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**Presentation by William C. Meeker, DC, MPH, Director of Research
Palmer Center for Chiropractic Research, Davenport, Iowa**

To the

**White House Commission on Complementary and Alternative Medicine Policy
Washington, DC
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Questions for Session II: Clinical and Cost-Effectiveness of Selected CAM Services

Please provide references that best describe the clinical and cost-effectiveness data for access to and delivery of chiropractic practice.

A selected bibliography is appended to this report. Particular attention should be directed to two government sponsored monographs about the chiropractic profession. One was commissioned by the province of Ontario, Canada, ^(Manga, 1993) the other by the U.S. Agency for Healthcare Research and Quality (formerly Agency for Health Care Policy and Research). ^(Cherkin, 1997) Another major reference is the recent, "Job Analysis of Chiropractic," published by the National Board of Chiropractic Examiners, which is based on a major random survey of chiropractic practices in the U.S. ^(Christensen, 2000)

Relative to the clinical effectiveness of chiropractic practice, please summarize the data regarding the following measures: specific health conditions, populations (age, sex, occupation, etc.), practice setting (including whether chiropractic only, or in conjunction with conventional medicine), type of practitioner.

One indicator of chiropractic mainstreaming is the steadily increasing use by patients in the U.S., which has tripled in the last two decades from about 3.6% in a 1980 survey ^(Von Kuster, 1980) to an estimated 11% in a 1997 national random telephone survey. ^(Eisenberg, 1998)

This translates to an estimated 190 million patient visits to chiropractors in a year, or about 30% of visits to all CAM practitioners. In surveys of patients seeking alternative care, chiropractors are utilized more often than any other CAM provider group. ^(Eisenberg, 1998) Payments for chiropractic services in the U.S. total approximately \$8-10 billion annually.

Although spinal adjustment and manipulation is practically synonymous with chiropractic (chiropractors deliver over 90% of the manipulations in the U.S., ^(Shekelle, 1992)) chiropractors also provide a variety of other treatments and counsel to patients. Physical therapies such as heat, cold, electrical modalities, and rehabilitation methods are very commonplace. ^(Christensen, 2000; Mootz, 1997) Therapeutic exercises and general fitness recommendations are usually made to a majority of patients, and many receive advice about nutrition, vitamins, weight loss, smoking cessation, and relaxation techniques. ^(Hawk, 1995) Many chiropractors use other forms of CAM therapy, with emphasis on massage, acupuncture, and mineral and herb supplements. ^(Hawk, 1999)

Studies demonstrate that chiropractic patients generally represent a cross-section of U.S. population demographics. Patients come from all age and occupational groups, economic and educational levels. Patients less than 18 years old account for approximately 12%, and patients 65 years and older make up approximately 15% of the chiropractic patient population. (Coulter 1996; Christensen, 2000)

Studies confirm that the chiropractic case-mix is predominately musculoskeletal in nature with about 50% of patients complaining of back pain; the remainder with head, neck and extremity complaints. (Christensen, 2000; Shekelle, 1991; Hurwitz, 1998) Approximately one-third of all patients who seek professional care for low back pain consult chiropractors in a primary health care role. (Deyo, 1987; Shekelle, 1995; Carey 1995; 1996) Furthermore, about half of the patients seeking chiropractic care have chronic symptoms. (Hurwitz, 1998; Hawk, 2000) Typically, approximately 5% seek care for other types of conditions. Recent studies also document that a proportion of patients attend chiropractors for general health concerns, prevention and a feeling of well-being, often receiving standard health advice, most often with regard to physical fitness and nutrition. (Hawk, 2000; Rupert 2000a; 2000b)

Clinically, chiropractors direct spinal adjustments to a dysfunctional joint "lesion" known as a subluxation. This is characterized as a form of joint strain/sprain with clinically associated hypomobility, malalignment, local and referred pain, inflammation, and muscle tension. (Gatterman, 1995) Subluxation in the chiropractic context primarily connotes a functional and not necessarily an anatomical entity. In theory, subluxation prevents the body from operating at an optimum healthy level. At least five mechanical and neurologic mechanisms have been proposed and these are listed below

Proposed Mechanisms of Spinal Manipulation

Action	Mechanism
Mechanical/anatomical	Alleviation of an entrapped facet joint inclusion or meniscoid, which have been shown to be heavily innervated (Giles, 1987; Bogduk, 1985)
Mechanical/anatomical	Repositioning of a fragment of posterior annular material from the intervertebral disc (Bogduk, 1985; 1981)
Mechanical/anatomical	Amelioration of stiffness induced by fibrotic tissue from previous injury or degenerative changes that may include adaptive shortening of fascial tissue (Arkuzewski 1988; Lantz, 1995)
Neurological/mechanical	Inhibition of excessive activity in the intrinsic spinal musculature or limbs and/or facilitation of inhibited muscle activity (Blunt, 1995; Bolton, 2000; Budgell, 2000; Suter, 2000).
Neurological/mechanical	Reduction of compressive or irritative insults to neural tissues (Haldeman, 2000).

Intriguing effects on neurophysiological and musculoskeletal function have been noted and these support the results from clinical trials. They include: increased range of joint

motion, (Miereau, 1988; Nansel, 1989) increased pain tolerance, (Terrett, 1984) reduced muscle activity, (Shambaugh, 1987) and muscle reflex responses. (Herzog, 1999) The nervous system may be affected by manipulation as suggested by experiments examining capillary blood flow, (Harris, 1987) serum levels of beta-endorphin, (Vernon, 1986; Christian, 1988) and substance P. (Brennan, 1992) A biomechanical picture of manipulation is beginning to emerge from studies on the forces involved and the resultant kinetics and kinematics. (Herzog, 1995) This is an area of intense scientific discussion and study.

There are numerous case-studies and observational outcome studies on the clinical effectiveness of chiropractic care. This summary will only focus on the experimental randomized controlled trial data. To date, at least 70 randomized clinical trials of a broadly defined spinal manipulation procedure can be found in the English literature. Most of these studies have been conducted on patients with low back, neck and head pain, with a few on other conditions. The clinical trials include placebo-controlled comparisons, comparisons to other treatments, and pragmatic comparisons of chiropractic management vs. common medical management. (Von Tulder, 1997; Hurwitz, 1996)

Results of RCTs of Spinal Adjustment/Manipulation (Please see list of references.)

Condition	# of RCTs	Positive, Equivocal, or Negative
Acute back pain	10	Positive
	3	Equivocal
Subacute and chronic back pain	8	Positive
	6	Equivocal
Mixed acute and chronic back pain	10	Positive
	4	Equivocal
Migraine headache	2	Positive
	1	Equivocal
Muscle tension headache	4	Positive
	1	Equivocal
Cervicogenic headache	1	Positive
Acute, subacute, chronic neck pain	4	Positive
	7	Equivocal
Dysmenorrhea	1	Positive
	1	Equivocal
Infantile colic	1	Positive
Enuresis	1	Equivocal
Asthma	2	Equivocal
Premenstrual syndrome	1	Positive
Carpal tunnel syndrome	1	Equivocal
Hypertension	1	Positive
	1	Equivocal

Forty-one RCTs of spinal manipulation for treatment of acute, subacute, and chronic low back pain have been published. Twenty-eight favored manipulation over the comparison treatments in at least a subgroup of patients, and the other 13 found no significant differences. No trial to date has found manipulation statistically or clinically less effective than the comparison treatment. Eleven of the low back pain trials included a

placebo arm and 8 of them demonstrated an advantage to manipulation. ^(Koes, 1996) Eleven RCTs of spinal manipulation for neck pain have been conducted, four positive and seven equivocal. Seven of 9 RCTs of manipulation for various forms of headache were positive.

The treatment effect sizes estimated by the majority of RCTs of manipulation on musculoskeletal pain appear to be clinically and statistically significant. Systematic reviews and meta-analyses in the early 1990s made cautiously positive or equivocal statements about the effectiveness of manipulation for low back pain, neck pain and headache, and called for higher quality studies. ^(Shekelle, 1992; Hurwitz, 1996; Koes, 1996; Anderson, 1992; Assendelft, 1995; Aker, 1996) A 1997 systematic review ^(Von Tulder, 1997) of manipulation for low back pain concluded that there was sufficient evidence to recommend manipulation for chronic back pain, but that there was weak evidence for acute back pain. The most recent review ^(Bronfort, 1999) used a slightly different method of analysis taking into account study design and quality, and concluded there was moderately strong evidence of benefit of manipulation for acute and chronic back pain. There was insufficient evidence for or against the effectiveness of manipulation for sciatica.

Using formal consensus processes, the Quebec Task Force on Whiplash-Associated Disorders in 1995, concluded that spinal manipulation had at least "weak cumulative evidence," and recommended that a short regimen of spinal manipulation may be used as a therapeutic trial for neck pain. ^(Cassidy, 1995) The U.S. Agency for Health Care Policy and Research in 1994 similarly concluded that spinal manipulation was safe and effective for acute low back pain. They reviewed all clinical trials available at the time and found no other treatment to have stronger evidence. ^(Bigos, 1994) Other countries for example, the U.K., Sweden, Denmark, and New Zealand, have also developed practice guidelines for the treatment of low back pain and have arrived at essentially similar conclusions.

The treatment of disorders not generally thought to be related directly to the musculoskeletal system by manipulation has been supported mainly by clinical experience and case reports. In the past few years, RCTs for primary dysmenorrhea, hypertension, chronic asthma, enuresis, infantile colic, and premenstrual syndrome have been completed with variable results. Two systematic reviews, one on extant trials at the time ^(Bronfort, 1996) and one recently on asthma sponsored by the Cochrane Collaboration ^(Hondras, 2000) concluded that the results so far do not argue convincingly for or against the utility of spinal manipulation for these kinds of conditions. Additional research is obviously needed in this area.

Although additional research is necessary, spinal adjustment/manipulation is already one of the most studied treatments for back and neck pain. ^(Bigos, 1994; Von Tulder, 1997) It should no longer be considered "investigational" in nature when compared to standard medical and other treatments in common use for common musculoskeletal conditions.

Describe the cost-effectiveness of chiropractic care provided as a stand-alone therapy with chiropractic care that is provided in conjunction with conventional medicine as part of an integrative approach.

To date, there are no formal cost-effectiveness studies that have compared chiropractic care to chiropractic care integrated with conventional medicine. Although settings exist where chiropractors work alongside medical doctors, these have not been subjected to this sort of analysis. In addition, typical chiropractic care is a case-management approach that emphasizes spinal adjustment, but also uses other procedures and lifestyle advice such as for exercise and nutrition, which might be considered "conventional." Finally, there are studies that indicate high rates of referral from chiropractors to medical physicians and a growing rate of medical doctors referring cases to chiropractors. (Curtis, 1992; Mainous, 2000)

Patients fall into one of three categories: those that require only chiropractic care, those that need co-management, and those that need specialty medical care alone. Logically, co-management of patients only requiring chiropractic care would seem to be a waste of health resources, unless it can be shown that improved outcomes are the result.

Compare the costs of chiropractic care with those of conventional medicine for the same or similar health conditions.

The relative cost-effectiveness of chiropractic and medical care has not yet been convincingly demonstrated, although approximately 40 studies in this area have been published in the past three decades. Most studies have been retroactive and actuarial in nature, using claims databases that may not accurately reflect actual total costs, episodes of care and the clinical experience of doctors and patients. Furthermore, most studies have failed to compare equivalent patients, measure clinical outcomes, and include both direct and indirect costs in the analysis. Sophisticated economic analyses have been lacking. To date, there is still not a single prospective randomized trial comparing chiropractic care to conventional medical care with properly assessed economic and clinical variables as outcome measures.

However, despite variation in study quality, the preponderance of information from a number of studies indicates that chiropractic services are equal to or less expensive than common medical treatments. Cost advantages for chiropractic care, particularly for back pain patients appear possible. The most recent and best done single study indicates that chiropractic care substitutes for medical care in occupational low back injuries, and that there may be a cost advantage relative to disability expense as well (Johnson, 1999).

The most comprehensive review of the cost-effectiveness of chiropractic management of low back pain was undertaken by a team of health economists at the direction of the government of Ontario, Canada. (Manga, 1993) Conclusions strongly favored a much greater inclusion and integration of chiropractic services.

Fourteen of seventeen retrospective actuarial reviews from 14 different jurisdictions in the United States prior to 1981 concluded that the total costs for injured workers managed by chiropractors were lower than similar cases managed by other providers (Johnson, 1985). In 16 of the studies, less time loss from work was reported in patients under chiropractic care. (Johnson, 1985) Publications after 1981 provide additional data regarding cost-comparison trends, and have improved on the descriptive methodology used in the earlier studies. A review of low back and neck sprain/strain claims data in Iowa reported average

case payments to medical providers at \$352 and \$223 for chiropractors. (Johnson, 1989) A review of Utah claims indicated that overall compensation costs were 10 times greater for medical physicians compared to chiropractors. Mean medical costs were \$684 for medically managed claims versus \$527 for those managed by chiropractors. (Jarvis, 1991) Additional studies from Florida in 1988 and Oregon in 1991 reinforce these trends. (Wolk, 1988a; 1988b; Nyiendo & Lamm, 1991) Similar data was also reported in Australia. (Ebrall, 1992)

A recent well-designed study from a private workers compensation carrier in California reported that for equivalent populations of patients, the health care costs of chiropractic and medical care were similar (\$1044 vs. \$1075). (Johnson, 1996a) However, indemnity costs (related to lost work time) under chiropractic care were substantially less making the average total claim costs (health care plus indemnity) under chiropractic care 20% less (\$1526 vs. \$1875. The most recent and sophisticated actuarial review of one California insurer's database on 185 closed claims between 1991-1993 concluded that medical and chiropractic management costs of non-surgical, low back work injuries is nearly equivalent. (Johnson, 1999) Medical costs, temporary disability, and permanent disability costs were considered.

Two years of large fee-for-service claims data records were examined in one study. Total health care costs as represented by third party payments were significantly lower for those patients treated by chiropractors. (Stano, 1993) Total adjusted cost differences ranged from \$291 to \$1722 over the two-year period. (Stano, 1994) Stano noted that outpatient costs tended to be slightly lower for patients exclusively using medical services, but lower hospital costs for patients under chiropractic care more than offset these additional costs. (Stano, 1994)

Stano & Smith (1996) subsequently compared health insurance payments and patient utilization patterns for episodes of low back conditions care, controlling for differences in clinical (eg, diagnosis, severity, episodes of relapse) and insurance coverage characteristics. They reported that costs were higher for episodes where the medical doctor was the first contact provider. Chiropractors were also more likely to retain the patient for subsequent episodes.

In contrast, Shekelle (1995) concluded that chiropractors had significantly more visits per episode, and the highest mean outpatient cost per episode. Disparity in the conclusions drawn between Shekelle and Stano may have resulted from differences in the data pool and study methods. Shekelle's study was observational in nature and reviewed evidence collected from the RAND Health Insurance Experiment data from the 1970's. Data on 1020 episodes of back care, totaling 8,825 visits by 686 different persons was evaluated.

