EVALUATING QUALITY MANAGEMENT OF ACUTE LOW BACK PROBLEMS PROVIDED BY AIR FORCE NURSE PRACTITIONERS

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ABSTRACT

Providing appropriate quality health care is essential to the management of patients with acute low back problems (ALBP). In 1994, the Agency for Health Care Policy and Research (AHCPR) published clinical guidelines to assist health care providers when managing acute low back problems in adults. The concept and acceptance of clinical practice guidelines evolved from the necessity to minimize aberrant, ineffective clinical approaches, conserve financial costs, and preserve the quality of health care. There is currently no data available on the adherence of published guidelines in the military or by nurse practitioners. The purpose of this study was to evaluate the clinical practice techniques implemented by Air Force Nurse Practitioners (AFNPs) in the management of ALBP based on AHCPR Clinical Practice Guidelines No. 14. A survey was distributed to 143 family, adult, and women s health nurse practitioners in the United States Air Force. Sixty-four percent of the 57 returned surveys were valid. The survey contained questions focusing on the three key elements specific to the AHCPR guidelines: initial assessment techniques, clinical care methods implemented, and special studies and diagnostic considerations. The overall score of compliance to the AHCPR guidelines was 52.3 %. The knowledge gaps revealed in this study on the management of ALBP in adults by AFNPs is substantial. It is suggested that the AFNP become familiar and implement the guidelines established by the AHCPR to improve their management of patients with ALBP. Adhering to the recommendations based on evidence and expert consensus will ensure quality health care delivery.

Key Words: nurse practitioner, advanced practice nurse, military, United States Air Force, AHCPR Clinical Practice Guidelines, acute low back problems, quality health care

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PREFACE

The Agency for Health Care Policy and Research has released numerous clinical practice guidelines. This study was conducted to evaluate the implementation of its guideline for the management of acute low back problems of adults in a military medical setting. Adhering to the AHCPR guideline reflects quality health care delivery.

DEDICATION

I dedicate this thesis to Margaret M. McNeill and Venita I. Sampson. Both are exceptional examples of military medical professionals. They were able to recognize qualities which I possessed before I was able to acknowledge them myself. They helped me to discover my true potential. Each one encouraged me to excel in a variety of new and enhancing challenges. I owe my recent professional accomplishments to these two military nurses, who had the insight and cared enough for their subordinates to push them in the direction necessary to succeed.

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CHAPTER ONE: INTRODUCTION

Background

Providing appropriate quality health care is essential to the management of patients with acute low back problems (ALBP). In the United States, 80% of population will suffer from at least one episode of acute lower back pain (Jones, 1997). In 1990, ALBP was the fifth most common reason for visits to primary care clinics (Hart, Deyo, & Cherkin, 1995) and in 1997, it ranks second only to upper respiratory infections (Jones, 1997). The incidence is rising nationally as evident by the dramatic increase of occurrence over a brief period of time.

Eight to twenty billion dollars is spent annually on acute low back problems in the form of medical costs and lost wages (Jones, 1997). The indirect costs associated with acute low back problems are reflected in disability compensation and lost productivity. These costs may total over $100 billion annually (Cherkin, Deyo, Wheeler, & Ciol, 1994). ALBP is the most common cause of disability for those under the age of 45 (Bigos et al., 1994a) and the number of claims are increasing. It is difficult to accurately estimate the total cost nationwide since some studies are reporting a possible relationship between depression and those with symptoms of acute low back problems (Jones, 1997).

National statistics of acute low back problems suggest a nationwide problem, therefore it is currently plausible to assume a similar prevalence in the United States Air Force (USAF). According to Major S. Hall, Senior Health Services Researcher, USAF (personal communication, May 5, 1998), a metric is currently under design to delineate the cost and number of duty days lost to the Air Force as the result of back problems. Captured information was previously reported as Diagnosis Related Groups (DRG s) codes, which collectively grouped all back problems or associated them with neck ailments. The

International Classification of Diseases 9th Revision Clinical Modification (ICD.9.CM) (National Committee on Vital and Health, 1989), codes each individual back problem and this classification system has been implemented by the USAF. The conversion to the ICD.9.CM codes will better isolate the problem of acute low back problems from all other types of back ailments, therefore allowing specific quantification of prevalence and cost to the Air Force.

In addition, other national statistics indicate that 80% of the patients presenting with acute low back pain have no discernible cause and, most people recover in 2-7 weeks with or without medical intervention (Jones, 1997). The recovery rate of acute low back problems to the level of being able to tolerate normal activities is approximately 90% within one month (Bigos et al., 1994a). Previous reports cite variations in the treatment of low back pain and express uncertainty regarding optimal treatment interventions. High medical cost associated with back pain has been attributed to the costly diagnostic tests such as computed tomography (CT) and magnetic resonance imaging (MRI). There has been considerable controversy over which tests to perform and when they were appropriate. Since most episodes of acute low back problem will resolve with minimal intervention, it is essential that clinical practice guidelines assist the provider in identifying serious disease processes and promote proven interventions (Little, et al., 1996). In 1994 (Bigos et al., 1994 a), the Agency for Health Care Policy and Research (AHCPR) published a clinical practice guideline to provide information to assist the practitioner in making appropriate decisions in managing acute low back problems in adults.

There have been relatively few studies conducted evaluating the adherence of published guidelines in practice. A study conducted in England sought to compare the actual practices of general physician practitioners in managing acute back pain recommended by

published guidelines. The researchers measured reported activities against clinical practice guidelines published by the Quebec Task Force (Spitzer, Le Blanc, & Dupuis, 1987), Britain s Clinical Standards Advisory Group (Clinical Standards Advisory Group, 1994), and the AHCPR Clinical Practice Guideline (Bigos et al., 1994a). Results determined that compliance to the guidelines was lacking and the authors recommended further research in general practice areas where acute back pain is managed (Little et al., 1996).

The use of nurse practitioners in the United States Air Force has increased in recent history with the effort to conserve medical costs in the military. Air Force Nurse Practitioners (AFNPs) are acting in the role of primary care providers and may be the only contact for patients with acute low back problems in the military medical system. It is therefore critical that the AFNPs deliver the highest quality of care as it relates to patients with ALBP. The AHCPR Clinical Practice Guideline Number 14 (Bigos et al., 1994a) is a method to insure this goal.

Statement of the Problem

Published data is currently lacking in the evaluation of nurse practitioners adherence to AHCPR s Clinical Practice Guideline Number 14 (Bigos et al., 1994a). There is no evidence of research conducted questioning the military nurse practitioner on this issue. The purpose of this study was to examine the use of the ALBP guideline as reported by Air Force Nurse Practitioners.

Research Questions

1. To what extent do Air Force Nurse Practitioners assess acute lower back problems in accordance to the acute low back problem guideline?

2. To what extent do Air Force Nurse Practitioners adhere to the three goals of the acute low back problem guideline in the application of clinical care methods?

3. To what extent do Air Force Nurse Practitioners follow the acute low back problem guideline when considering the implementation of special studies and diagnostic considerations when acute back problems persist for greater than one month after intervention?

Conceptual Framework

The conceptual framework for this study was contingent upon the delivery of quality health care. Clinical practice guidelines have been developed to provide a working framework for health care providers to ensure that all patients receive quality health care. Reputable guidelines provide an analytical foundation for medical intervention and the ability to measure the effectiveness of health care outcomes.

The foundation for defining quality health care was laid by Donabedian in 1966. He stated that a balance exits between the actual benefit and the harm instilled upon the patient resulting from medical intervention (Bergman, 1995). Donabedian does not address the concept of life progression or the dynamic interaction between provider and patient. Both concepts are critical issues in today s medical care.

In the past, attempts to define quality health care lacked usefulness in clinical application. A report by Buck (1992) published in March of 1990, the Institute of Medicine (IOM) presented a definition of quality health care addressing the optimal definition components. Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (p. 260). The definition developed by the IOM demonstrates an effort to clearly define what quality health care is. Buck also states that this definition involves:

1. a more inclusive, integrated focus (health care services);
2. the ability to support consideration of patient-provider interaction and the decision-making process inherent in broader health status and quality-of-life matters (desired health outcomes); and,
3. the recognition and emphasis that options and armamentarium for the provision of health care may change with time (current professional knowledge) (p. 260).

The IOM (Buck, 1992) definition of quality health care adopts a dynamic approach in an attempt to quantify the ever-evolving practice of medical care. The complexity of health care delivery due to the expanding advent of medical specialties and the advanced presentation of the disease process requires an integrated focus. This approach will ensure adequate and comprehensive utilization of all available services. Patients are better informed and more knowledgeable of their health status, therefore, their desires need to be considered before implementing medical interventions. Advancing technologies and new medical discoveries occur each passing day requiring timely implementation once efficacy and safety have been established.

