chief complaints, and patient risk factors
 - Physical examination findings, particularly lung function
 - Laboratory, radiology, and other test results
 - Treatment modalities
 - Documentation of patient education
 - Discharge status
 - Health outcomes

A standard, validated outpatient clinical follow up questionnaire specific to the asthma population will be sent out to patients with at least one visit in the outpatient

setting in order to capture patients' functional status, symptom-free days, and quality of life. The questionnaire will address patients' recent health status (ie., the past 2 weeks). A facility characteristic form will be used to collect information on staffing patterns and other items.

Data will be entered in custom designed software by trained data abstractors. Data will be collected from a number of inpatient and outpatient sources e.g. ED medical records and outpatient medical records. Data (e.g. CPT codes) will also be electronically captured from DoD databases.

3.5 Analysis

The data will be analyzed using statistical and epidemiological techniques to produce reports that are scientifically sound and appropriate for the outcomes in question. All data will be statistically and clinically analyzed to determine relevant patient risk factors and their association with selected patient outcomes. The completed report will include a detailed analysis of compliance to NHLBI guidelines at both the Service and MTF level. The study will test the hypotheses that increased guideline compliance is associated with better patient outcomes and lower cost. In addition, descriptive information will be provided for the feasibility study, assessing the availability and completeness of data in the outpatient setting. Based on this information, recommendations for future studies, database usage and reliable variables will be made. An outline of the proposed methods follows:

Unit of Comparison

- Military Service
- Hospital Type
- Region
- MTF
- Records available/missing

Stratifiers/Risk factors

- Severity of disease
- Triggers
- Age
- Comorbidities

Statistical Methods

- Comparison across administrative units of rates for availability of data items, electronic and outpatient medical records
- Stratified calculation of metrics
- Comparison of demographics, utilization and outcome based on availability of medical records
- Comparison of rates by anova, chi squared test
- Life table analysis of time to hospitalization
- Poisson, logistic and duration modeling of hospitalizations

- Tests of association – individual metrics and overall compliance index with log costs, hospitalization and other outcomes, using regression, rank order correlation

4.0 REPORTING

The 1999 Asthma Review will present results in the form of special reports. It will include analytical reports on the adherence to national guidelines. It will also include descriptive reports that provide insight into the quality of the ambulatory databases available as well as an evaluation of specific data that can be reliably obtained from electronic databases and/or medical records for future studies. In addition, the review will include reports describing the characteristics of the review cohort and therapy. It will analyze initial assessments, compliance to NHLBI guidelines, functional status, quality of life, and utilization of resources.

Schedule

Deliverables	Time
Quality Management Review	September 30, 1999
Clinical Practice News Release	
Ad-hoc Reports	As requested
Minutes of significant meetings	Within 20 working days of meeting