Total health care costs for comparable cases of neck and back pain for members in a health maintenance organization (HMO) who sought chiropractic care and other treatment methods over a one-year period showed that care, prescription and imaging costs were lower in the group managed by chiropractors. Patient satisfaction and surgical rates were nearly identical for both groups. (Mosely, 1996)

Carey⁽¹⁹⁹⁵⁾ reported a comparison of outcomes (functional recovery, return to work, complete recovery from back pain, satisfaction) and cost of care for patient management by chiropractors, orthopedists and primary care physicians in both urban and rural regions of North Carolina. Clinical outcomes were assessed by telephone interview. Results were similar for all groups, although satisfaction was highest in those treated by chiropractors. Chiropractic costs were extrapolated from numbers of visits based on state-wide average costs per visit (not actual reimbursement). These estimated costs were highest for chiropractic and orthopedic care and lowest under management by primary care physicians. However, these differences may be accounted for by the fact that medical delivery was provided under managed care, while all of the chiropractic cases were fee-for-service.

The effects of dynamically evolving delivery systems of care severely complicate the design, implementation and analysis of true cost-effectiveness studies and will need to be dealt with in future efforts.

Summarize patient satisfaction data.

Chiropractors generate very high levels of patient satisfaction. A recent essay opined that much of chiropractic's success and perhaps its most important contribution to health care might have to do with the patient-physician relationship.^(Kaptchuk, 1998) Analyses from anthropological and sociological perspectives have suggested that treatment by a chiropractor, especially for many patients with chronic pain, can generate a sense of understanding and meaning, an experience of comfort, an expectation of change, and a feeling of empowerment.^(Coulter, 1995; Oths, 1993; Coulehan, 1985) The hands-on and compassionate "can do" clinical behavior of the typical chiropractor seems to be concrete, reassuring and immediately satisfying to many patients. Consumer-oriented surveys, observational studies and randomized trials leave little doubt that chiropractic patients are very satisfied with the treatment they receive, often at rates much greater than with other health professionals.^(Cherkin, 1989; Sawyer, 1993; Carey, 1995; Cherkin, 1998) In one study, chiropractors were retained as primary provider by a much greater percentage of their patients (92%) who had a second episode of back pain care than were medical doctors.^(Shekelle, 1995)

Describe current significant barriers to the access and delivery of chiropractic care.

Chiropractors have only marginal statutory roles in many integrated delivery care systems such as HMOs, the U.S. military, Federal government health plans, Medicare and Medicaid. Regulations should be examined and revised to be inclusive and equitable.

Chiropractors are only marginally included in studies of health care resources and delivery systems.

Chiropractic institutions receive virtually no financial support from Federal government programs designed to support and enhance health professions education and practice.

Please suggest specific policy recommendations that would improve the access and delivery of chiropractic care to consumers, including legislative or regulatory recommendations.

Increase funding for health services research that targets access and delivery issues with regard to the chiropractic profession.

Recommend that the Agency for Healthcare Research and Quality (AHRQ), the National Institutes of Health, the Health Resources and Services Administration, and others develop research agendas that include consideration of chiropractic and other CAM professions.

Ensure that chiropractors are treated equitably in health delivery and reimbursement systems.

Prohibit discrimination based on type of practitioner license in all Federal health delivery and reimbursement systems such as Medicare, Medicaid, the military, etc.

Mandate the inclusion of chiropractors on all appropriate advisory councils, policy committees, task forces, etc. that deal with health issues at the Federal level.

Discuss whether chiropractic practice should be delivered as stand-alone care or should be integrated with more conventional therapies.

Both. Chiropractic care should be delivered as a stand-alone clinical practice AND it should be integrated in conventional health delivery systems that provide appropriate access and choice to patients. By history and habit chiropractors believe themselves to be primary health care providers, and chiropractic practice demonstrates many primary care attributes. However, this becomes a contentious point in the PCP gatekeeper vs. direct access issue in reimbursement and delivery systems when non-chiropractors control the flow of patients. Chiropractors and their patients are accustomed to direct access and chiropractors are trained to handle it appropriately.

Since chiropractic is a profession and not simply a procedure, the issue of chiropractic integration is a complex systems problem that must be examined at a variety of levels. CAM procedures and professions can be more easily integrated at some levels than others and there can be varying degrees of integration at the various levels. This is currently the case with chiropractic. These levels of integration include the following:

- ◆ The patient, or health consumer level
- ◆ The clinical management or health practitioner level
- ◆ The reimbursement and/or care delivery system level
- ◆ The regulatory and policy level
- ◆ The cultural, social and political level

Chiropractic is arguably very well integrated at the health consumer level in terms of use and satisfaction, and there is some evidence for a certain degree of integration at the clinical and reimbursement levels. Some examples can be cited.

On the other hand, chiropractic is not well-integrated in the sense of coordinated, interdisciplinary clinical behavior with conventional medical doctors. The following model of a continuum of integrative clinical practice makes this distinction clear, and it can be applied to most forms of CAM practice. It does not apply to the direct learning and use of CAM procedures by medical practitioners themselves. From top to bottom professional autonomy declines and shared expertise and professional communication increases.

- ◆ Parallel practice
- ◆ Collaborative practice
- ◆ Consultative practice
- ◆ Coordinated practice

Today, the majority of CAM is in the form of parallel practices. Patients choose and integrate their own health care and find ways to pay for it. Communication between practices is minimal. Some CAM is moving into a collaborative practice mode with case-by-case exchanges of information and referrals. There is evidence that chiropractic is increasingly moving into this stage with increasing referral rates both ways, but data are few. Consultative practice consists of the giving and taking of expert advice and integration occurs at the practitioner-to-practitioner level instead of at the level of the patient. Coordinated practice as it applies to CAM is very rare and undocumented. In this mode, a formal management function is added to the case-management decision-making process that may be subject to administrative review. PCP gatekeepers may function in this role. This kind of practice may only be feasible in large organizations with sufficient infrastructure to support it. Furthermore, excellent teamwork attitudes, values, and skills are essential.

Combining the integration level model with the continuum of practice model yields interesting observations that deserve additional study. For example, chiropractic is well integrated at the patient level, and increasingly so at the reimbursement/payor level. However, due to the nature of the way in which reimbursement systems are organized, chiropractic may continue to operate only in the parallel and collaborative practice modes. In other words, true multidisciplinary and interdisciplinary practice may be very difficult to obtain. Furthermore, whether or not this is a bad thing is debatable. Perhaps integration should be kept at the patient level; perhaps the dilution of professional autonomy necessary for consultative and coordinated practice will eliminate the attributes of CAM that make it attractive and effective. There is no data on this issue.

Finally, there are significant challenges to true interdisciplinary practice even within the established medical delivery system now, and CAM represents the special challenges of diverse disciplines, "turf" issues, non-standard practices, administrative and other resistance to change, history, habit and lack of experience, data, and knowledge. These



will all have to be addressed simultaneously in order for true integration to occur. (Bielinski, 2000)

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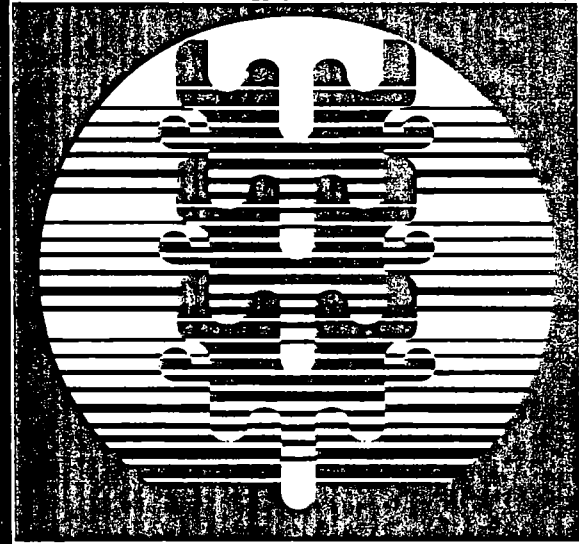
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Meeker

MANGA REPORT
EXECUTIVE SUMMARY



THE
EFFECTIVENESS AND
COST-EFFECTIVENESS
OF
CHIROPRACTIC
MANAGEMENT OF
LOW-BACK PAIN

The Manga Report, commissioned by the Ontario Ministry of Health and prepared by highly respected health economists at the University of Ottawa, represents the largest and most thorough analysis of the scientific literature on low back pain ever. It clearly demonstrates that chiropractic management of low back pain is more effective, more cost effective, and produces higher levels of patient satisfaction than other forms of management. The report recommends that chiropractic services, in Ontario, be fully funded by OHIP and be fully integrated into the health care system, including hospitals. The following is a summary of the report.

EXECUTIVE SUMMARY

INTRODUCTION

The serious fiscal crisis of all governments in Canada is compelling them to contain and reduce health care costs. It has brought a new and unprecedented emphasis on evidence-based allocation of resources, with an over riding objective of improving the cost-effectiveness of health care services.

The area of low back pain (LBP) offers governments and the private sector an excellent opportunity to attain the twin goals of greater cost-effectiveness and a major reduction in health care costs. Today LBP has become one of the most costly causes of illness and disability in Canada - a phenomenon which does not appear to be generally appreciated or understood in medical and government circles in Canada. Studies on the prevalence and incidence of LBP suggest that it is ubiquitous, probably the leading cause of disability and morbidity in middle-aged persons, and by far

the most expensive source of workers' compensation costs in Ontario - as indeed in most other jurisdictions.

Much of the treatment of LBP appears to be inefficient. Evidence from Canada, the USA, the UK and elsewhere shows that there are conflicting methods of treatment, many with little, if any, scientific evidence of effectiveness, and very high costs of treatment. Despite this, levels of disability from LBP are increasing.

In the Province of Ontario LBP is managed mostly by physicians and chiropractors, with physiotherapists also playing a significant role. While medical services are fully insured under Medicare, chiropractic care services are only partially covered. LBP patients incur the highest out-of-pocket expenses for chiropractic services. Virtually no out-of-pocket expenses are incurred for medical treatment, with the exception of drugs, and out-of-pocket expenses incurred for physiotherapy services fall somewhere in between the two.

Physicians, chiropractors, physiotherapists and an assortment of other professionals together offer about thirty-six therapeutic modalities for the treatment of LBP. In this study we focused principally on the effectiveness and cost-effectiveness of chiropractic and medical management of LBP.

FINDINGS

E1

On the evidence, particularly the most scientifically valid clinical studies, spinal manipulation applied by chiropractors is shown to be more effective than alternative treatments for LBP. Many medical therapies are of questionable validity or are clearly inadequate.

E2

There is no clinical or case-control study that demonstrates or even implies that chiropractic spinal manipulation is unsafe in the treatment of low back pain. Some medical treatments are equally safe, but others are unsafe and generate

iatrogenic complications for LBP patients. Our reading of the literature suggests that chiropractic manipulation is safer than medical management of low-back pain.

E4 While it is prudent to call for even further clinical evidence of the effectiveness and efficacy of chiropractic management of LBP, what the literature revealed to us is the much greater need for clinical evidence of the validity of medical management of LBP. Indeed, several existing medical therapies of LBP are generally contraindicated on the basis of the existing clinical trials. There is also some evidence in the literature to suggest that spinal manipulations are less safe and less effective when performed by non-chiropractic professionals.

E4 There is an overwhelming body of evidence indicating that chiropractic management of low-back pain is more cost-effective than medical management. We reviewed numerous studies that range from very persuasive to convincing in support of this conclusion. The lack of any convincing argument or evidence to the contrary must be noted and is significant to us in forming our conclusions and recommendations. The evidence includes studies showing lower chiropractic costs for the same diagnosis and episodic need for care.

E5 There would be highly significant cost savings if more management of LBP was transferred from physicians to chiropractors. Evidence from Canada and other countries suggests potential savings of many hundreds of millions annually. The literature clearly and consistently shows that the major savings from chiropractic management come from fewer and lower costs of auxiliary services, much fewer hospitalizations, and a highly significant reduction in chronic problems, as well as in levels and duration of disability. Workers' Compensation studies report that injured workers with the same specific diagnosis of LBP returned to work much sooner when treated by chiropractors than by physicians. This leads to very significant reductions

in direct and indirect costs.

E6 There is good empirical evidence that patients are very satisfied with chiropractic management of LBP and considerably less satisfied with physician management. Patient satisfaction is an important health outcome indicator and adds further weight to the clinical and health economic results favouring chiropractic management of LBP.

E7 Despite official medical disapproval and economic disincentive to patients (higher private out-of-pocket cost), the use of chiropractic has grown steadily over the years. Chiropractors are now accepted as a legitimate healing profession by the public and an increasing number of physicians.

E8 In our view, the constellation of the evidence of:

- (a) the effectiveness and cost-effectiveness of chiropractic management of low-back pain;
- (b) the untested, questionable or harmful nature of many current medical therapies;
- (c) the economic efficiency of chiropractic care for low-back pain compared with medical care;
- (d) the safety of chiropractic care;
- (e) the higher satisfaction levels expressed by patients of chiropractors, together, offers an overwhelming case in favour of much greater use of chiropractic services in the management of low-back pain.

E9 The government will have to instigate and monitor the reform called for by our overall conclusions, and take appropriate steps to see that the savings are captured. The greater use of chiropractic services in the health care delivery system will not occur by itself, by accommodation between the professions, or by actions on the part of the Workers' Compensation Board and the private sector generally.

RECOMMENDATIONS

Our recommendations for reform include the following:

R1 Current policy discourages the utilization of chiropractic services for the management of LBP. There should be a shift in policy to encourage and prefer chiropractic services for most patients with LBP.

R2 Chiropractic services should be fully insured under the Ontario Health Insurance Plan, removing the economic disincentive for patients and referring health providers. This one step will bring a shift from medical to chiropractic management that can be expected to lead to very significant savings in health care expenditure, and even larger savings if a more comprehensive view of the economic costs of low-back pain is taken.

R3 Chiropractic services should be fully integrated into the health care system. Because of the high incidence and cost of LBP, hospitals, managed health care groups (community health centres, comprehensive health organizations, and health service organizations) and long-term care facilities should employ chiropractors on a full-time and/or part-time basis. Additionally such organizations should be encouraged to refer patients to chiropractors.

R4 Chiropractors should be employed by tertiary hospitals in Ontario. Hospitals already employ chiropractic in the United States with good effect. Similar recommendations have been made recently by government inquiries in Australia and Sweden, and following government funded research in the U.K. and other countries. Unnecessary or failed surgery is not only costly but also represents low quality care. The opportunity for consultation, second opinion and wider treatment options are significant advantages we foresee from this initiative which has been employed with success in a clinical research setting at the University Hospital, Saskatoon.