Various methodologies are currently being identified and refined to better manage quality health care. One example is the evolution of guidelines (Buck, 1992). Clinical practice guidelines, are optimal care specifications that provide an analytical framework for defining high-quality care and measuring health care outcomes (Bergman, 1995, p. 831). They serve as the basis for customizing clinical strategies in specific medical settings. Quality insuring guidelines should be accurate, accountable, defensible and easy to use. The IOM (Buck, 1992), in an effort to reduce variability in the development of clinical practice guidelines, has outlined an optimal process in guideline development. The potential to improve quality of health care through the development of guidelines needs to be based on a

panel of expert clinicians and grounded in scientific evidence. Integrating both the evidence and expert consensus-based approach allows for experts to fill in the gaps where scientific evidence is insufficient (Wall, Susman, Hagen, & LeFevre, 1994).

Quality assuring clinical practice guidelines should be developed based on specific principles to allow for flexibility in clinical application and so that the majority of clinical practice outcomes are known. Numerous steps are involved in the developmental process to ensure achievement of these ideals. First, the clinical problem is precisely defined and the specific population of the guideline is identified. Second, potential outcomes resulting from proposed clinical guideline interventions should be clearly stated. The patients view of desirable outcomes should also be addressed. Third, estimates on the effect of stated interventions should be made based on scientific evidence. Next, the guidelines need to include an estimate of how outcomes may differ between varying patients. Finally, an estimate should be attempted in stating the degree in which each possible outcome is desired by the patient (Wall et al., 1994). The method of developing quality assurance clinical practice guidelines is rigorous and thorough; hence, it is both a time-consuming and expensive process (Bergman, 1995). This complex process allows for the acceptance of only reputable published guidelines for the basis of evaluating quality health care.

In 1994, the Agency for Health Care Policy and Research (AHCPR) published Clinical Practice Guideline Number 14: Acute Low Back Problems in Adults (Bigos et al., 1994a), in compliance to the stated developmental components. The AHCPR has dedicated at least two years and several hundred thousands of dollars in the development of each of its guidelines (Wall et al., 1994). An expert panel of 23 individuals was selected based upon their knowledge regarding low back problems, major clinical disciplines involving back care, and geographic diversity. The panel initiated a comprehensive literature search and

evaluated 3,918 articles (Bigos et al., 1994a). This extensive process satisfied both evidence and expert consensus-based approaches.

Flexibility in clinical application and practice outcomes are described in the AHCPR s clinical practice guideline. The published document explicitly states components of the problem and what patient population can be appropriately managed by their methods. The three key elements of clinical approach, initial assessment, clinical care methods, and special studies and diagnostic considerations, are explained in detail. The evidence of efficacy for each clinical approach is divulged by presenting pertinent data for each key element. The panel established a rating scale to represent the potential of the advised method of assessment and treatment to achieve the intended goals. This collective judgment interpretation was weighted against potential harm and costs (Bigos et al., 1994a).
The initial assessment consists of a focused medical history and physical examination to identify potential serious underlying spinal conditions called red flags or nonspinal conditions warranting referral. In the absence of a referral-based diagnosis, clinical care interventions can be implemented. The goals are to educate the patient, assist with symptomatic relief, and prescribe appropriate activity recommendations. Diagnosis reevaluation is recommended if limiting back symptoms persist beyond one month after initial clinical care interventions. Red flag and nonspinal conditions need to be ruled-out, then special studies and diagnostic considerations are advised (Bigos et al., 1994a).

Definition of Relevant Terms

Air Force Nurse Practitioner (AFNP)

A nationally certified nurse practitioner in the United States Air Force serving in any of the following specialties: family, adult, or women s health care.

Acute Low Back Problems

Activity intolerance of less than three months duration, due to low back pain and/or back-related leg symptoms of a patient no younger than 18 years of age (Bigos et al., 1994a).

AHCPR Clinical Practice Guidelines

Clinical practice guidelines, provide a representation of the most current medical knowledge in an action-oriented format that is easily used by the (provider) (Bergman, 1995, p. 833). The AHCPR clinical practice guidelines are, systematically developed statements to assist practitioner and patient decisions about appropriate health care (Bigos et al., p. ii, 1994a).

Red Flags

Serious underlying spinal conditions such as fracture, tumor, infection, or cauda equina syndrome (Bigos et al., p. 1-2, 1994a).

Nonspinal Conditions

Vascular, abdominal, urinary, or pelvic pathology (Bigos et al., p. 2, 1994a).

Quality Health Care

The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Buck, p. 260, 1992).

Operational Definitions

Assessment Techniques

Consists of a careful, focused medical history and physical examination for the primary purpose of detecting red flags (Bigos et al., 1994a).

Clinical Care Methods

Treatments prescribed or recommended to obtain three goals:

1. to provide accurate patient information about low back problems,
2. to help provide comfort by means of symptom control methods (oral medications, therapeutic injections, and physical treatments), and
3. to recommend activity modifications (Bigos et al., p. 23, 1994a).

Special Studies and Diagnostic Considerations

Special studies are grouped in two categories which provide specific diagnostic considerations based on either physiologic dysfunction or potential anatomical causes. Tests utilized for physiologic dysfunction are electromyography (EMG), sensory evoked potentials (SEPs), and thermography. These procedures can provide evidence of neurologic dysfunction, infection, inflammation, malignancy, or other systemic disease processes. Plain myelography, MRI, CT, CT-myelography, discography, and CT-discography evaluate anatomical deformities. Specific disorders resulting from anatomical malformations includes a herniated lumbar disc, spinal stenosis, infection, tumor, or abdominal mass (Bigos et al., 1994a).

Limitations

Although all AFNPs must be Master s prepared, variations will exist in their educational backgrounds and practical experiences. The emphasis placed on acute low back problems within educational institutions will not be universal. Each specialty certification has a distinct focus so a discrepancy exists in the educational depth of subject matters. Many educational institutions stress the relevance of clinical practice guidelines to quality health care delivery. This emphasis would be nonexistent if the practitioners were educated prior to the publishing of the ALBP guideline. These issues will affect the foundational knowledge

of each AFNP. The frequency of exposure to patients with acute low back problems will vary based on the practitioner s assigned clinic position. Some subjects may not have opportunities to attend continuing educational opportunities on the issues concerning acute low back problems. Practical experiences can have a pronounced effect on the current and evolving knowledge of the AFNP.

Assumptions

If the AFNP correctly answers the research questions, it can be assumed that compliance to the ALBP clinical practice guideline has been achieved. This does not insure awareness and adherence to the ALBP clinical practice guideline, but does distinguish clinical practice techniques based on sound practical judgment.

Summary

The purpose of this study was to evaluate the adherence to the clinical practice guideline on the management of acute low back problems in adults by AFNPs. Quality health care is fundamental in clinical practice. The concept and acceptance of clinical care guidelines evolved from the necessity to minimize aberrant, ineffective clinical approaches. Compliance with the guideline will guarantee high quality and cost effective care to patients with acute low back problems.

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

The purpose of this study was to examine the implementation of the Agency for Health Care Policy and Research (AHCPR) guideline (Bigos et al., 1994a) for acute low back pain (ALBP) by Air Force Nurse Practitioners (AFNPs). The review of literature will focus on the nationwide prevalence of ALBP, the financial cost to society, and the variation in management interventions. The advent of clinical practice guideline development to combat these issues and the results of studies conducted to evaluate the adherence to these guidelines will be discussed. An overview of the impact ALBP has in the military setting will also be presented.

Acute Low Back Problems

Internationally, studies have been conducted and determined that 65 to 80 percent of the population have been afflicted by back pain at some point during their lives. The number of ambulatory visits in the United States and the resources being utilized for complaints of low back pain were unknown until a study was designed by the National Ambulatory Medical Care Survey (NAMCS) (National Center for Health Statistics, 1992). In the most recent years examined (1989-1990), low back pain was the fifth most common reason for visits to the physician clinics and general physicians saw the majority of patients. The most common therapy prescribed was drug treatment and was utilized most frequently by family physicians and general internists (Hart, Deyo, & Cherkin, 1995).

Frymoyer and Cats-Baril (1991) studied the overall cost and prevalence associated with low back pain. They concluded that the incidence of low back disorders has not substantially increased over the past two decades, but what has changed is the perception of the disorder. Society is acceptant of the resulting disability instilled by low back pain but for unknown

reasons. The increased incidence of disability has lead to an increase utilization of medical care. The costs associated with low back disorders are difficult to quantify due to direct and indirect factors. The direct costs relate to the direct services delivered for medical care and are quantifiable. However, the indirect costs are ambiguous since they reflect anticipated lost wages and productivity. After analyzing and calculating several indices, it was estimated that the total expense to society for low back disorders range from 75 to 100 billion dollars each year. The authors concluded that prevention and optimum management are keys to control cost in the future.