R5 Hospital privileges should be extended to all chiropractors for the purposes of treatment of their own patients who have been hospitalized for other reasons, and for access to diagnostic facilities relevant to their scope of practice and patients' needs.

R6 Chiropractors should have access to all pertinent patient records and tests from hospitals, physicians, and other health care professionals upon the consent of their patients. Access should be given upon the request of chiropractors or their patients.

R7 Since low-back pain is of such significant concern to workers' compensation, chiropractors should be engaged at a senior level by Workers' Compensation Board to assess policy, procedures and treatment of workers with back injuries. This should be on an interdisciplinary basis with other professional, technical and managerial staff so that there is early development of more constructive relationships between chiropractors, physicians, physiotherapists and Board staff and consultants. A very good case can be made for making chiropractors the gatekeepers for management of low-back pain in the workers' compensation system in Ontario.

R8 The government should make the requisite research funds and resources available for further clinical evaluation of chiropractic management of LBP, and for further socio-economic and policy research concerning the management of LBP generally. Such research should include surveys to obtain a better understanding of patients' choices, attitudes and knowledge of treatments with respect to LBP. The objective of these surveys should be better information for health policy, programme planning and consumer education purposes.

R9 Chiropractic education in Ontario should be in the multidisciplinary atmosphere of a university, with appropriate public funding. Chiropractic is the only regulated health profession in Ontario without public funding for education at present, and it works against the best

interests of the health care system for chiropractors to be educated in relative isolation from other health science students.

510 Finally, the government should take all reasonable steps to actively encourage cooperation between providers, particularly the chiropractic, medical and physiotherapy professions. Lack of cooperation has been a major factor in the current inefficient management of LBP. Better cooperation is important if the government is to capture the large potential savings in question and, it should be noted, is desired by an increasing number of individuals within each of the professions.

AUTHORS

PRAN MANGA, PH.D.

Pran Manga is a Professor of Health Economics and Director of the Master in Health Administration Program of the University of Ottawa. He is the author of 25 monographs and over 60 articles in health economics, health policy and biomedical ethics. He has served as a consultant for more than 40 occasions to Canadian governments, and private sector and international organizations.

DOUG ANGUS, M.A.

Doug Angus is an adjunct Professor of the MHA Program at the University of Ottawa and the Project Director of a major national research endeavour on the cost-effectiveness of the Canadian Health Care System. He is a Health Economist with 20 years of experience in both the public and private sectors and has published extensively in national and international journals.

COSTA PAPADOPOULOS, MHA

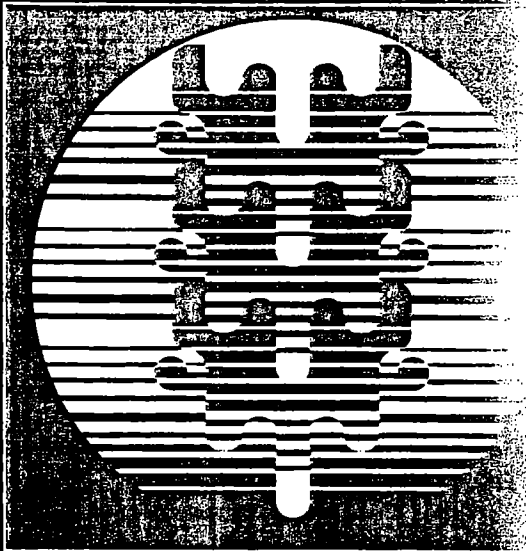
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Tel: 905-629-8211 Fax: 905-629-8214

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MANGA REPO

EXECUTIVE SUMMARY



THE EFFECTIVENESS AND COST-EFFECTIVENESS OF CHIROPRACTIC MANAGEMENT OF LOW-BACK PAIN

The Palmer Center for Chiropractic Research

The PCCR is an administrative component of the Palmer Chiropractic University Foundation and an integral part of the Palmer College of Chiropractic. While research has always been in the mission statement of this 103 year old institution, an organized center dates from 1984 with the establishment of the Palmer Institute for Graduate Studies and Research. In 1995, the effort was re-organized and became the Palmer Center for Chiropractic Research. In the last five years, the PCCR has grown dramatically in terms of external funding and research productivity. Notably in 1997, the National Center for Complementary and Alternative Medicine (NCCAM) awarded a center grant to establish the Consortial Center for Chiropractic Research (CCCR). This event was seminally important because it was the first significant NIH research funding awarded to the chiropractic profession. In the last five years, investigators at the PCCR have won other research awards from NIH, the Bureau of Health Professions of the U.S. Health Resources and Services Administration (HRSA), and from private foundations and health businesses. As a result, the PCCR has become one of the largest and most comprehensive chiropractic research centers in the world.

The present principal areas of strength and future potential are in the following programs: 1) Neurophysiology and Anatomy, 2) Clinical Biomechanics, and 3) Clinical Trials and Epidemiology. The PCCR is the administrative headquarters for the Consortial Center for Chiropractic Research. There are also three major research support cores: the Office of Data Management (ODM), the Animal Care Facility, and the Research Clinic. The PCCR supports research training through its Research Residency Program and by collaborating with the Master's Degree in Anatomy graduate program.

The Consortial Center for Chiropractic Research (CCCR)

The mission of the CCCR at Palmer is to examine the effectiveness and validity of chiropractic care and to provide assistance to researchers in developing high-quality research projects. William Meeker, DC, MPH, Director of Research for the PCCR, is also the Principal Investigator for the CCCR. The rationale for establishing such a center came with the recognition that there was a small and incomplete body of chiropractic research; and that there was a need for a stronger chiropractic research infrastructure and better scientific training and experience in the profession. In an attempt to meet these needs, the CCCR is structured as a consortium of five chiropractic colleges and a number of other institutions with the PCCR as the lead administrative institution. The specific aims are to:

- ◆ establish linkage of academic centers with which chiropractic investigators are associated;
- ◆ establish an Advisory committee to provide research program advice;
- ◆ establish a bibliographic resource on chiropractic topics;
- ◆ develop a program of assistance activities to provide clinical research, basic scientific and technical assistance to potential chiropractic investigators;

- ◆ develop and implement research workshops, seminars, and educational materials; act as an institutional focus for formal training in research methodology, bioethics, biostatistics, clinical trial design, epidemiological and health services studies, and basic laboratory methods;
- ◆ evaluate the feasibility of using data from chiropractors for research projects;
- ◆ establish a network of chiropractic clinicians and investigators in specific topic areas;
- ◆ link investigators to the technical expertise necessary to pursue research goals;
- ◆ prioritize research topics related to chiropractic treatment of musculoskeletal conditions;
- ◆ develop a mechanism for scientific and technical merit review of research proposals;
- ◆ implement selected research projects.

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Kail

Divider Title: _____

Efficacy and Cost-Effectiveness in Naturopathic Care

Testimony before the
White House Commission on Complementary and Alternative Medicine
December 4, 2000

I am Konrad Kail. I am a naturopathic physician. I am the director of the Southwest College Research Institute and a co-founder of the Southwest College of Naturopathic Medicine and Health Sciences in Phoenix, Arizona. I serve on the advisory council to the National Center for Complementary and Alternative Medicine.

Naturopathic medical education trains family practitioners in preventive medicine and natural therapeutics. There are four accredited schools of naturopathic medicine in North America recognized by the Council on Naturopathic Medical Education, the accrediting body approved by the U.S. Department of Education.

Primary alternative treatment modalities taught in these institutions include:

- Lifestyle modification – diet, exercise, stress management
- Clinical orthomolecular nutrition – nutritional supplementation
- Botanical medicine – herbal prescription
- Energy medicine – acupuncture, homeopathy, ayurvedic medicine
- Physical medicine – physical therapies, spinal manipulation, hydrotherapy
- Psychological medicine – counseling and natural psychoactive medicines
- Minor surgery – office procedures under local anesthesia without invading major body cavities
- Obstetrics – pre-natal care and low risk home birthing

The scope of practice varies according to the jurisdiction and licensure. The broadest scope jurisdictions include prescription of controlled substances and all routes of administration of natural substances including intravenous.

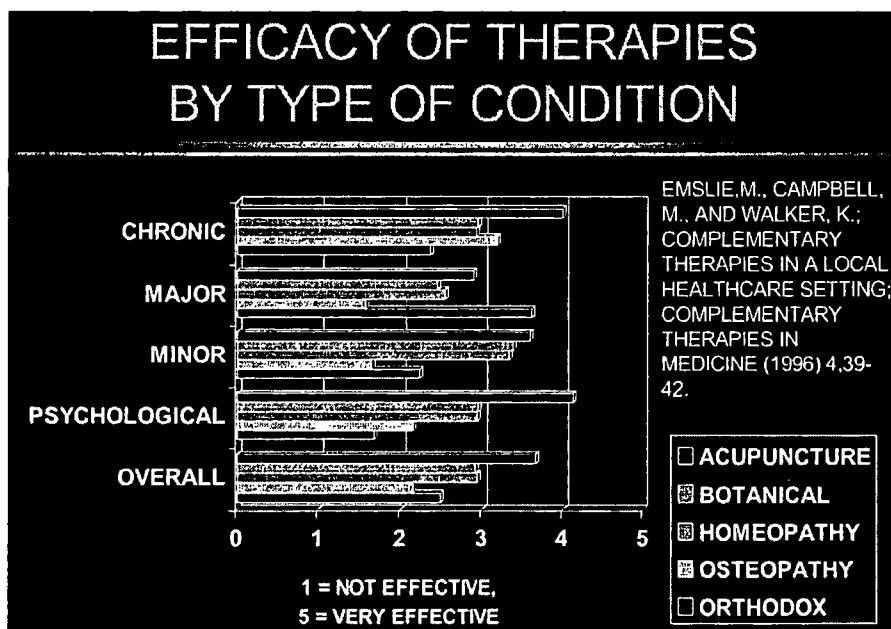
It has been well documented that at least one third of Americans use alternative medicine. Although conventional medicine has long enjoyed large sources of both private and public funding to research the efficacy and cost-effectiveness of commonly used agents and procedures; it has only been recently, with the advent of the National Center of Complementary and Alternative Medicine, that funding has been available to establish an evidence base for CAM agents and procedures.

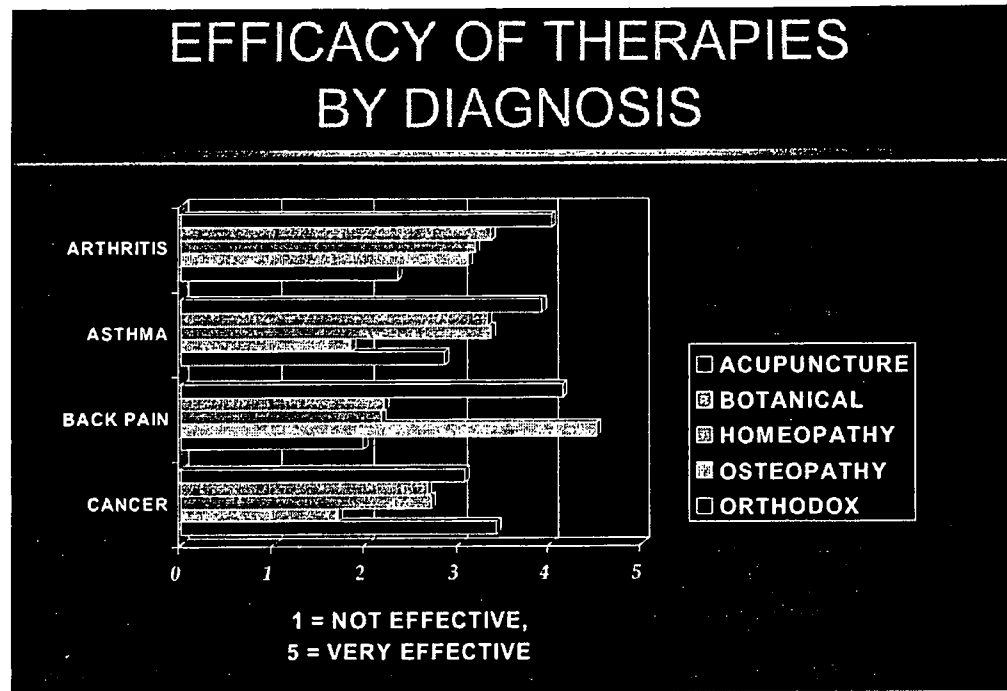
A medline search of peer reviewed literature in the National Library of Medicine on 11/26/00 revealed:

Nutrients in humans	368 citations
Supplements in humans	311 citations
Medicinal plants in humans	180 citations
Manipulative therapy	599 citations
Acupuncture	7446 citations
Ayurveda	109 citations
Homeopathy	1761 citations

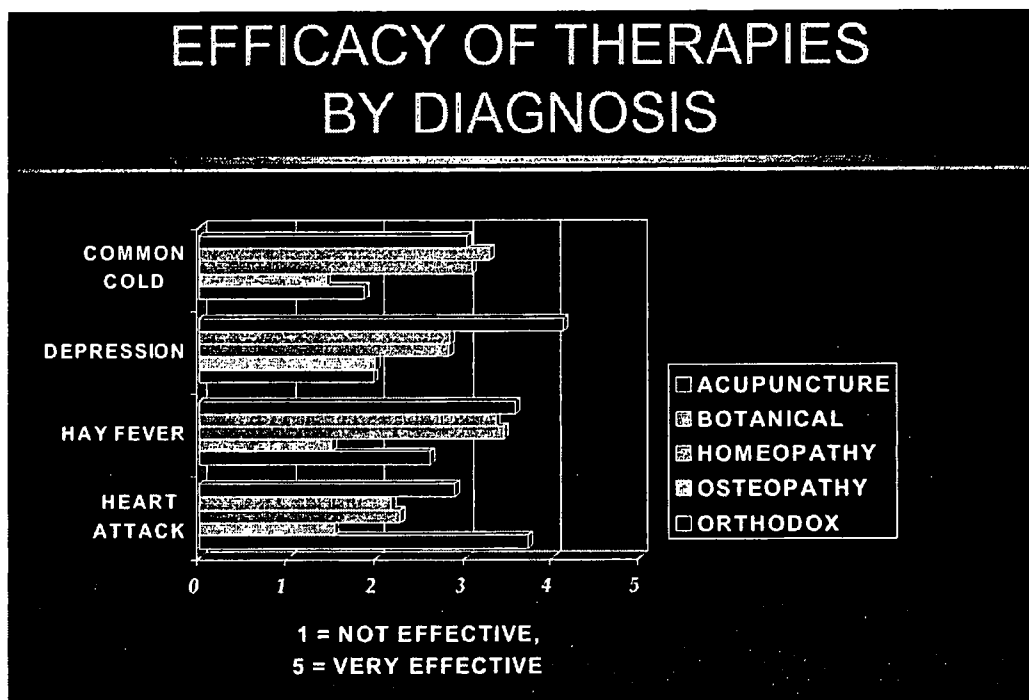
However, there is a relative paucity of controlled clinical trials available for review to look at the efficacy of CAM therapies. There is also only a short history of limited third party reimbursement to look at utilization and cost-effectiveness issues, which are considered proprietary by third party payors. I have attempted to put together as much information for you as can be gleaned from the limited data available.