The exact toll to society that acute low back problems produce varies greatly. According to Jones (1997), medical expenses and lost wages related to ALBP account for a cost of $8 billion to $20 billion each year. This disparity of cost statistics can be related to the diffuse impact of society and the diverse approaches to diagnosis and management of ALBP. The impact to society is vast. The effect goes beyond the individual afflicted by ALBP. The psychological impact of limited activity and possible burden to others effects the individual's role as a provider, marital partner, and family member. The author refers to the possibility that a connection exists between ALBP and depression. Acute low back pain affects thirty-one million people at any given time and in 80 percent no discernible cause will be identifiable. The methods of diagnosis and treatment lacked consensus among health care providers. However, there has been a paradigm shift from the existing variations between the health care providers and how they managed ALBP to a proven and preferred single approach. In 1994, the AHCPR guidelines (Bigos et al., 1994a) were published to address familiar presentation, standards of assessment, and treatment of this common ailment.

Jones (1997) reviewed the emphasis the AHCPR guidelines (Bigos et al., 1994a) placed on the neurologic evaluation in the initial assessment and physical examination. This

focal assessment is necessary to rule out any potentially dangerous spinal disorders that are referred to as red flags. These potentially serious disorders included the presence of a tumor, infection, osteomyelitis, or compression of the spinal cord. Immediate surgical intervention maybe required with cauda equina syndrome, spinal stenosis, herniated disc, and spinal dislocations. Red flags were found to be age dependent. Ankylosing spondylitis is more frequently seen in males less that 20 years old and abdominal aortic aneurysms are to be contemplated if the patient is older than 50 years old. If any critical spinal disorder is suspected, referral to a specialist is warranted. Diagnostic texts such as MRI s or CT s are not suggested in the absence of red flags and should not be considered unless pain is not alleviated after one month of intervention. Recommendations to resume normal activity within certain limits determined by the level of lower back discomfort were advised. The use of nonsteroidal anti-inflammatory agents and cold or heat packs were encouraged to alleviate the pain. Additional treatment modalities were described to include patient education guides on exercise to strengthen the lower back.

Guideline Benefits

The desire to control medical costs, abate practice variations, and to ensure quality of care has generated the creation of clinical practice guidelines. The advent of managed care has forced health care providers to balance the needs of patients with available resources limited by cost. Bergman (1995) discussed how financial objectives can be achieved without compromising the quality of care in the pediatric arena. Although his article focused on the pediatric population, the issues discussed apply to medical practice in general. The author stated how the rapid advancement in medical technology without a wealth of scientific evidence to support the efficacy had left pediatricians with an abundance of therapeutic alternatives and no clear guidelines. The creation of Medicare and Medicaid lead to increase

access of medical care to those previously unable to afford treatment. These two developments resulted in a rapid elevation in the cost of health care. Clinical practice guidelines evolved in an effort to conserve the financial burden and preserve the quality of health care. The guidelines are tools subjected to continual improvement with the advancement in practice techniques and as new knowledge is attained. Outcome assessment measurements assure the accountability of the recommendations identified in the guidelines.

Wall, Susman, Hage, and LeFevre (1994) recognized the expectation that clinical policies will play an increasing role in medical care by providing a guide outlining approaches to common problems. The article served to provide an overview of policy development and highlight the implications of implementation to clinical practice, medical education, and research applicability. The authors expressed the need to develop clinical guidelines based on the rigors of scientific evidence, expert medical opinion, and provide a methodology to evaluate patient outcomes. Development based on these guidelines will justify the creditability and validity of the stated recommendations.

Acute Low Back Problem Guidelines

A study conducted prior to the release of the AHCPR guideline (Bigos et al., 1994a), compared physician beliefs of treatment efficacy of low back pain to guideline developed by the Quebec Task Force on spinal disorders (Spitzer et al., 1987). A two part, seven page questionnaire was designed to evaluate acute back pain, acute back pain with sciatica, and chronic low back pain. Nine treatments were listed in part one, and physicians were asked to identify which were effective for different types of back pain. Part two presented three hypothetical patients and asked the provider to identify which of 12 treatments would be most effective. A 43% return rate was achieved after three mailings. A high percentage of nationally surveyed physicians in the United States established that physical therapy, strict

bed rest for no more than three days, and trigger point injections are the most effective treatments for acute low back pain. They stated that physical therapy, inpatient pain programs, transcutaneous electrical stimulation (TENS), corsets, trigger point injections, and epidural steroid injections for sciatica are effective for chronic back pain. The study concluded that there was a poor correlation between the treatments shown to be effective in controlled clinical trials for acute and chronic back pain by the Quebec Task Force and what physicians believed to be effective (Cherkin, Deyo, Wheeler, & Ciol, 1995).

After the guideline from the AHCPR was released, a British study noted that despite the availability of numerous guidelines for the management of acute back pain, it was unclear how most general practitioners assess and manage these patients in relation to available references. A questionnaire was developed to examine how British general practitioners spent time in consultation with patients complaining of ALBP. Routinely performed examinations, signs and symptoms which indicate urgent consultation with a specialist, and the type of advice given to the patient was investigated. Although guidelines stress the importance of a comprehensive history and physical exam with emphasis on neurologic deficits, the study revealed that few general practitioners do full examinations. Many of the study respondents did not give educational advice about activities of daily living, back exercises, or physical fitness. However, the majority of general practitioners were aware of the danger signs of serious neurologic conditions and would refer to a specialist (Little et al., 1996).

Nurse Practitioners and Acute Low Back Problems

An article by McIntosh (1997) provided guidelines specifically designed for the nurse practitioner to accurately assess the true pathology of adults with low back pain. The author emphasized the need to rule out other causes of low back pain such as cauda equina

syndrome and screening for emotional issues. Physical exam techniques were described in detail and photographs of the tests performed were included. Once the diagnosis of muscle strain or herniated disk has been determined, conservative measures were recommended for treatment. The author s recommendations for management of low back problems were based on the guideline published by the AHCPR. The article accentuated the value of exercise programs to treat acute problems and prevent future injuries.

Croteau (1996) in Nurse Practitioner Forum highlighted the fact that rehabilitation for ALBP is geared toward controlling pain, the restoration of normal function, and prevention of future problems. The author emphasized the need for a complete rehabilitation program which included exercises to improve strength, flexibility, endurance, and coordination. This article specifically focused on basic stretching exercises for low back pain. The author stated that stretching enhanced flexibility by transiently increasing muscle or tendon unit length and permanently increasing the surrounding connective tissue length. Multiple exercises were described with this desired goal identified.

Military Issues

A pilot study was conducted to determine the incidence, prevalence, and risk factors associated with low back pain in a group of Army basic trainees. The study subjects were limited to only men thereby eliminating associative pelvic pain as a source of low back problems. Studying only trainees leads to a young median age thereby decreasing the ability to generalize the research results to a wide population. The survey return rate may have been falsely high due to the fact that drill instructors administered the questionnaire. The overall results concluded that a fairly high incidence of new onset low back pain existed with few pre-existing back problems. The Army basic trainee was identified as a high-risk population for the development of back aliments (O Conner & Marlowe, 1992).

Blount & Krober (1991) discussed medical issues faced by deployed health care providers during a peacetime or humanitarian type missions in Military Medicine. The types and incidence of medical complaints seen in the third world country of Bolivia were compared to medical problems seen in United States clinics. The data was classified into diagnostic clusters of clinically similar presentations. Low back pain and syndromes ranked number seven in comparison to a ranking of 27 in the US. The article concluded that different mixtures of medical needs would be seen in non-American patient populations and that anticipated patient characteristics are critical to successful medical operational exercises.

A descriptive study was conducted to determine if moderate, cumulative exposure to gravitation forces (Gz) facilitates back disability in the Air Force. A record review from 1972-1993 of non-rated officers, pilots and navigators with less than 150 hours, and pilots and navigators with greater than 150 hours in aircraft which normally exceed 5 Gz or more was conducted. No significant difference was observed between aircrew exposed to low gravitational forces and those exposed to moderate levels. The researchers noted that there may have been unidentified reasons why aviators do not admit to having back pain upon separation or retirement. They recommended a prospective study of all rated and non-rated officers to include not only a detailed questionnaire and physical exam, but also nerve conduction studies of those with suggestive back pain or injury. This could rule out gravitational forces as a cause for chronic back pain from cumulative trauma (Voge & Tolan, 1996).

Gaps in Knowledge

A sufficient amount of data exists to conclude that ALBP is a predominant aliment in the US today requiring cost-effective strategies in its assessment, diagnosis, and management. The implementation of creditable clinical guidelines could provide a

framework for a consistent approach to this major health care problem. The AHCPR guideline (Bigos et al., 1994a) for ALBP have been available since 1994. The published literature on ALBP only addresses physician practice although nurse practitioners also provide care to the same patient population. No published data is currently available addressing the adherence of clinical guidelines for ALBP and nurse practitioners. Literature supports the prevalence of ALBP in the military setting, but there are no documented research studies discussing how it is managed by military providers.

Conclusion

A significant amount of data is available indicates the prevalence of ALBP is on the rise and the financial toll on society is increasing. The literature supports the advent of clinical practice guidelines as a means to limit excessive expenditure, ensure continuity of care across clinic practice settings, and provide a means for outcome parameters to assess compliance. A small number of studies have evaluated the adherence of physicians to established guidelines in the management of ALBP. These studies indicate that the level of adherence to the guidelines is less than ideal. There is minimal data currently available on the implementation of guidelines and nurse practitioners. Also, a gap in knowledge exists in the implementation of guidelines within the military medical setting. The purpose of this study satisfied the deficits in published research concerning adherence of the guidelines for ALBP by nurse practitioners in the USAF.

CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this research study was to describe the stated practice techniques of AFNPs in the management of ALBP based against the established guideline published by the AHCPR (Bigos et al., 1994a). This chapter will identify the research methodology. The research design and rationale for its applicability is discussed. The research sample, measurement tool, reliability and validity of the study tool, human protection, and the rationale for data analysis will be described.

Research Design and Procedures

A descriptive study provides a method to acquire greater knowledge about particular characteristics within a specific field of study. The implementation of a descriptive design will provide representation of situations as they naturally occur. Problems with current practice techniques, justification of current practices, and determination of consistency in specific situations can be determined with this design approach (Burns & Grove, 1997).

A descriptive study was employed to determine AFNP s practice techniques in the management of ALBP in accordance to the published guideline. The descriptive process allowed for the isolation of individual s practice techniques during similar clinical presentations. A tool based on the guideline was developed to gather desired information from the target population.

Sample

A population study was conducted since there are only 145 nurse practitioners currently enlisted in the United States Air Force (USAF) which met the criteria for this study. The number and accessibility of all AFNP s was feasible for data collection and interpretation. Therefore, it was reasonable to use the entire target population of family,

adult, and women s health nurse practitioners for this study.

The AHCPR guideline (Bigos et al., 1994a) for management of ALBP had determined that patients younger than 18 years old are outside the scope of the guidelines. Therefore, pediatric nurse practitioners were excluded from this study. They do evaluate patients who are 18 years old, however, their practice focuses primarily on younger age groups. Sampling representativeness, error, and bias have been removed with population studies. The list of qualified AFNPs for this study was obtained from Air Force Military Personnel Center (AFMPC).

Instrument

Permission was obtained to adapt the research tool from a study conducted in Britain by Little and colleagues (1996) (see Appendix B). The researcher s survey was developed to evaluate how general practitioners utilize their time in consultations involving ALBP. The questionnaire addressed routinely performed examinations, danger signs and symptoms indicating referral, and the type of recommendations given to the patient. Explicit yes and no questions were asked and brief descriptions were requested from the study s subjects. The questionnaire was pilot tested for reliability (type was not published) and demonstrated a 73% - 88% agreement from 25 responding general practitioners who did not participate in the main study. The responses of the main study were compared to guidelines from the Quebec Task Force (Spitzer et al., 1987), Britain s Clinical Standards Advisory Group (Clinical Standards Advisory Group, 1994), and the AHCPR Clinical Practice Guidelines (Bigos et al., 1994a).

The survey for this research proposal is based on the AHCPR Quick Reference Guide for Clinicians Number 14 (Bigos et al., 1994b) (see Appendix A). The questionnaire concentrates on the three components of the ALBP guideline which specifically correlate to

the research questions of this study. Questions were presented to elicit specific practice approaches the AFNP employs. Survey questions number one, two, and three addressed how to assess acute lower back problems. Survey questions number four, five, six, and seven pertained to the clinical care methods being implemented. The type of situations when special procedures are implemented to assist in diagnosis was evaluated in survey question number eight (see Appendix C).

A survey packet was sent to each AFNP and contained a cover letter identifying the purpose of the study, the researcher, and a means of contacting the investigator with questions (see Appendix D). The questionnaire was devised to be folded into postcard size and returned by mail with a stamp already in place. A follow-up note was mailed three weeks after the original, requesting completion and return of the survey.

The validity of the instrument was established by an expert panel consisting of two health care providers knowledgeable about the ALBP guideline. The expert panel was asked to rate each question of the survey using a 4-point scale based on the content degree of relevance to the purpose of the study. Questions identified as relevant to the domain by all experts will be considered valid. The experts were also be asked to identify important areas not addressed by the instrument. The content validity index (CVI) was 1.0. The developed research tool required no changes. The experts did not take part in the main study.

Protection of Human Subjects

Ethical requirements were supported throughout the research process. Permission was obtained from the USUHS Institutional Review Board (IRB) (see Appendix E) and USAF Survey Control Board (see Appendix F) prior to receiving the names and addresses of the sample population. The cover letter contained in the survey packet disclosed essential information regarding the study s purpose to the prospective subject. The completion and

return of the questionnaire represented informed consent. The surveys were not coded or contained any identifying marks linking the subject to the information provided. Subjects were able to withdraw from the research study by not returning the questionnaire.

Plan for Data Analysis

Descriptive statistics allow the researcher to organize the collected data to determine if and how the proposed research questions were answered. The data was entered and analyzed with SPSS. The coded data was classified into groups to determine how the subjects responded to each of the ALBP guideline components in the questionnaire. The grouped components were assessment of acute lower back problems, clinical care methods implemented, and situations indicating special procedure application to assist with diagnosing. The survey contained questions concerning critical elements specific to each of the guideline components. The percentage of correct answers to the critical elements within each of the components determined the overall compliance to the guidelines.

Summary

A descriptive design was incorporated into this research study to evaluate the clinical practice techniques implemented by AFNP in the management of ALBP based on the published guideline. This approach allowed for problems with current practice techniques to be revealed. It was feasible for the entire target population to be surveyed and the questionnaire developed elicited the desired information. Data analysis described compliance within the three components of the ALBP guideline by the AFNP s.

CHAPTER FOUR: ANALYSIS OF DATA

Introduction

The purpose of this study was to evaluate the clinical practice techniques implemented by Air Force Nurse Practitioners (AFNPs) in the management of acute low back problems (ALBP) based on the Agency for Health Care Policy and Research (AHCPR) Clinical Practice Guideline (Bigos et al., 1994a). This chapter provides a description of the sample population, demographics, and responses to the three components of the clinical practice guidelines relating to acute low back problems. The components consist of specific approaches when assessing ALBP, the types of clinical care methods implemented, and when special studies and diagnostic procedures are considered applicable.

Sample

The survey packet was mailed to 143 AFNPs on 14 January 1999 from a list generated by the Air Force Military Personnel Center (AFMPC) identifying all Family Nurse Practitioners (FNPs), Women s Health Nurse Practitioners (WHNPs), and Adult Health Nurse Practitioners (ANPs) in the USAF effective on 24 November 1998. Two packets were returned due to invalid addresses. Ten working days after initial mailing (29 January 1999), a follow-up note was sent to all study participants. The time allotted for returned surveys was twenty-five working days (19 February 1999). Three WHNPs emailed or telephoned the researcher stating that they would not be returning the survey because they did not evaluate ALBP as a Women s Health Nurse Practitioner. Two WHNPs telephoned the researcher citing the same reason for not participating in the study.

Fifty-seven (40.5%) of the surveys were returned. Nineteen of the returned surveys were considered invalid. These respondents were WHNP and did not complete the survey, stating that they did not routinely evaluating or managing ALBP. Of the returned surveys,

64% (N=38) were considered valid for data analysis.

Demographics

Demographic information was collected to establish background data on the provider types. The most recent national certification the respondents held consisted of 22 FNPs, 1 ANP, and 15 WHNPs. The ANP was grouped with the FNPs for data analysis (FANPs). The mean number of months of practice as a nurse practitioner identified by provider type included: AFNP 50 months, FANPs 32 months, and WHNPs 77 months. WHNPs have been practicing longer than the FANPs by a mean of forty-five months. Table 1 summarizes the type of clinic where the nurse practitioners provide care.

Table 1

Type of Clinics Where Air Force Nurse Practitioners are Providing Care

Clinic Type	Number of Family/Adult Nurse Practitioners (N=23)	Number of Women s Health Nurse Practitioners (N=15)	Number of Total Surveyed Nurse Practitioners (N=38)
Family Practice	17	4	21
Women s Health	1	11	12
Ambulatory Care	2	0	2
Other (Primary Care)	3	0	3

Five of the AFNP were not currently being utilized in the clinic of their most recent national certification. One of the FANPs was providing care in a women s health care clinic and four WHNPs were working in family practice clinics. The mean number of months providers have been working in the clinics outlined in Table 1 included: AFNPs 43 months, FANPs 27 months, and WHNPs 66 months. The WHNPs have been practicing an average of thirty-nine more months than the FANPs.

The final demographic question of the survey asked if the subject had attended any

seminar, conferences, or CE opportunities about the management of acute low back problems since 1994. Forty-seven percent (N = 18) of the AFNPs answered yes to this question. The FANPs responded yes 57% of the time compared to the WHNPs who responded yes 33% of the time. Approximately half of the FANPs have had the opportunity to learn of the AHCPR guidelines since its publication, but only a third of the WHNPs expressed this opportunity.