A 1996 study by Emslie, et al, published in Complementary Therapies in Medicine compared the efficacy of orthodox medicine with manipulation, homeopathy, botanicals, and acupuncture in a variety of conditions. The chart shows outcomes for chronic conditions, major diseases, minor illnesses, psychological problems and overall efficacy. On a scale of 1-5 with 1 being not effective and 5 being very effective, manipulation scored 2.14, botanicals 2.91, homeopathy 2.94 and acupuncture 3.66, compared to orthodox medicine 2.48. Orthodox medicine was rated most efficacious for major diseases, but ranked lower in the other categories

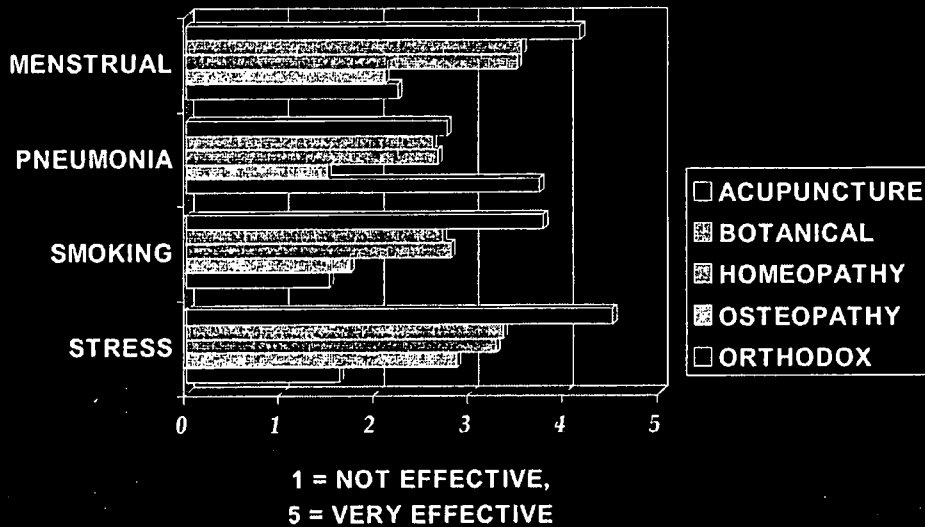




The same study showed varying results when broken down by specific diseases.



EFFICACY OF THERAPIES BY DIAGNOSIS



Patients of naturopathic physicians tend to regard them as their primary care physicians, although many also see allopathic physicians because of insurance reimbursement

PERCEPTIONS OF N.D.'s AS P.C.P's

- N.D. IS PRIMARY CARE PHYSICIAN 75%
 - I HAVE A PRIMARY CARE M.D. 46%
 - I ALSO SEE M.D. FOR SAME CONDITION 31%
 - MY FIRST CALL IS TO MY NATUROPATH 73%
 - IF INSURANCE WAS NO ISSUE, MY N.D. 97%
 - WOULD BE MY FIRST CHOICE
- NATUROPATHIC PATIENT SURVEY PILOT,
PIHCP, JOHN WEEKS, 1996

The naturopathic profession has put forward the notion that alternative medical care is more cost effective than conventional care. Potential cost savings come from several areas. Because patients are educated about how to stay healthier through lifestyle intervention; and because the nutritional, botanical, and homeopathic medicines that are prescribed by their naturopathic physicians become a home medical chest for them to treat themselves; patients require less office visits, which greatly reduces cost. A survey done by John Weeks in 1996, showed that respondents used less pharmaceutical medication and actually avoided surgery or other procedures.

POTENTIAL COST SAVINGS IN NATUROPATHIC CARE

- LOWERED OR DISCONTINUED
CONVENTIONAL Rx 49%
- FORGONE SURGERY
OR PROCEDURE 16%
- HOMECARE EDUCATION GOOD-
EXCELLENT 96%
- EFFECT ON LIFESTYLE GOOD-
EXCELLENT 92%

– NATUROPATHIC PATIENT SURVEY PILOT, PIHCP,
JOHN WEEKS, 1996

When numbers of visits and duration of care is reviewed, the average number of visits per year to naturopathic physicians was 2.6 when compared with 2.4 visits per year to orthodox family physicians. Sicker people required more visits and duration of relationships were similar to conventional family physicians.

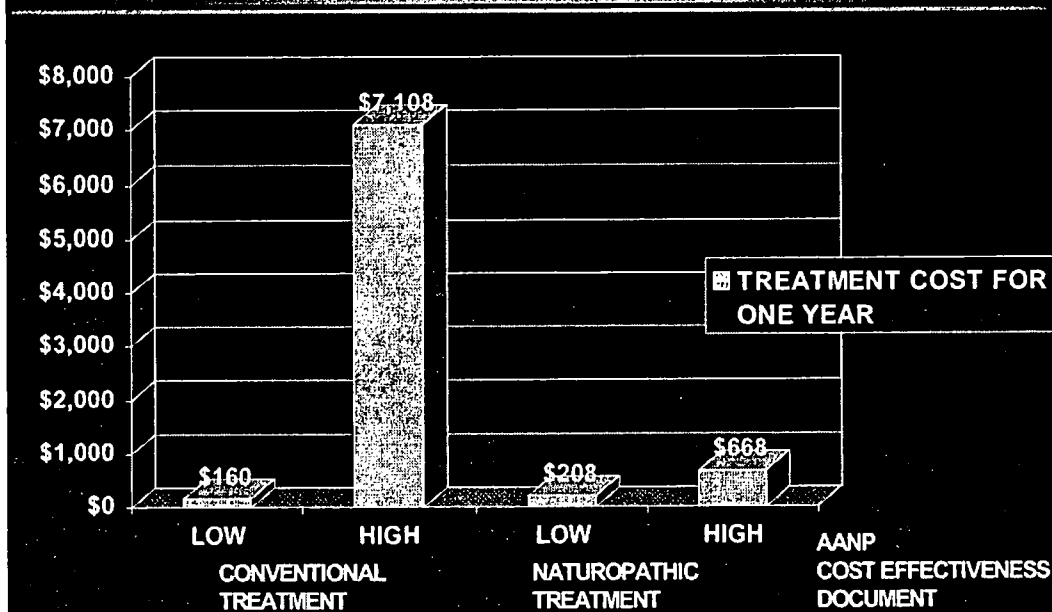
DURATION OF RELATIONSHIPS & NUMBERS OF VISITS IN NATUROPATHIC CARE

- 2-5 YEARS 23%
- OVER 5 YEARS 16%
- 11-20 TOTAL VISITS 15%
- OVER 20 TOTAL VISITS 23%

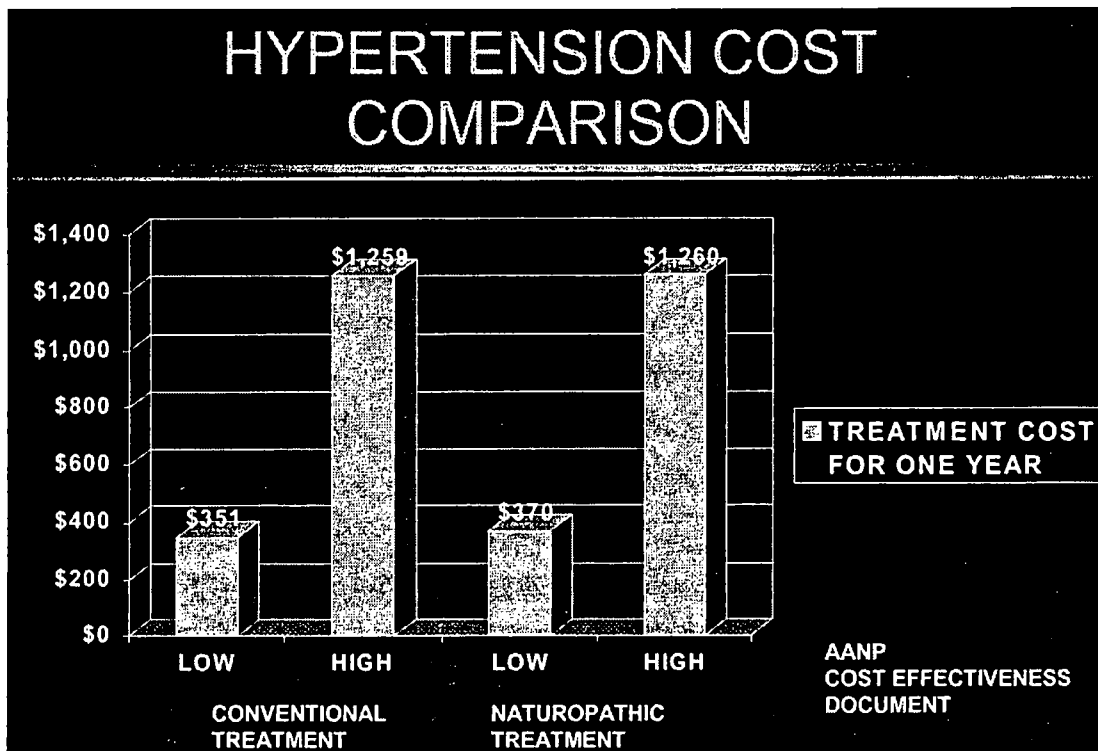
— NATUROPATHIC PATIENT SURVEY PILOT,
PIHCP, JOHN WEEKS, 1996

The American Association of Naturopathic Physicians (AANP) showed that when looking at cost comparisons of allopathic and naturopathic care for an acute problem such as otitis media; minimal care costs were similar. When looking at extended care for the same problem, the cost differential was large. Naturopathic physicians rarely need to refer for surgical implanting of ear drainage tubes.

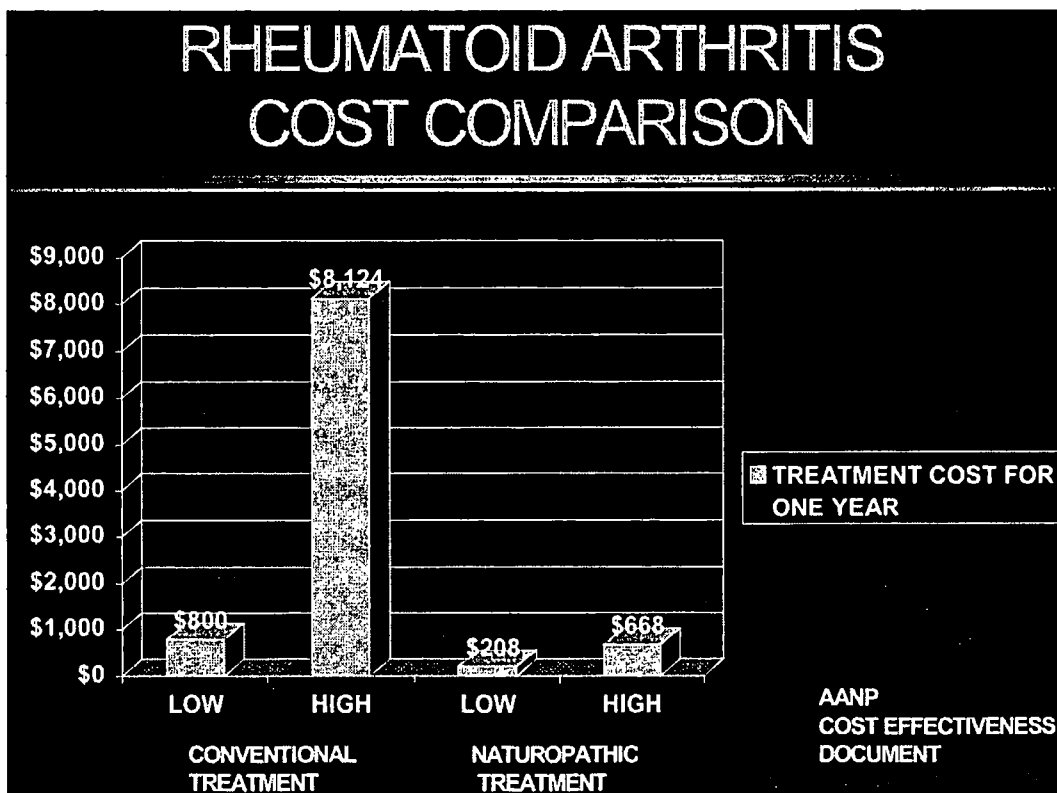
OTITIS MEDIA COST COMPARISON



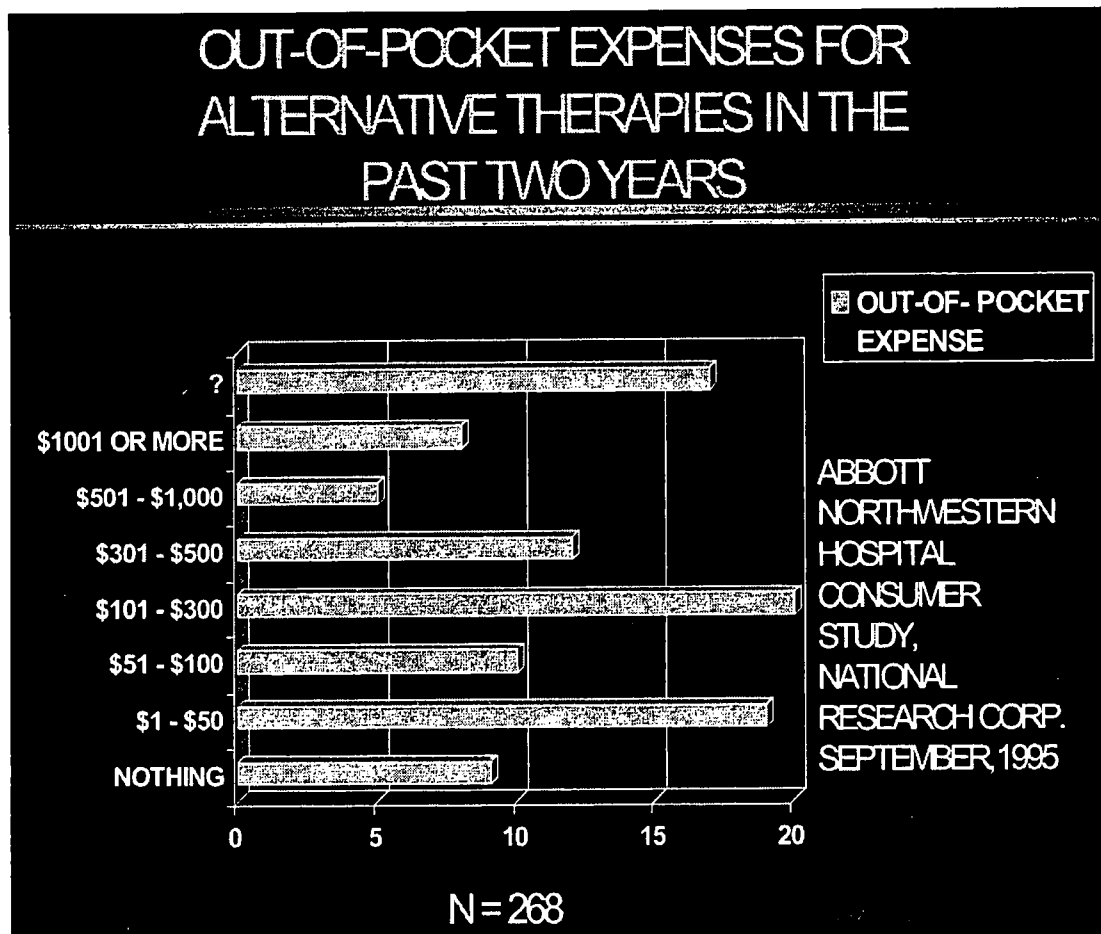
When looking at allopathic and naturopathic management of chronic diseases, the cost differential varies depending on the disease. For example, the cost of treating hypertension is almost identical.