Research Questions

Three research questions were asked in this study. Research question number one evaluated the assessment of ALBP. The second question addressed the types of clinical care methods implemented by AFNPs. The last question was concerned with clinical indications for implementation of special studies and diagnostic considerations when acute back problems persist for greater than one month after intervention.

Data analysis determined the percentage of correct responses to the three research questions. The percentages were calculated based on the correct response to the options presented for each question. Distracters were calculated as correct if the distracter option was not selected by the respondent.

Initial Assessment

The first research question analyzed the AFNP s ability to identify key questions to ask during history collection, what tests should be performed during the initial examination, and which signs and symptoms are probable red flags indicating immediate referral. Survey questions number one, two, and three (see Appendix C) identified compliance of the standards for initial assessment of patients presenting with ALBP established by the AHCPR (Bigos et al., 1994a). The following three tables (Tables 2-4) list the results by provider type for each of the three components of initial assessment. The asterisk (*) indicates the

distracter option.

The respondents were asked in survey question number one: What do you routinely evaluate during the initial history of patients presenting with ALPB? (check all that apply).

Table 2

Key Elements Routinely Evaluated During the Initial History of Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
History of cancer	47.8	53.3	50
History of trauma	100	93.3	97.4
History of diabetes *	78.3	80	78.9
Pain worse at night	82.6	73.3	78.9
Unexplained weight loss	21.7	33.3	26.3
Prolong use of corticosteriods	17.4	20	18.4
Family history of back problems *	34.8	13.3	26.3
Urinary retention/incontinence	82.6	60	73.7

The AHCPR guideline (Bigos et al., 1994a) identified six key elements to evaluate in all patients presenting with ALBP: history of cancer, history of trauma, pain that is worse at night, unexplained weight loss, prolonged use of corticosteriods, and urinary retention/incontinence. Over all, the respondents correctly identified all six elements 57% of the time.

Fewer than half of the FANPs correctly indicated: history of cancer (47.8%), unexplained weight loss (21.7%), and prolong use of corticosteroids (17.4%) as key history inquiries. Less than half of the WHNPs correctly selected: unexplained weight loss (33.3%),

and prolong use of corticosteroids (20%) as key history inquiries. The majority of both FANPs and WHNPs incorrectly indicated that the distracter: family history of back problems, was a key element in evaluating the patient s back complaint.

The respondents were asked in survey question number two: What tests do you routine evaluated in the initial examination of a patient with ALBP? (check all that apply).

Table 3

Key Tests Routinely Evaluated During the Initial Examination of Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Bulge Sign *	78.3	93.3	84.2
Romberg Test *	82.6	86.7	84.2
Ankle reflexes	82.6	100	50
Straight leg raises	100	60	84.2
Strength of great toe	69.6	0	42.1
Dorsiflexion strength of ankle	73.9	26.7	55.3
Touch sensation of lower extremities	78.3	46.7	65.8

The AHCPR guideline (Bigos et al., 1994a) identified five key tests to perform on all patients presenting with ALBP: ankle reflexes, straight leg raises, strength of the great toe, dorsiflexion strength of the ankle, and touch sensation to the lower extremities. Over all, the respondents correctly identified all five tests 59.5% of the time.

The WHNPs scored poorly in four of the examination tests which should be assessed. They correctly selected the following options by sixty percent or less: straight leg raises

(60%), strength of great toe (0%), strength of ankle in dorsiflexion (26.7%), and touch sensation of lower extremities (46.7%).

The respondents were asked in survey question number three: What signs and symptoms do you feel justify immediate referral for a patient with ALBP: (check all that apply).

Table 4

Signs and Symptoms Identified as Red Flags in Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Constant night pain	21.7	40	28.9
Severe local back pain *	87	46.7	71.1
History of saddle anesthesia	56.5	20	42.1
Neurological signs at multiple levels	91.3	93.3	92.1
History of pain less than 72 hours *	100	80	92.1

The AHCPR guideline (Bigos et al., 1994a) identified three red flags which require immediate referral in all patients presenting with ALBP: constant night pain, a history of saddle anesthesia, and neurological signs at multiple levels. Over all the respondents correctly identified all three elements 54.4% of the time.

The majority of both the FANPs (21.7%) and the WHNPs (40%) did not selected constant night pain as a red flag. History of saddle anesthesia was correctly identified by the less than half of the WHNPs (20%). The WHNPs also incorrectly identified the distracter: severe local back pain, 47.6% of the time.

The overall score for all respondents for research question number one in the evaluation of the initial assessment of patients with the complaint of ALBP was 57%.

Initial Clinical Care Methods

The components evaluated to determine adherence to the AHCPR guideline (Bigos et al., 1994a) for routine management of ALBP included recommended physical treatments, prescribed medications, activities advised, and the type of education provided to the patient. Survey questions four thru seven (see Appendix C) addressed these components of research question number two (see Tables 5-8).

The respondents were asked in survey question number four: What physical treatments do you routinely recommend or refer patients with an initial complaint of ALB? (check all that apply).

Table 5

Physical Treatments Routinely Recommended for Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
TENS *	91.3	93.3	92.1
Traction *	95.7	100	97.4
Back belts *	95.7	66.7	84.2
Ice application	87	66.7	78.9
Lumbar corsets *	100	93.3	97.4
Heat application	78.3	80	78.9
Epidural injections *	100	100	100
Shoe insoles or lifts *	91.3	100	94.7
Spinal manipulation	8.7	13.3	10.5
Ligament/joint injections *	100	100	100

The AHCPR guideline (Bigos et al., 1994a) identified three physical treatments recommended for all patients presenting with ALBP: ice application, heat application, and spinal manipulation. Over all, the respondents correctly identified all three physical treatments 56% of the time.

Few FANPs and WHNPs knew that spinal manipulation was advised (8.7%, 13.3%, respectively). All AFNPs correctly indicated that epidural injections and ligament/joint injections should not be a method of initial treatment of ALBP. One hundred percent of the FANPs recognized that lumbar corset use was a distracter.

The respondents were asked in survey question number five: What medications do you routinely prescribe for patients with an initial complaint of ALBP? (check all that apply).

Table 6

Routinely Prescribed Medications for Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Opioids *	100	100	100
NSAIDS	100	100	100
Oral steroids *	100	100	100
Acetaminophen	17.4	26.7	21.1
Antidepressants *	100	100	100
Muscle relaxants	82.6	40	65.8

The AHCPR guideline (Bigos et al., 1994a) identified three medications to prescribe in all patients presenting with ALBP: non-steriodal anti-inflammatory agents, acetaminophen, and muscle relaxants. Over all, the respondents correctly identified all three medications 62.3% of the time.

The AFNPs responded well to this question, scoring 100% in all three distracter options: opioids, oral steroids, and antidepressants. Relatively few of the providers thought that it was okay to prescribe acetaminophen for ALBP. Sixty percent of the WHNPs erroneously indicated that muscle relaxants should not be prescribed.

The respondents were asked in survey question number six: What activities do you advise the patient with ALBP to participate in? (check all that apply).

Table 7

Activities Advised for Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Biking	21.7	13.3	18.4
Walking	73.9	40	60.5
Running *	100	93.3	97.4
Swimming	56.5	46.7	52.6
Step aerobics	0	6.7	2.6
No exercising	17.4	20	18.4
Bed rest < 4 days	8.7	20	13.2
Bed rest > 4 days *	100	93.3	97.4
Back muscle stretches *	13	73.3	36.8
Back specific machines *	100	100	100
Back exercises after 2 weeks of sx	26.1	0	15.8

The AHCPR guideline (Bigos et al., 1994a) identified seven activities allowed in all patients presenting with ALBP: biking, walking, swimming, step aerobics, no exercising, bed rest for less than four days, and back exercises are allowed after the symptoms have been managed for two weeks. Over all, the respondents correctly identified all seven activities 25.9% of the time.

Scores for this question were relatively low. The correct response rate for recommended activities was only greater than fifty percent in two of the options: walking (60.5%) and swimming (52.6%). Few AFNPs would have advised the following activities

which are recommended by the guideline: biking (18.4%), step aerobics (2.6%), no exercising (18.4%), bedrest for less than four days (13.2%), or back exercises after the first two weeks of symptoms (15.8%). The majority of the FANPs correctly indicated that running (97.4%), bed rest greater than four days (97.4%), and back specific machines (100%) were distracters.

The respondents were asked in survey question number seven: What type of education do you provide to a patient with initial ALBP? (check all that apply).

Table 8

Type of Education Provided for Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Body mechanics	87	93.3	89.5
Medication instructions	91.3	60	78.9
Fitting for lumbar brace *	100	100	100
Activity recommendations	95.7	53.3	78.9
Exercise therapy and stretching	91.3	46.7	73.7

The AHCPR guideline (Bigos et al., 1994) identified four education topics for all patients presenting with ALBP: proper body mechanics, instructions regarding prescribed medications, activities allowed or not to be done, and types of exercises and stretching techniques. Over all, the respondents correctly identified all four education topics 80.3% of the time.

The respondents scored well on this question. The lowest correct response rate was body mechanics (87%). The WHNPs demonstrated lack of adherence to: medication instructions (60%), activity recommendations (53.3%), and exercise therapy and stretching (46.7%). All respondents indicated that fitting for a lumbar brace was a distracter.

The overall score for all respondents for research question number two in the types of clinical care methods implemented in patients with initial complaints of ALBP was 56%.

Initial Special Studies and Diagnostic Considerations

The third research question asked if the AHCPR guideline (Bigos et al., 1994a) were followed when considering situations which would indicate the use of special studies and diagnostic tests if the back pain remained after one month of intervention. Survey question number eight (see Appendix C) evaluated the AFNP s knowledge and the results are outlined in Table 9.

The respondents were asked in survey question number eight: In what situations do you obtain a MRI, CT scan, EMG or laboratory tests? (check all that apply).

Table 9

Identified Situations Which Indicate the Use of Special Tests in Patients with Acute Low Back Problems by Air Force Nurse Practitioners

Percent who correctly answered options to the question: (*) indicates a distracter	Percent		
	Family/Adult Nurse Practitioners (N=23)	Women s Health Nurse Practitioners (N=15)	Total Surveyed Nurse Practitioners (N=38)
Symptoms return after 4 weeks	17.4	6.7	13.2
Tolerates sitting for 50 minutes *	100	100	100
Returns with c/o paresthesia	87	46.7	71.1
Returns in 1 week with same sx *	95.7	73.3	86.8
C/o sx greater than 1 month since initial visit	52.2	40	47.4

The AHCPR guideline (Bigos et al., 1994a) identified three complaints which indicate the use of special studies and diagnostic tests in all patients presenting with ALBP: if symptoms return after four weeks, if the patient returns with new onset paresthesia, and if ALBP complaints last greater than one month since the initial visit. Over all, the respondents correctly identified all three elements 43.9% of the time.

The respondents scored poorly on the option symptoms return after 4 weeks. Only 17.4 % of the FANPs answered correctly and 6.7% of the WHNPs. All nurse practitioners correctly indicated that further investigation is not necessary if the patient could tolerate sitting for fifty minutes. Less than half of the WHNPs correctly selected the following options: patient returns to clinic complaining of paresthesia (46.7%), and complain of symptoms greater than one month since initial visit (40%). All the respondents indicated that

tolerating sitting for 50 minutes was a distracter and scored 86.8 % for the other distracter option: returns in one week with same symptoms.

The overall score for all respondents for research question number three in the situations when special studies and diagnostic tests were indicated in patients with initial complaints of ALBP was 44%.

Summary

A total of 38 surveys were analyzed for their compliance of ALBP in accordance to the ALBP guideline. The provider types were divided into two groups, FANPs and WHNPs. Overall, the WHNPs have been practicing longer than the FANPs. Answers to the survey questions, which directly reflect this study s research questions, were presented by provider type. Correct option selection varied from question to question and by provider type. The best scores were identified in the type of medications prescribed, with more than half of the options correctly selected by all respondents. Few AFNPs would have advised five of the seven activities recommended by the ALBP guideline. Greater than 55% correct response rate was noted for the first two research questions by all respondents, but only 44% was achieved for the final research question. The overall score for the entire survey was 52.3% for all AFNPs.

CHAPTER FIVE: SUMMARY

Conclusion and Recommendations

The purpose of this study was to evaluate the clinical practice techniques implemented by Air Force Nurse Practitioners (AFNPs) in the management of acute low back problems (ALBP) based on The Agency for Health Care Policy and Research (AHCPR) Clinical Practice Guideline Number 14 (Bigos et al., 1994a). Adherence to the guideline indicates quality health care management of patients with complaints of ALBP. Clinical published guidelines preserve the quality of health care by reducing aberrant, ineffective clinical approaches and conserving financial costs when managing specific medical conditions (Berman, 1995; Buck, 1992; Wall et al., 1994). Currently, there is no data concerning the adherence to published guidelines and how this relates to military nurse practitioners.

The methodology for this study consisted of distributing surveys (see Appendix C) to all Family Nurse Practitioners (FNPs), Adult Nurse Practitioners (ANPs), and Women s Health Nurse Practitioners (WHNPs) in the United States Air Force (USAF). The information collected was classified into three groups: Family/Adult Nurse Practitioners (FANPs), Women s Health Practitioners (WHNPs), and Air Force Nurse Practitioners (AFNPs). Data analysis revealed how the subjects responded overall to guideline adherence and to each of the three research questions.

Guideline Adherence

This study determined that only 52.3% of the surveyed AFNPs manage ALBP in accordance to the guideline established by the AHCPR (Bigos et al., 1994a). The analysis between the FANPs and the WHNPs was fairly consistent in all areas with slight variance occurring within a few of the survey question options. The overall performance by the

surveyed AFNPs was disappointingly poor. Although WHNPs may have less clinical exposure to ALBP, they are still responsible for the assessment and management of common acute medical problems in the adult female. If managing ALBP is beyond their scope of practice, referral to the appropriate health care provider based on the severity of symptoms being displayed is warranted. It should be noted that several WHNPs did not complete or return the survey because, as indicated on the returned surveys, they do not routinely evaluating ALBP in their practice. FANPs may practice in settings with a greater concentration of pediatric, women s health, or geriatric patients, however they too are responsible for the assessment and management of common acute problems in the adult.

Research Questions

Assessment of Acute Lower Back Problems

The initial assessment involving patients with the complaint of ALBP entails a focused medical history and physical examination to identify potential serious underlying red flags warranting immediate referral (Bigos et al., 1994a). The overall score for compliance to the ALBP guideline the assessment of initial complaints of ALBP by surveyed AFNPs was 57%.

Detection of serious spinal conditions can be elicited by key questions during the patient interview. The index of suspicion for cancer would be increased if the patient indicated that they have a history of cancer, if their back pain is worse at night, or if they have unexplained weight loss. A history of trauma or corticosteroid use may be indicative of a compression fracture. Cauda equina syndrome can be ruled out with the absence of urinary retention, bladder incontinence, and saddle anesthesia (Bigos et al., 1994a). Only 57% of the surveyed AFNPs correctly identified the key history questions. The failure to ascertain the existence of these key elements can result in the misdiagnosis of life threatening pathology.

Physical examination is used in conjunction with the initial patient history in revealing the potential existence of red flags. Inspection and palpation better indicate spinal infections and neurologic compromise than the key history questions. The neurological examination revealing any of the following abnormal findings would raise the index of suspicion for nerve root compression due to disc herniation from L4 thru S1: weak ankle reflexes, a positive straight leg raise test, diminished strength of the great toe, diminished dorsiflexion strength of the ankle, or decreased touch sensation at multiple levels of the lower extremity (Bigos et al., 1994a). Nearly sixty percent of the surveyed AFNPs correctly indicated the tests to be performed during the initial physical examination and only 54.4% identified findings which indicate red flags. Failure to assess neurologic functioning is inconsistent with the standard of care and possible harm to the patient may result. Permanent neurologic defects may result due to mismanagement of the patient with ALBP.

Application of Clinical Care Methods

In the absence of potential red flags, interventions for management can be implemented. The goals of treatment are to educate the patient, assist with symptomatic relief, and prescribe appropriate activity recommendations. The overall score for compliance to the ALBP guideline for the application of clinical care methods by surveyed AFNPs was 56%.

The AHCPR (Bigos et al., 1994a) determined that educating patients about back problems may reduce the frequency of medical visits, decrease the use of expensive diagnostic tests, reduce patient apprehension, and may lead to earlier symptom resolution. Information should be provided regarding expectation of recovery and reoccurrence, methods of symptom control, reasonable activity modifications, means of limiting recurrent ALBP, and pointlessness of special tests without the presence of red flags. The surveyed AFNPs

correctly identified required educational topics 80.3% of the time. Providing the patient with erroneous information regarding self-care in the initial phase of ALBP and during the convalescent period could lead to significant complications and poor patient outcomes.

Symptomatic relief focuses on providing comfort in order to allow the patient to be as active as feasible until the remission of discomfort. Symptomatic control encompasses medications and physical treatments. NSAIDs have analgesic properties as well as anti-inflammatory actions and inhibit prostaglandin production. Acetaminophen provides analgesic effects to provide pain relief. The reduction of pain caused by muscle spasms is the therapeutic objective in prescribing muscle relaxants. Physical agents such as ice and heat application appear to provide temporary relief of symptoms and are recommended by the AHCPR. Scientific evidence has proven the effectiveness of spinal manipulation in reducing pain and improved function if implemented within the first month of symptoms (Bigos et al., 1994a). Only 62.3% of the surveyed AFNPs correctly indicated that they prescribe recommended medications and 56% recommend the correct physical agents. Providing proven scientifically valid modalities maximizes the patients opportunity for a speedy recovery.