But when looking at rheumatoid arthritis, the cost differential is large when comparing allopathic and naturopathic management.



Unfortunately, few third party payers reimburse for naturopathic medical care. Most patients still pay out of pocket for alternative care. The Abbott Northwestern Hospital Consumer Study done by the National Research Corporation found that the most people spent between \$100 and \$300 dollars in out of pocket expenses for alternative care from 1993-1995.



Botanical and homeopathic therapeutics were rated as the most satisfactory of alternative therapeutics, with dietary and chiropractic services being less satisfactory. However, in general, consumers were well satisfied with their alternative medical experience.



In summary, I hope that I have been able to present to you an overview of the effectiveness and cost-effectiveness of naturopathic medicine.

ALTERNATIVE TREATMENT MODALITIES

- EFFECTIVE
- COST LESS
- NON-INVASIVE
- EASILY MANAGED AT HOME
- LESS SIDE EFFECTS
- ENHANCE BIOCHEMISTRY AND PHYSIOLOGY
- ENHANCE CONVENTIONAL THERAPEUTICS



I must re-emphasize that this information is gleaned from a relative paucity of evidence available for review. It is the obligation of this body to advise the president as to policy regarding CAM. Naturopathic medicine must be able to survive the same level of scrutiny that has been applied to conventional medicine in order for it to be proven to be safe and efficacious for use by the American public. I urge you to **recommend greater funding for the National Center for Complementary and Alternative Medicine** at the National Institutes of Health.

I also find it unfortunate that the vast majority of people who need this medicine the most, have no access to it. I am referring to the elderly, the poor and the disenfranchised who are unable to pay out of pocket for these services. It is extremely important that you **recommend inclusionary language for alternative medicine in entitlement acts such as medicare, medicaid, the Indian health service, and champus for the military**. Only then will third party payers reimburse for these services to any great extent. Only then will the great majority of Americans be able to realize their right to choose the physician and health care services that they want.

I will conclude with a quote from the U.S. Preventive Services Task Force:

***"Lack of evidence of effectiveness does
not constitute evidence of ineffectiveness"***

I thank you for your time and attention.

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Notes

- Need Cost Effectiveness Studies for CDM
- Need Nursing Education Training
- Public Education Programs
- School Loan Forgiveness for MSN Program

79- Studies Supported by NIH -
28- 492- CDC

Research Data on Cost Effectiveness of Acupuncture

Avoidance of Surgery

Christensen BV et al (1992) Acupuncture treatment of severe knee osteoarthritis: a long-term study, *Acta Anaesthesiol Scand* 36:519-525.

Twenty-nine patients with severe osteoarthritis of the knee, each awaiting arthroscopic surgery, were randomized to receive 6 weeks of acupuncture treatment or be placed on a waiting list to receive similar acupuncture treatment starting 9 weeks later. Of the 29 patients, 7 were able to cancel their scheduled surgeries at a cost savings of \$9,000 per patient.

Decreased Days in Hospital and Rehabilitative Nursing Home

Johansson K et al (1993) Can sensory stimulation improve the functional outcome in stroke patients? *Neurology* 43:2189-2192.

Half of 78 stroke patients receiving standard in-hospital rehabilitative care (initiated within 10 days of stroke) were randomly assigned to receive adjunctive acupuncture treatment. Patients given standard care plus acupuncture recovered faster and to a greater extent. Those receiving acupuncture spent, on average, 88 days per patient in hospital and nursing homes compared to 161 days per patient receiving standard rehab care alone. Cost savings averaged \$26,000 per patient.

Quicker Return to Physical Labor

Gunn CC et al (1980) Dry needling of muscle motor points for chronic low-back pain, *Spine* 5:279-291.

Fifty-six patients at a workers' compensation clinic were randomized to receive physical therapy/occupational therapy/exercise with or without acupuncture. Of the 29 treated with acupuncture, 18 were able to return to their original or equivalent jobs and 10 returned to lighter employment. Of the 27 who received only the standard therapy, 4 were able to return to their original or equivalent jobs and 14 to lighter employment.

Avoidance of Surgery, Fewer Hospital Visits and Greater Return to Employment

Ballegaard S et al (1996) Cost-benefit of combined use of acupuncture, shiatsu and lifestyle adjustment for treatment of patients with severe angina pectoris, *Acupunct Electrother Res* 21:187-197.

Sixty-nine patients with severe angina received 12 acupuncture treatments in 4 weeks. Patients were also instructed in performing shiatsu 2 times per day and received counseling in stress reduction, exercise and diet. At the 2-year follow-up, of the 49 patients who had been candidates for coronary bypass or balloon angioplasty surgery, 30 had their surgeries postponed due to clinical improvement. Cost saving from avoided surgery was \$13,000 per patient. The number of in-hospital days decreased for all 69 patients, averaging 79% reduction in the first year post-treatment and 95% in the second year. Outpatient visits decreased by 60% and 87%, respectively. Additional cost savings resulted from the increase in percent of patients able to work, from 11% pre-treatment to 60% at 2 years post-treatment. Estimated savings in annual sick pay was \$9,000 per patient.

Reduction of In-patient Alcohol Detoxification Episodes

Bullock ML, Culliton PD, Olander RT, (1989) Controlled trial of acupuncture for severe recidivist alcoholism, *The Lancet* 1:1435-1439.

Eighty severe recidivist alcoholics received ear acupuncture for two months at points specific to the treatment of substance abuse (treatment group) or at non-specific points (control group). Participants were asked to attend follow-up interviews at one, three and six months post acupuncture. Detoxification admissions were examined for all participants whether or not they attended the follow-up interviews. The total cost of admissions to detoxification centers over the six-month follow-up period was \$20,424 higher for those in the control group than that of the treatment group.

Avoidance of Surgery

Ballegaard S et al (1999) Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: An open, prospective study, *J Altern Complement Med* 5: 405- 413.

One hundred five patients with angina pectoris had acupuncture and self-care education added to their pharmaceutical treatment. Seventy-three participants had been recommended for invasive procedures. The treatment protocol consisted of 12 visits over a four-week period that included an acupuncture treatment and an education session. A 90% reduction in hospitalization and a 70% reduction in surgery resulted in an estimated cost savings of \$32,000 per patient.

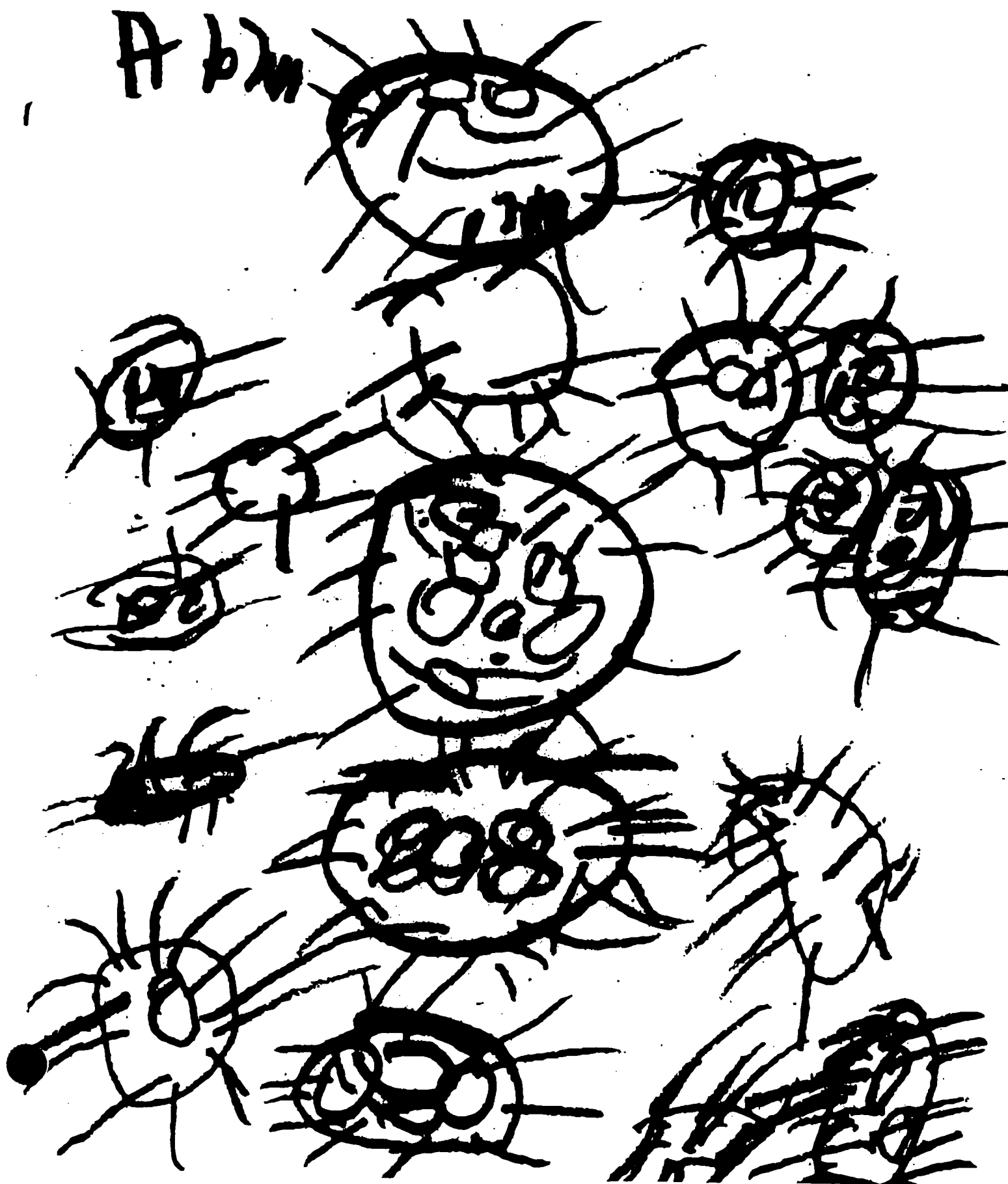
Reduction of Days of Missed Work

Liguori A et al (2000) Comparison of pharmacological treatment versus acupuncture treatment for migraine without aura, *J Trad Chin Med* 20:231-240.

One hundred twenty patients with migraine without aura were randomly assigned to an acupuncture group (AG) or a conventional drug therapy group. AG patients received acupuncture twice a week for a maximum of thirty treatments. Four sites in Italy, two hospital and two university public centers provided the acupuncture, the two university sites also provided the pharmacological therapy. Severity and frequency of headache and days of missed work were evaluated 12 months after admission. The AG had an absence rate of 1120 working days per year while the drug therapy group had a total absence rate of 1404 working days per year. This resulted in a cost savings of \$35,480 per year for the sixty patients receiving acupuncture compared to those in conventional drug therapy.

Acupressure for ADHD

16 year old girl with Downs' syndrome and nystigmus asked to draw a self portrait.



Second self portrait after wearing ear acupressure tabs for one week.



Post - 1997 NIH Acupuncture Consensus Development Conference
Acupuncture Bibliography

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Divider Title: Frye

WCCAM—Homeopathy

12/4/2000

I am Joyce Frye, an osteopathic physician and board certified obstetrician gynecologist. I serve as President-elect of the American Institute of Homeopathy, the nation's oldest medical professional organization founded in 1844 and as President of the National Center for Homeopathy, the nation's largest organization representing the public interest in homeopathy with approximately 6500 members. I practice gynecology in Philadelphia and also have a Master's degree in Business Administration. On behalf of these organizations, I am delighted to share with you, today, our view of the potential benefits in cost savings and improved health that could be realized with the incorporation of homeopathy throughout the continuum of care.

According to the World Health Organization, homeopathy is the second most widely practiced form of medicine around the globe. The international homeopathic medical organization, LIGA, has thousands members in 5 continents and over 40 countries. Unfortunately, although there are an estimated 2500 medical practitioners using homeopathy in the US (Swander, 1994), research on both clinical efficacy and cost effectiveness in the US has suffered from limitations in funding and seasoned research collaboration as well as from publication bias. Thus, our assumptions about the advantages of fully integrating homeopathy into the US healthcare system are augmented with international and historical data as well as a 200-year collection of thousands of case histories.

Efficacy

The most useful summary of clinical efficacy is provided by the meta-analysis of 89 placebo controlled trials published by Linde et al in Lancet 1997; 350 indicating that patients using homeopathy were 2.5 times more likely to have a therapeutic effect compared to placebo in a variety of conditions. References to a number of additional studies on treatment of specific conditions are included in your handout.