The purpose of activity modification is to avoid undue back irritation and prevent debilitation from inactivity. Prolonged bedrest and no exercising for a period of time greater than four days is not recommended because is can lead to muscle atrophy, cardiopulmonary de-conditioning, and the risk for thrombosis development. Aerobic conditioning exercises which have minimal stress to the lumbar area can be performed during the first couple weeks of ALBP complaints. These exercises include: walking, biking, swimming, and aerobics gradually increased over time. The exercises may slightly increase the symptoms at first. Conditioning back exercises are more stressful than aerobic exercises initially, but are

recommended after a few weeks to assist in regaining activity tolerance (Bigos et al., 1994). The surveyed AFNPs correctly identified the recommended activities 25.9% of the time.

Implementation of Special Studies and Diagnostic Tests

The AHCPR guideline (Bigos et al., 1994a) recommend waiting four weeks before considering the implementation of special studies and diagnostic tests. Further studies may be considered after reviewing the history, physical findings, and activity limitations of the patient. Forty-four percent of the surveyed AFNPs adhered to the recommendations outlined by the guideline.

The majority of patients with ALBP spontaneously resolve within four weeks. False labeling may occur if changes are noted on imagining studies as the cause of the acute symptoms. The interpretation of these tests do not change the clinical approach. Electromyography may be helpful in identifying the source of focal neurologic dysfunction if symptoms last longer that three to four weeks. Findings suggestive of specific nerve root compromise warrant imaging studies. Laboratory tests can be useful in screening for nonspecific medical diseases such as a tumor or infection if symptoms persist (Bigos et al., 1994a).

Only 43.9% of the surveyed AFNPs correctly indicated what situations call for the use of special studies and diagnostics. The special studies and diagnostic tests are expensive and increase the cost of care to an already overstressed health care system. If these tests are performed unnecessarily, referral will be generated without merit and increase the burden to the health care system. The patient would face unfounded concern for a condition that would otherwise resolve with conservative treatment.

Recommendations for Practice

The results of this study demonstrate the lack of knowledge in effectively managing patients with the initial complaint of ALBP by surveyed AFNPs in accordance to the guideline established by the AHCPR (Bigos et al., 1994a). The implementation of the guideline as a source of standardized operating instructions in all Air Force medical facilities is recommended. AFNPs are encouraged to contact the Agency for Health Care Policy and Research to obtain their own personal copy of the guideline. Participation in conferences and continuing educational (CE) opportunities highlighting the use of the guideline is highly encouraged.

Recommendations for Future Research

The survey could be re-administrated after the recommendations above have been implemented to determine if the management of ALBP in adherence to the guideline has improved. Extending the study subjects to other military services and the civilian sector may help identify if the knowledge deficit is exclusive to the Air Force, or if it is military and nationwide. The distribution of evaluation could be broadened to include physicians and physician assistants. Expanding the use of this tool would increase its validity in evaluating AHCPR guideline (Bigos et al., 1994a)adherence in the treatment of ALBP.

The types and frequency of CE opportunities concerning ALBP should be questioned with the next survey distribution. This will reveal the nurse practitioners range of exposure and familiarization of the AHCPR guideline (Bigos et al., 1994a). A question which addresses the fundamental education regarding the management of ALBP during their Master s preparation would help to establish if the nurse practitioner programs attended are falling short in adequately preparing the medical professional.

Summary

This study demonstrated that 52.3% of the surveyed AFNPs adhere to the AHCPR Clinical Practice Guideline Number 14 (Bigos et al., 1994a) in the management of ALBP. The guideline explicitly outline the recommendations for the initial assessment to identify red flags warranting immediate referral, clinical care methods to be implemented, and when to consider special studies and diagnostics. These recommendations were based on evidence and expert consensus.

Nurse practitioners are medical professionals and are responsible for remaining knowledgeable about the most current trends in the delivery of quality health care. The knowledge gaps revealed by this study are huge. It concerns this researcher that the surveyed AFNPs are weak in their ability to appropriately manage patients with ALPB. The source of this inadequacy causes concern. Is the blame on the Master s programs attended or the lack of self-directed continuing education by the surveyed AFNPs? It is suggested that AFNPs become informed of the contents of the guideline provided by the AHCPR (Bigos et al., 1994a) for the management of ALBP and implement them into their everyday care. Nurse practitioners have an obligation to their patients to remain current in their field of practice. It is their responsibility and that of the clinic in which they provide care to ensure that quality health outcomes are being achieved.

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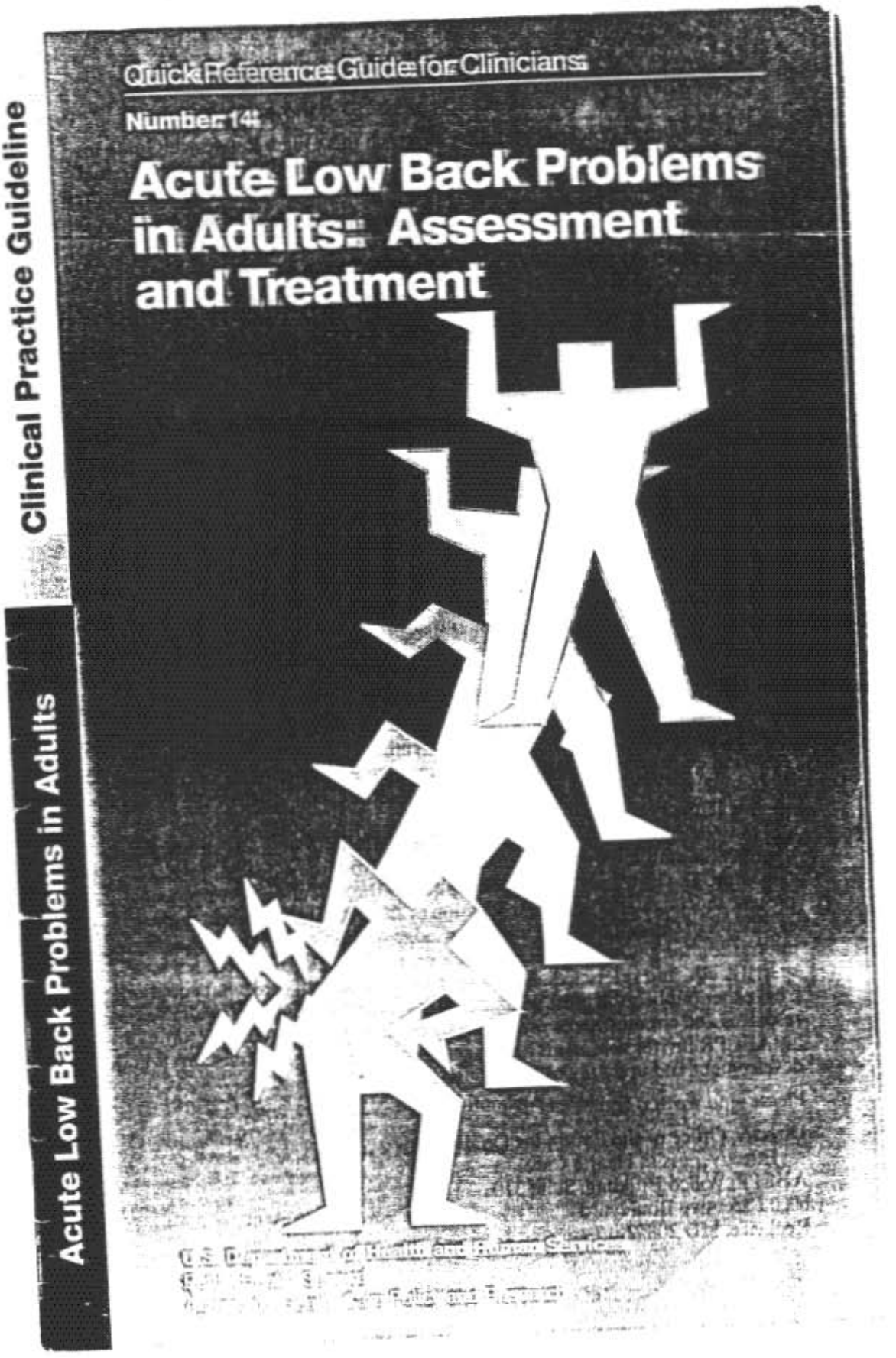
APPENDICES

APPENDIX A: QUICK REFERENCE GUIDE FOR CLINICIANS NUMBER 14



APPENDIX B: APPROVAL LETTER FROM DR. LITTLE

University of Southampton

School of Medicine

Primary Medical Centre

Aldermoor Health Centre
Aldermoor Close
Southampton
SO16 5ST
United Kingdom

Telephone +44 (0)1703 797700
Fax +44 (0)1703 701125
Email pmc1@.soton.ac.uk

Best wishes for your research.