Cost Effectiveness

The most complete data on cost effectiveness come from the French Government Report on 1991 Social Security Statistics, which demonstrated significantly reduced cost using homeopathic vs. conventional medical care. Total cost of care per physician utilizing homeopathy was approximately one-half of the total costs of care provided by conventional primary care physicians. Even when factoring in the cost of fewer patients seen per homeopathic physician, the overall cost per patient under homeopathic care was 15% less, and savings increased the longer a physician had been using homeopathy. (CNAM, 1991) Additionally, in a further review of the data, the number of paid sick leave days by patients under the care of homeopathic physicians was 3.5 times less than patients under the care of conventional practitioners. And while homeopathic prescriptions, which are reimbursable in the French healthcare system, represented 5% of all medicines prescribed, they represented only 1.2% of all drug reimbursements due to their lower cost per prescription. (CNAM, 1996) These data are particularly compelling in view of France's #1 rank in overall health system performance and #3 rank in life expectancy according to the WHO. (AMA, 2000)

In the US a small study surveyed 27 physicians specializing in homeopathy and compared them to the 205 general and family practitioners in the 1990 National Ambulatory Medical Care Survey. The comparison tables and charts from that study are provided in your handout. Again, although spending more time with patients, they ordered fewer tests and prescribed fewer conventional medicines for similar conditions. (Jacobs,1998) Homeopathy also compared favorably with naturopathic, and acupuncture services in a Seattle study that concluded that homeopathic care was the least costly and that patient visits to homeopaths were less frequent than to other alternative care professionals.(Jacobs,1996)

Patient Satisfaction

Patient satisfaction with homeopathic care tends to be high if for no other reason than the time a practitioner takes in listening to the story. However a California study also surveyed patients regarding their clinical course. Eighty percent of them had previously sought conventional care for their condition. After four months of homeopathic care, 60% reported improved overall health status and outlook, 70% reported at least partial improvement in their chief complaint, and 80% planned to continue homeopathic care. (Goldstein,1998)

Practice Setting

Homeopathy is effective for a variety of health conditions throughout the continuum of care from pregnancy to the end of life without regard to age, gender or occupation. With respect to our colleagues, the organism is certainly best equipped to respond to a homeopathic medicine when it is also well nourished and in musculo-skeletal alignment. We have no data comparing costs from one setting to another, and I would propose that the most appropriate setting, degree of collaboration, and type of practitioner vary with the type and acuity of the condition being treated. Consider the following framework:

For minor viral infections and traumas, the most appropriate care setting is usually in the home. An estimated 3.4% of the US population was using homeopathy in the 1997 Eisenberg study. (Eisenberg, 1998) It is difficult to assess how many physician visits might be avoided altogether if public awareness of homeopathic self-care was widespread. That, in turn, would decrease accompanying long-term sequelae of inappropriate antibiotic use, increasing antibiotic resistance, and iatrogenic illness (currently the 4th leading cause of death in the US, Lazarou, 1998)

For more serious acute conditions, homeopathy may provide complete care in the hands of the primary care provider. Indeed in the flu pandemic of 1918 where over ½ million Americans succumbed and the average mortality was 30%, less than 1% of patients treated homeopathically were lost with some homeopathic physicians reporting treatment of thousands of cases. (Dewey,1921)

In the realm of obstetrics, I have used homeopathy to treat nausea and vomiting, to arrest pre-term labor, to convert breech presentations, and to facilitate labor thereby avoiding numerous hospitalizations, procedures and neonatal intensive care days. In other acute conditions, such as trauma or peri-operatively, the addition of homeopathy by the treating health care team may promote more rapid healing; decrease conventional medication use; and reduce complications, side effects, and hospital lengths of stay. This

has been my personal experience both as a surgeon and as an ICU patient and also the experience of my colleagues in the Emergency Medicine field.

In chronic illness, in conditions where conventional medicine has little to offer, or where side effects of conventional treatment are unacceptable to the patient, homeopathy may become the mainstay of treatment either within or outside of the context of the usual treatment setting.

And, finally, in terminal illness, homeopathy may provide palliation, decrease conventional medication use, improve the quality of the remaining time, and decrease costs associated with end-of-life care.

Current Barriers

There are numerous barriers to increased use of homeopathy in the US.

- ❖ Public awareness of homeopathy remains limited. Many patients confuse the “H” words holistic, herbal, and homeopathy, thinking that they are synonymous. E.g. one manufacturer of a combination homeopathic teething product notes that while their product is 2nd in overall US sales in this category, only 11% of consumers realize that the product is homeopathic. (Borneman,2000)
- ❖ The number of homeopathic medical practitioners is very limited due to expensive and prolonged post-graduate education, lack of CME accreditation, and conventional medical bias attributed to the implausibility of any effect of homeopathic dilutions.
- ❖ Insurance reimbursement policies and billing codes that are biased towards procedures rather than time spent cause most practitioners to require out-of-pocket payment limiting access to those who cannot afford to pay.
- ❖ Non-medically licensed practitioners who wish to practice homeopathy in a manner similar to their counterparts in Great Britain and other countries have uncertain legal status in the US.

Recommendations

- ❖ Encourage funding sources for school and community health education projects to include homeopathic self-care among their activities.
- ❖ Encourage training in acute care homeopathy for Emergency Medical Technicians.
- ❖ Encourage the inclusion of meaningful workable homeopathic and CAM education throughout medical training curricula.
- ❖ Encourage the ACCME in general and the AAFP in particular to provide CME for training in the use of (not just about) homeopathy and other CAM modalities.
- ❖ Encourage the development of CPT codes specific for homeopathy and reimbursement for homeopathic care in all federally funded programs.
- ❖ Encourage the inclusion of medicines listed in the Homeopathic Pharmacopoeia of the United States (HPUS) on hospital and managed care formularies.
- ❖ Request assistance from the Agency for Health Care Research & Quality in establishing practice guidelines.
- ❖ Encourage research on the cost effectiveness of homeopathic care in the General Accounting Office.

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1992 American Institute of Homeopathy Survey

- **27 MDs or DOs practicing homeopathy**
- **All patients recorded week of April, 1992**
- **Total of 1177 patient visits**

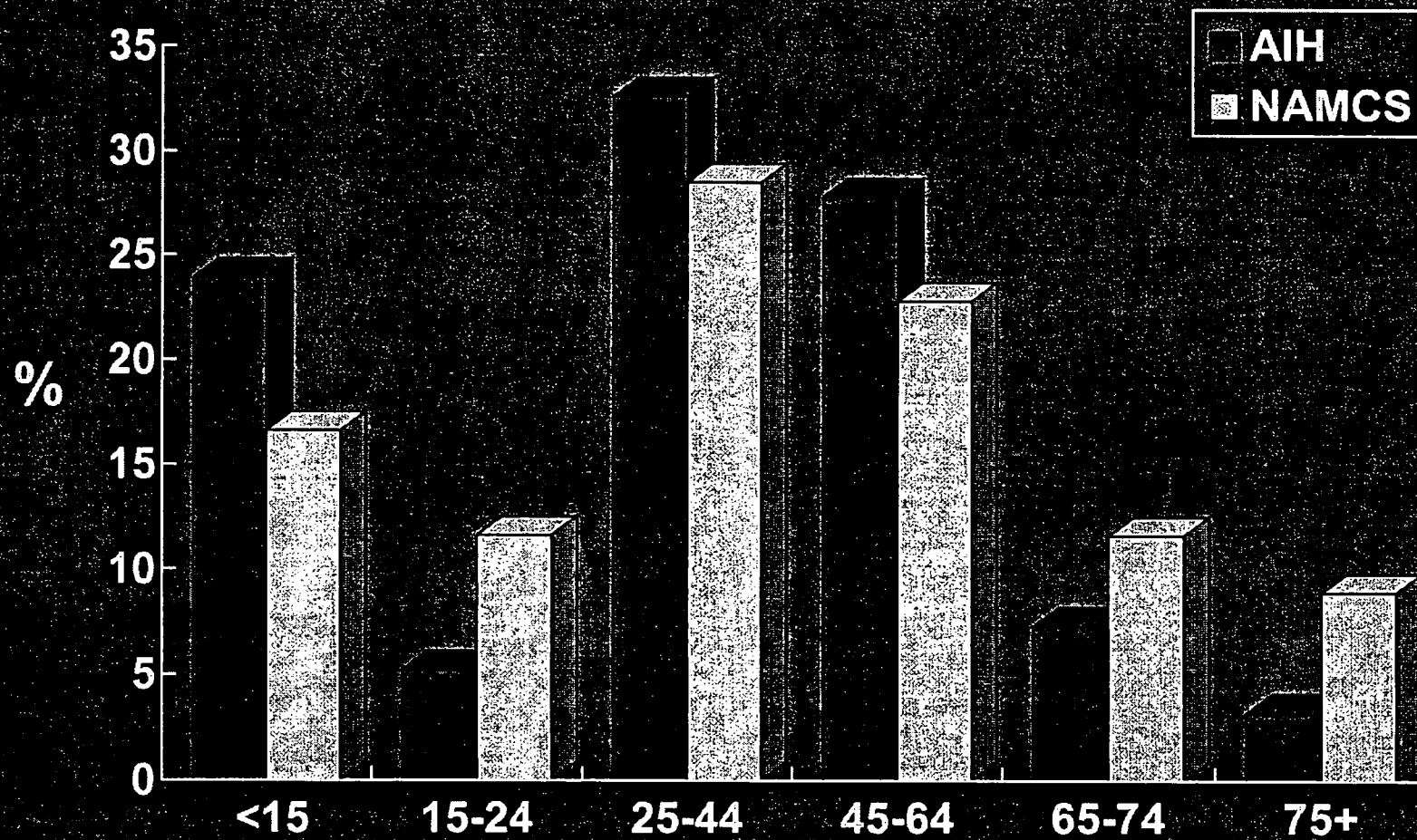
1990 National Ambulatory Medical Care Survey

- **205 MDs and DOs- General and Family practice**
- **All patients recorded for one random week**
- **Total of 11,614 patient visits**

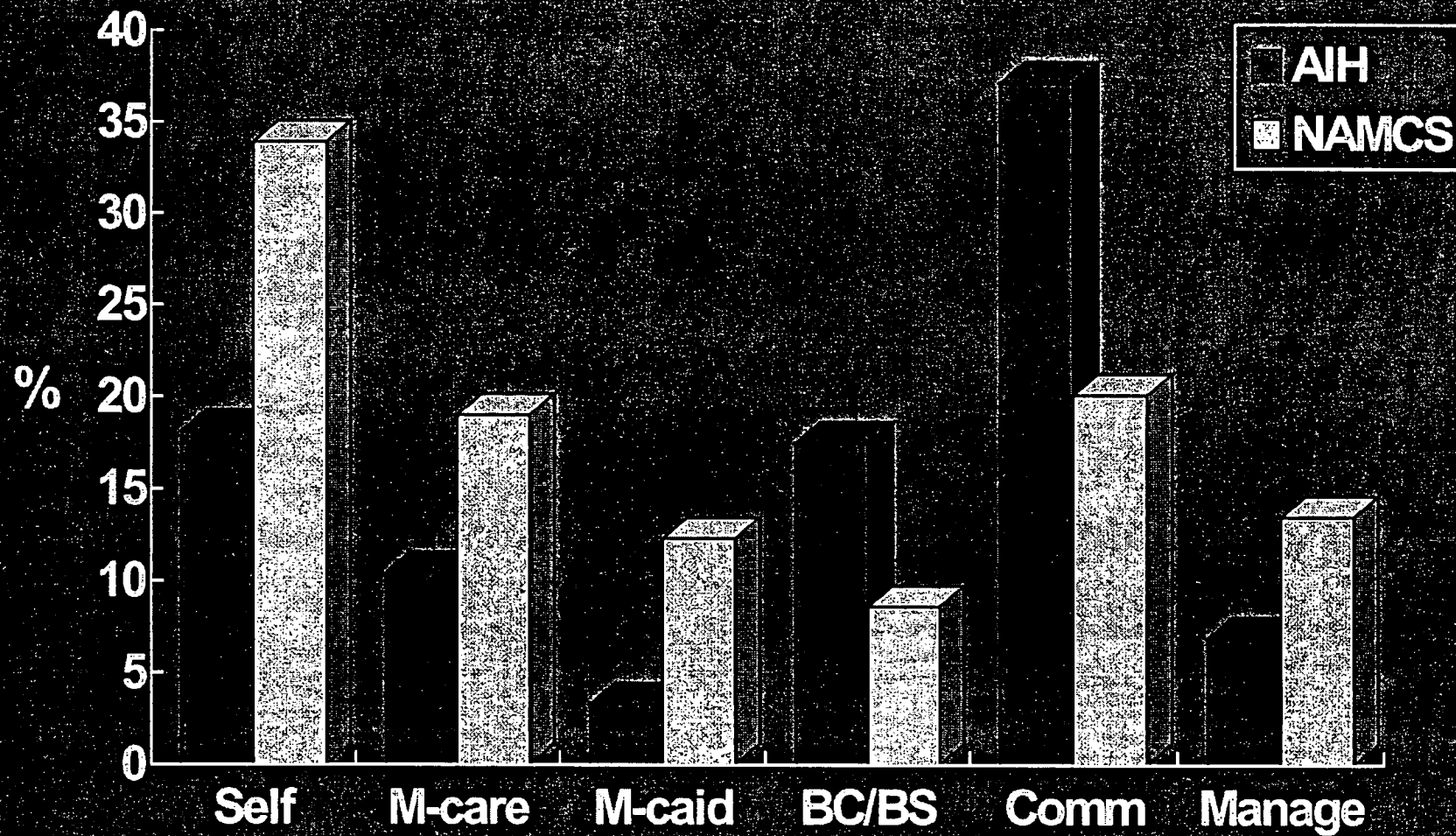
Comparison of selected characteristics

	AIH %	NAMCS %
Female	66.9	61.0
White	91.5	84.4
Black	2.9	8.5
Asian	5.5	3.0
1st visit	15.6	14.6

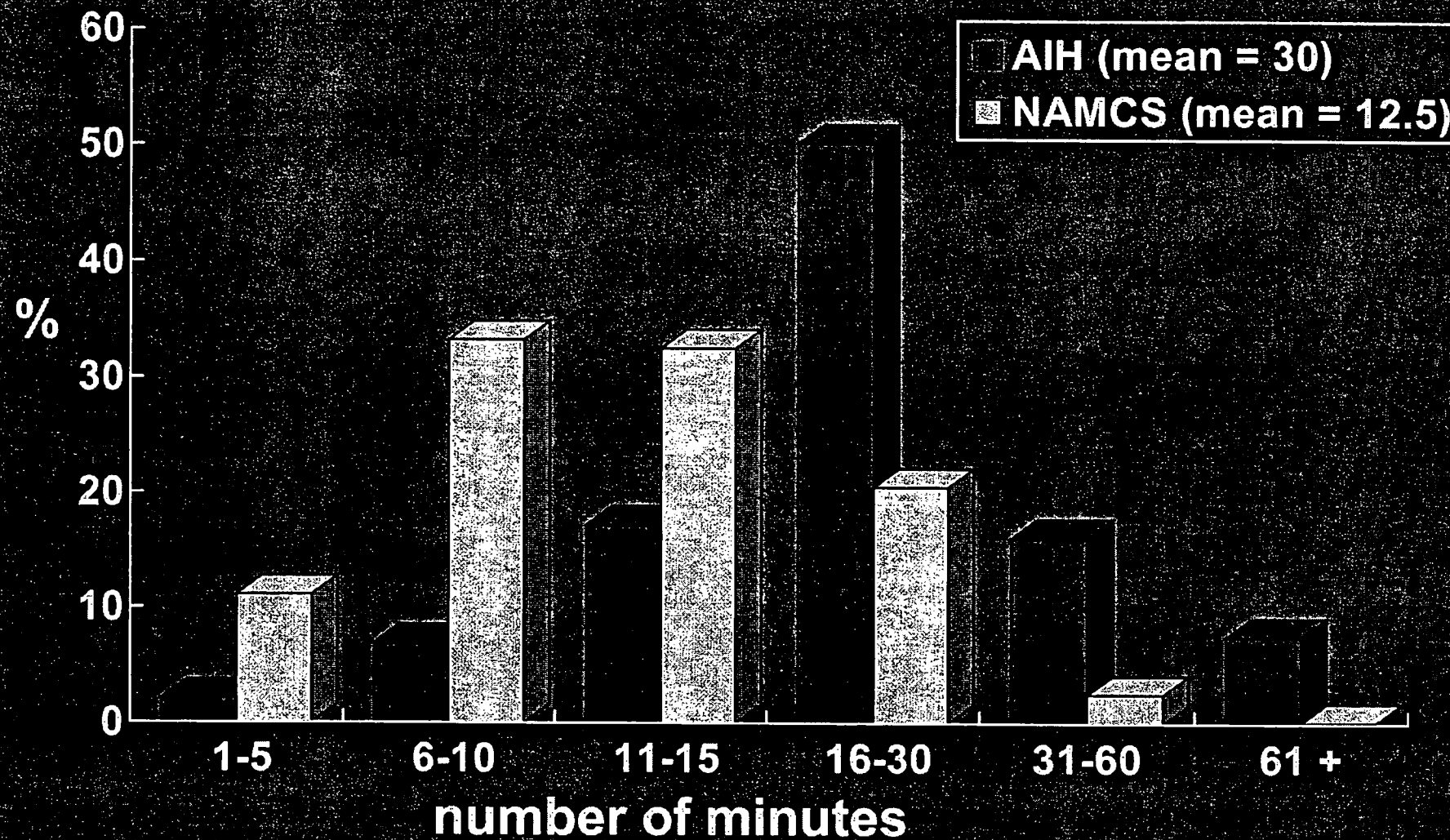
Patient age



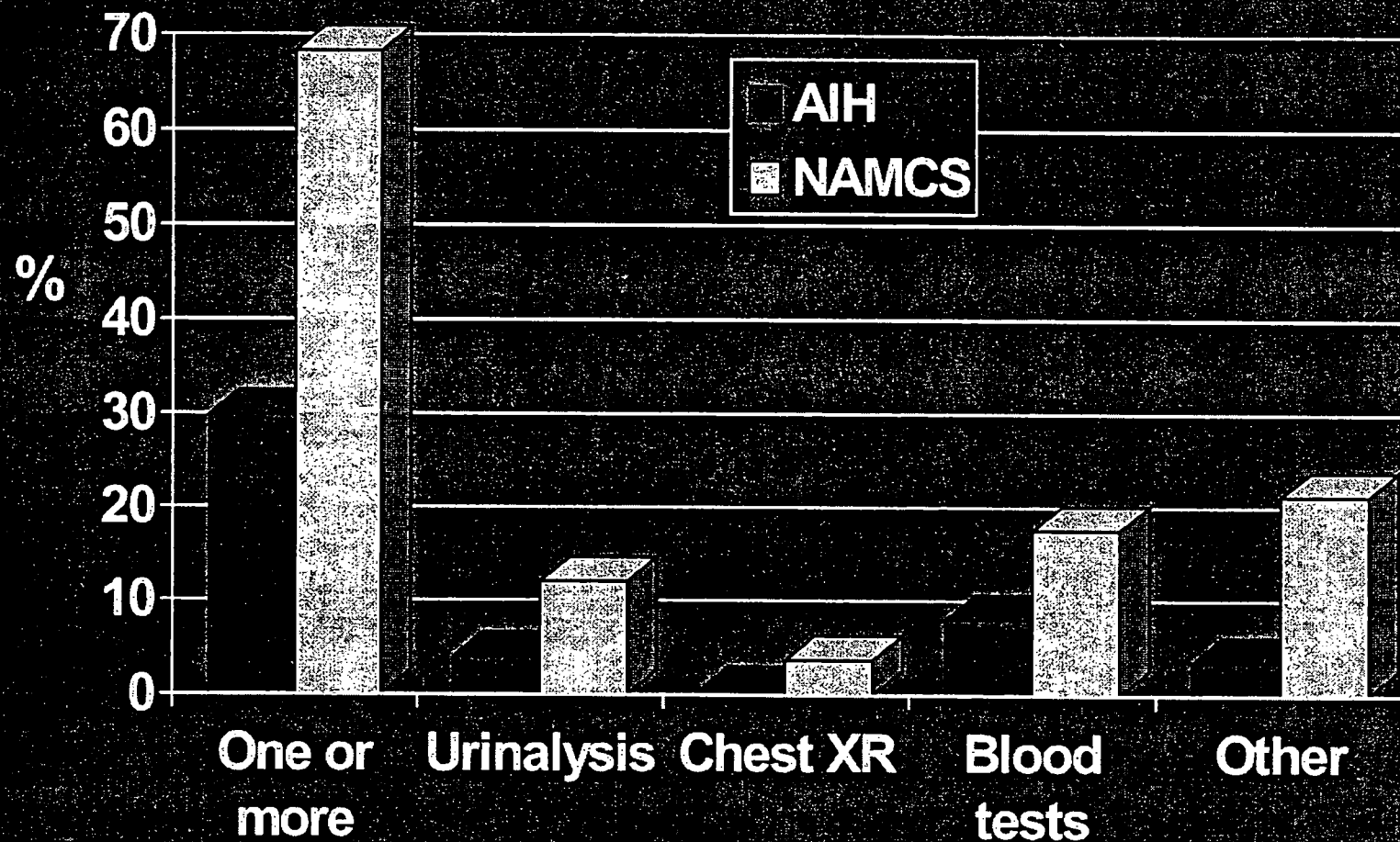
Insurance coverage



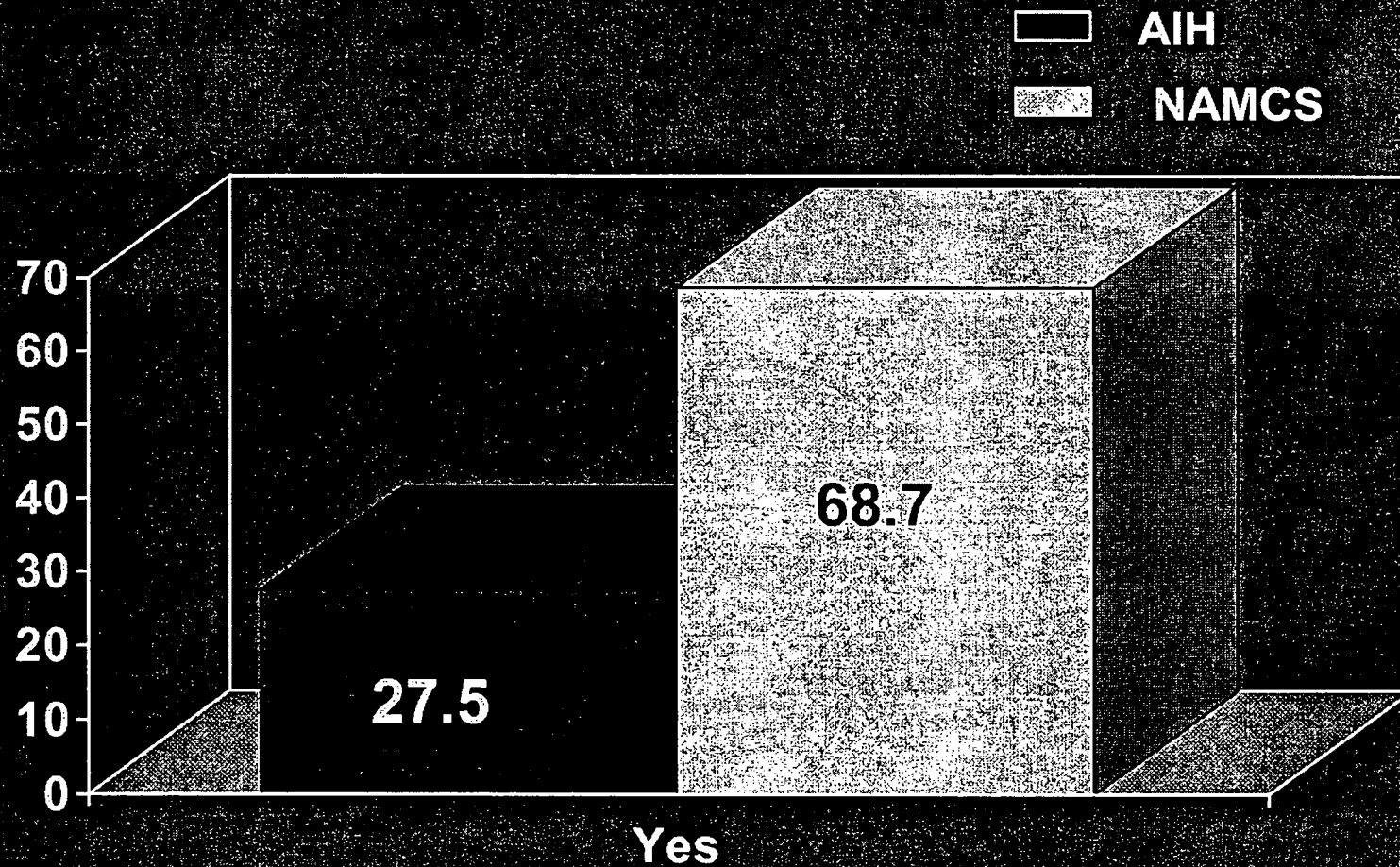
Duration of Visit



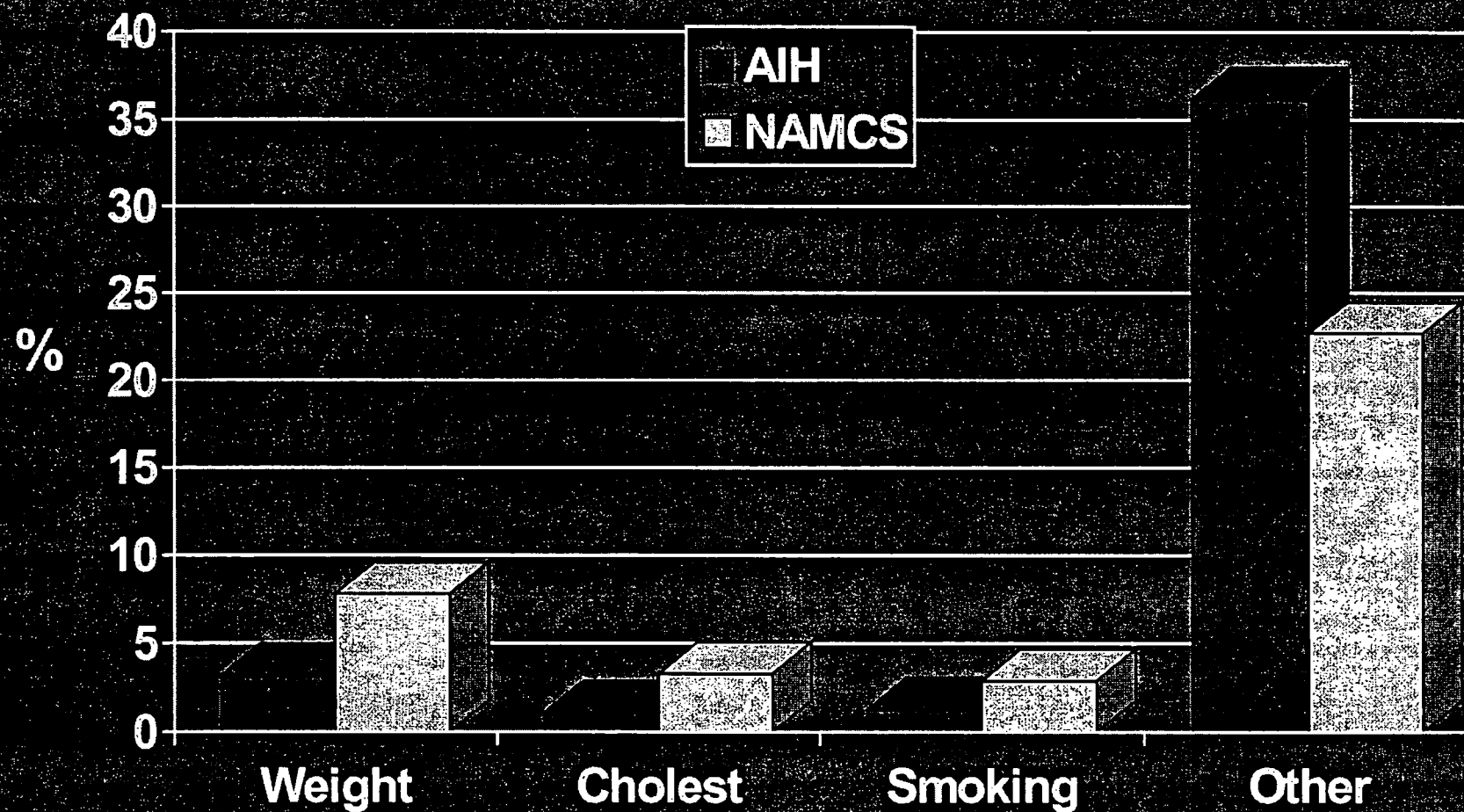
Diagnostic services ordered (% of visits)



Conventional Medication Used (% of visits)



Counseling/Advice (% of visits)



Most common diagnoses (%)