To: Lynn Tomlonson

From: Paul Little

With compliments

APPENDIX C: ACUTE LOW BACK PROBLEM QUESTIONNAIRE

1. What do you **routinely** evaluate during the initial history of patients presenting with acute low back problems? (check ALL that apply)

   _ History of cancer
   _ History of trauma
   _ History of diabetes
   _ Is the pain worse at rest
   _ Unexplained weight loss
   _ Prolong use of corticosteriods
   _ Family history of back problems
   _ Urinary retention or incontinence

2. What tests do you **routinely** evaluate in the initial examination of a patient presenting with acute low back problems? (check ALL that apply)

   _ Bulge sign
   _ Romberg test
   _ Ankle reflexes
   _ Straight leg raises
   _ Strength of great toe
   _ Dorsiflexion strength of ankle
   _ Touch sensation of lower extremities

3. What signs and symptoms do you feel justify **immediate** referral for a patient presenting with acute low back pain? (check ALL that apply)

   _ Constant night pain
   _ Severe local back pain
   _ History of saddle anesthesia
   _ Neurological signs at multiple levels
   _ History of pain less than 72 hours duration

4. What physical treatments do you **routinely** recommend or refer patients with an initial complaint of acute low back problems? (check ALL that apply)

   _ TENS
   _ Traction
   _ Back belts
   _ Ice application
   _ Lumbar corsets
   _ Heat application
   _ Epidural injections
   _ Shoe insoles or lifts
   _ Spinal manipulation

_ Ligament/joint injections

5. What medications do you **routinely** prescribe for patients with an initial complaint of acute low back problems? (check ALL that apply)

_ Opioids
_ NSAIDS
_ Oral steroids
_ Acetaminophen
_ Antidepressants
_ Muscle relaxants

6. What activities do you **advise** the patient with acute low back problems to participate in? (check ALL that apply)

_ Biking
_ Walking
_ Running
_ Swimming
_ No exercising
_ Bed rest < 4 days
_ Bed rest > 4 days
_ Step aerobics
_ Back muscle stretches
_ Back specific machines
_ Back extensor exercises after the first 2 weeks of symptoms

7. What type of **education** do you provide to a patient with initial acute low back problems? (check ALL that apply)

_ Body mechanics
_ Medication instructions
_ Fitting for a lumbar brace
_ Activity recommendations
_ Exercise therapy and stretching

8. In what **situations** do you obtain a MRI, CT scan, EMG or laboratory tests? (check ALL that apply)

_ Symptoms return after 4 weeks
_ Patient able to tolerate sitting at work for 50 min
_ Patient returns to clinic complaining of parasthesia
_ Patient returns to clinic in 1 week with same complaints
_ Complains of symptoms for greater than 1 month since initial visit

9. What is your most recent national certification as a nurse practitioner?

   _ Family
   _ Primary Care
   _ Women s health
   _ Adult
   _ Other, please specify: _____

10. How long have you been practicing as a nurse practitioner: Please, specify:

   _ ____ mos.

11. In what type of clinic are you currently providing care?

   _ Family practice
   _ OB/Gyn (Women s Health)
   _ Ambulatory care
   _ Acute care
   _ Emergency Department
   _ Other, please specify: _____

12. How long have you been practicing in the type of clinic stated in #12? Please, specify:

   _ ___ mos.

13. Have you attended any seminars, conferences, or CE opportunities about the management of acute low back problems since 1994?

   _ NO
   _ YES

==========

PRIVACY ACT STATEMENT

In accordance with the Privacy Act of 1974 (Public Law 93-579), this notice informs you of the purpose of the questionnaire and how the findings will be used. Please read it carefully.

Authority: 10 United States Code 451 note.

Principle Purpose: The purpose of this research is to gain information about how Air Force Nurse Practitioners manage acute low back problems in adults. Findings will be reported as aggregate data and printed in a thesis manuscript available at the Uniforms Services University of the Health Sciences.

Routine Uses: None.

Disclosure: Providing information on this questionnaire is voluntary. There is no penalty if you choose not to respond. This study involves no physical risks or discomfort to you. Completion of the questionnaire implies consent to participate. However, maximum participation is encouraged so that the data will be complete and representative. Your questionnaire form will be treated as confidential. No coded identifying information is found on the questionnaire. Participants will remain anonymous throughout the study. Only group statistics will be reported.

Note: This survey is in compliance with AFI 36-2601

APPENDIX C: PARTICIPANT COVER LETTER

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 Jones Bridge Road
Bethesda, Maryland 20814-4799

14 January 1999

Dear Fellow Nurse Practitioner,

As a graduate student at the Uniformed Services University of the Health Sciences (USUHS), I am researching the management of acute low back problems based on the published guidelines by the Agency for Health Care Policy and Research (AHCPR). Numerous studies have been done examining care provided by physicians, but few have focused on Nurse Practitioners. The purpose of this survey is to gather information on three components of patient management with acute low back pain: (a) initial assessment, (b) examination, and (c) treatment modalities.

Participation in this study is voluntary. Survey responses will be kept confidential. Data will be analyzed in aggregate form only, and no respondents will be identified in any publication. Returned surveys will have no means of linking them with participating individuals. Results will be available to you on the internet (http://www.usuhs.mil) through the Learning Resource Center of the Uniformed Services University of the Health Sciences. This thesis is under the direction of Dr. Carol Ledbetter, Ph.D., RNc, CS, FNP, Chair, Department of Nurse Practitioner and Director, Family Nurse Practitioner Program at USUHS. Any questions regarding this study may be directed to me or Dr. Ledbetter at the addresses or phone numbers given below.

The survey will take approximately 3 - 5 minutes to complete. Informed consent is indicated by your returned, completed survey. Please do not indicate your name on the survey. Once completing the survey, simply fold the form in half so the mailing address is on the outside. You can use the enclosed sticker to secure the form. Please return the prepaid postcards as soon as possible, preferably within the next ten days.

As a Nurse Practitioner in the Air Force, your input is important in this effort to enlighten and more clearly define your role and value in the modern military. Thank you for your time.

Sincerely,

Lynn A. Tomlonson, Capt., USAF, NC
4301 Jones Bridge Road, Box 911
Bethesda, MD 20814-4799
301-519-0423
DopamineQ@aol.com

Carol A. Ledbetter, PhD, RNc, CS, FNP
4301 Jones Bridge Road
Bethesda, MD 20814-4799
301-295-1992
cledbetter@usuhs.mil

APPENDIX E: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 208144799

November 13, 1998

MEMORANDUM FOR LYNN A. TOMLONSON, GRADUATE SCHOOL OF NURSING

SUBJECT: IRB Review and Approval of Protocol T06197 for Human Subject Use

Your research protocol, entitled ***"Evaluating Quality Management of Acute Low Back Problems Provided by Air Force Nurse Practitioners"*** was reviewed and approved for execution on **11/13/98** as an **exempt** human subject use study under the provisions of 32 CFR 219.101(4). This approval will be reported to the full IRB, scheduled to meet on 12/10/98.

The IRB understands that the purpose of this study is to evaluate the clinical practice techniques implemented by Air Force Nurse Practitioners in the management of acute low back problems on the Agency for Health Care Policy and Research clinical practice guidelines. The study will employ a survey to determine provider assessment of current clinical practice and will contain no identifying information.

Please notify this office of any amendments or changes in the approved protocol that you might wish to make and of anv untoward incidents that occur in the conduct of this project. If you have any questions regarding human volunteers, please call me at 301-295-3303.

Richard R. Levine, Ph.D.
LTC, MS, USA
Director, Research Programs and
Executive Secretary, IRB

cc: Director. Grants Administration

APPENDIX F: SURVEY CONTROL BOARD APPROVAL LETTER

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE PERSONNEL CENTER
RANDOLPH AIR FORCE BASE TEXAS

2 July 1998

MEMORANDUM FOR CAPTAIN TOMLONSON

FROM: HQ AFPC/DPSAS
550 C Street West Suite 35
Randolph APB TX 78150-4737

SUBJECT: Request for Survey Approval (Your ltr, undated)

Your proposed "Acute Low Back Problem Questionnaire" has been reviewed and is assigned a Survey Control Number (SCN) of USAF SCN 98-51. This number and authorization will expire on 31 December 1998.

With regard to the survey and its associated results, it is important to draw your attention to the provisions of the Freedom of Information Act (FOIA). Under the FOIA, the results of your survey can be requested by the public. Additionally, please forward a copy of the final version of the survey for our files. Finally, the SCN needs to appear either in the cover letter or on the face of the survey itself.

Questions or concerns can be directed to me at DSN 487-5680. Thank you and good luck with your data collection efforts.

MICHAEL J. BENSON Lieutenant, USAF
Personnel Survey Analyst