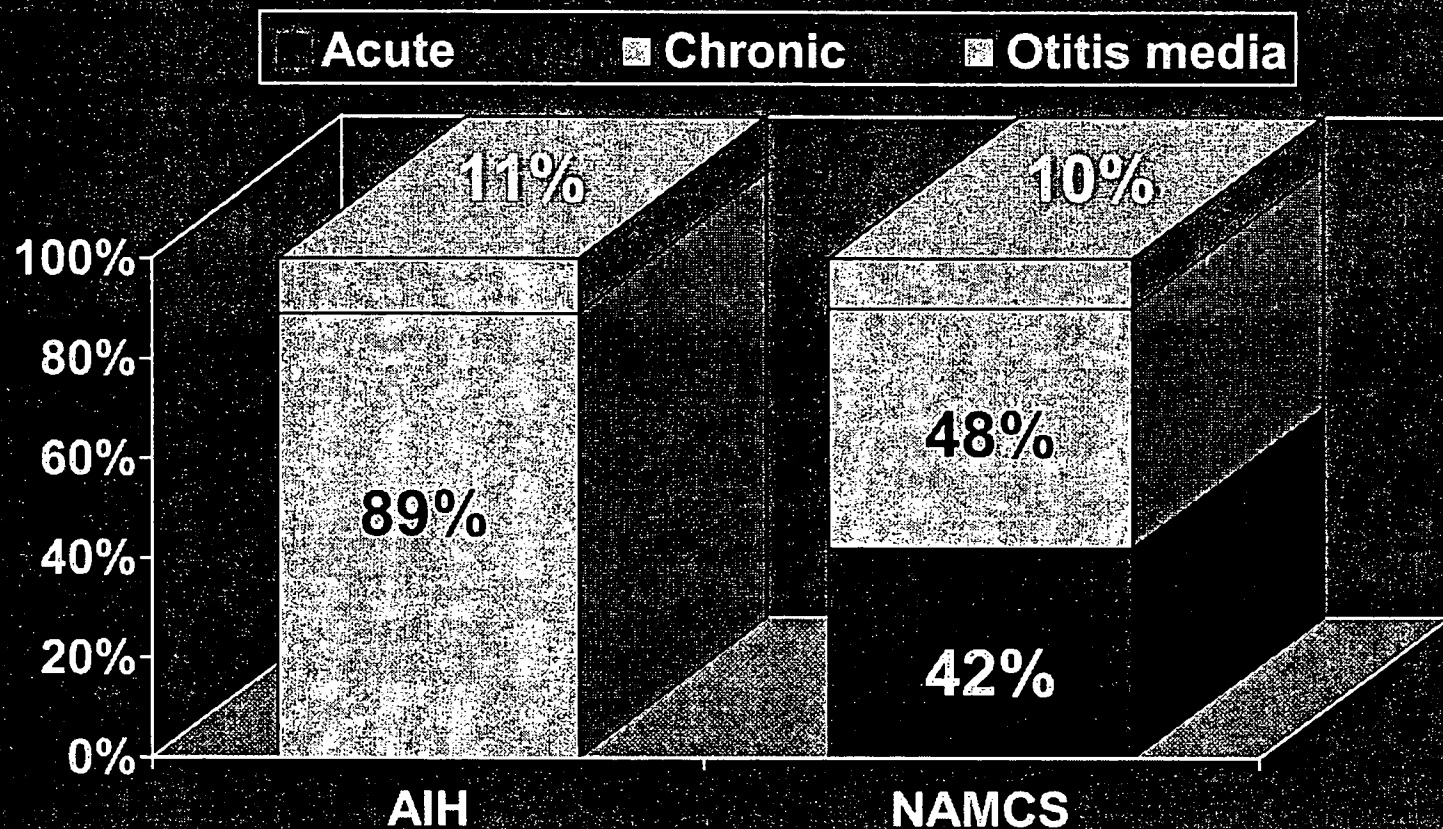
AIH

Asthma (4.9)
Depression (3.5)
Otitis media (3.5)
Allergic rhinitis (3.4)
Headache/migraine (3.2)
Neurotic disorders (2.9)
Allergy- non-specific (2.8)
Dermatitis (2.6)
Arthritis (2.5)
Hypertension (2.4)

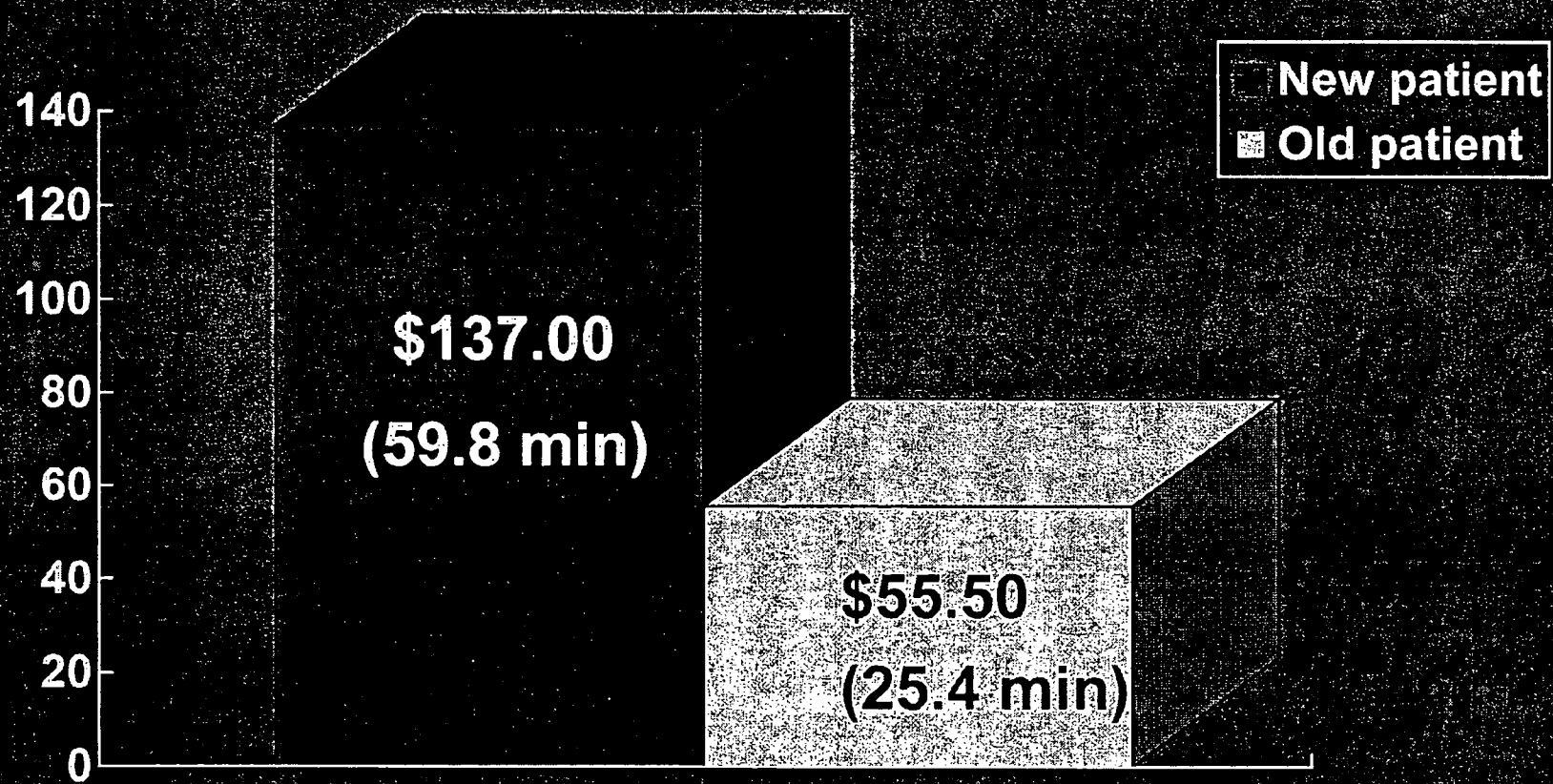
NAMCS

Hypertension (6.4)
Upper resp inf (3.9)
Otitis media (3.1)
Diabetes mellitus (2.9)
Acute pharyngitis (2.6)
Chronic sinusitis (2.6)
Bronchitis (2.6)
Sprains/strains (1.7)
Back disorders (1.4)
Allergic rhinitis (1.4)

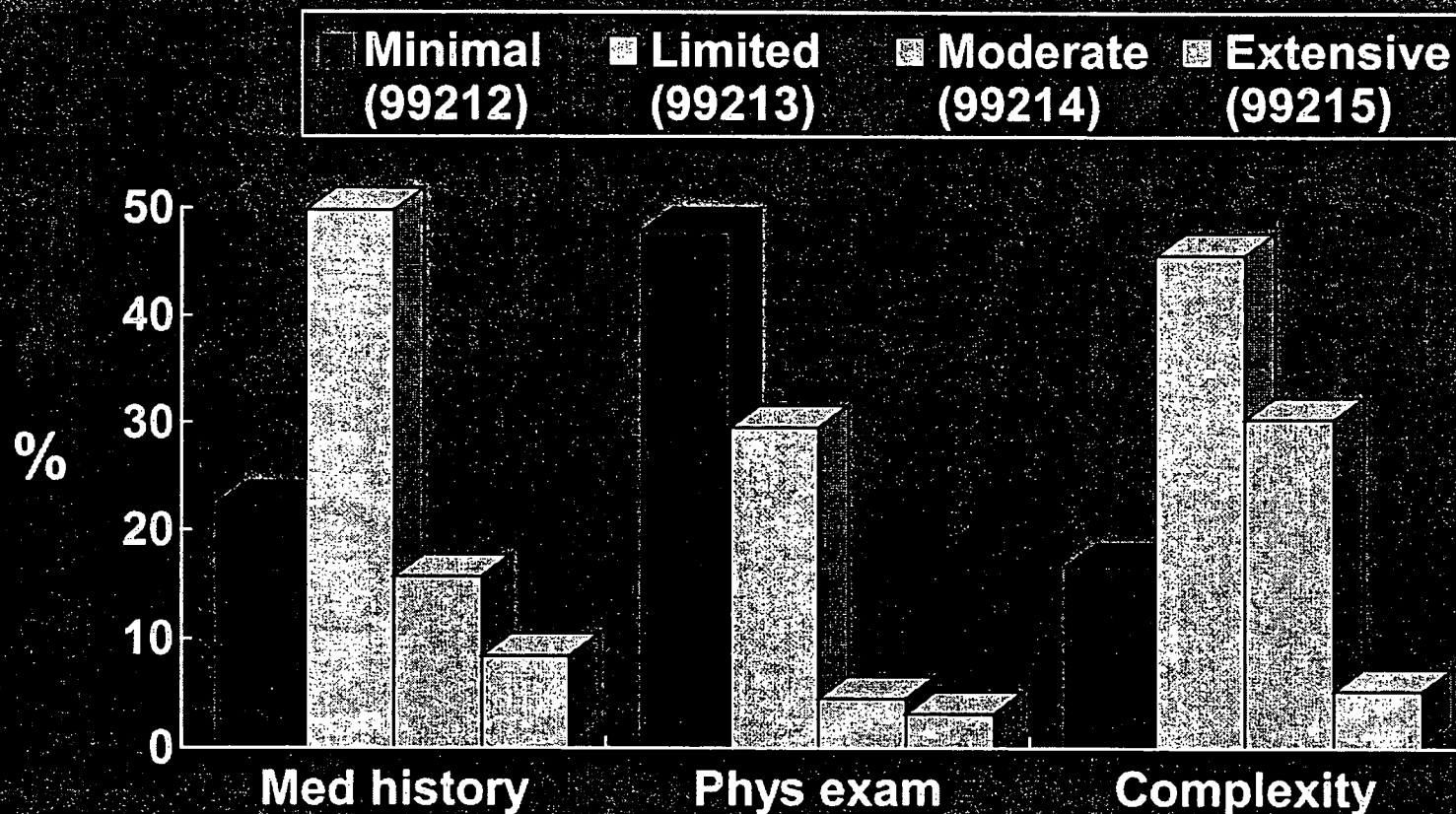
Acute vs. Chronic Illness- Ten most common diagnoses



Cost of Visit- AIH Survey



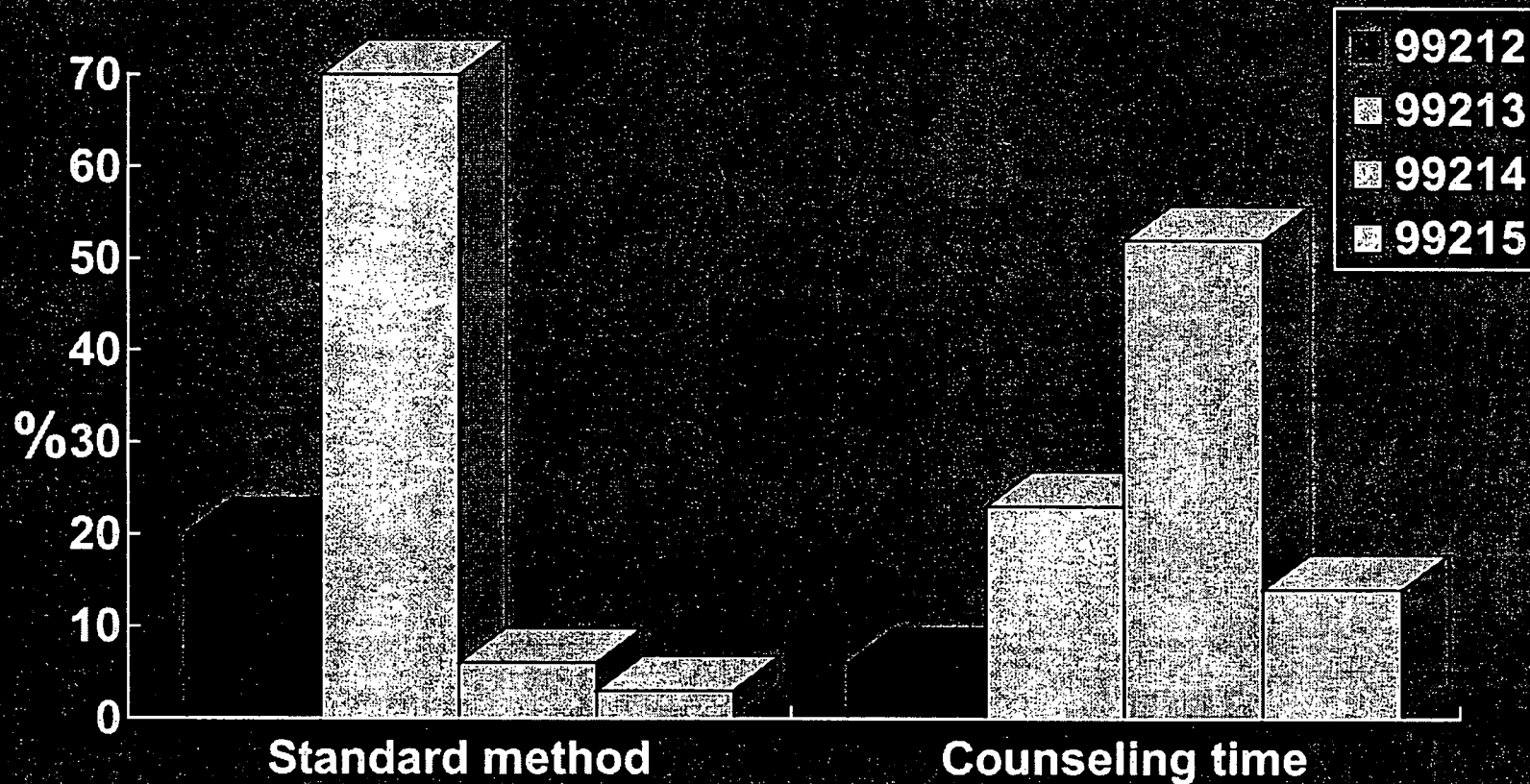
AIH Survey- Evaluation/Management Codes



AIH Survey- Coding:

Standard method vs counseling time

(117 cases with counseling > 50% of visit time)



Conclusions

- **AIH patients younger, more affluent, white**
- **Patients seek homeopathy for chronic, common illnesses for which conventional medicine offers only symptomatic treatment**
- **AIH physicians spend twice as much time with patients, order half as many tests**
- **AIH physicians use conventional medications but only 28% of the time**
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Recommendations- Future Research

- **Clinical outcomes**
- **Costs**
- **Patient satisfaction**

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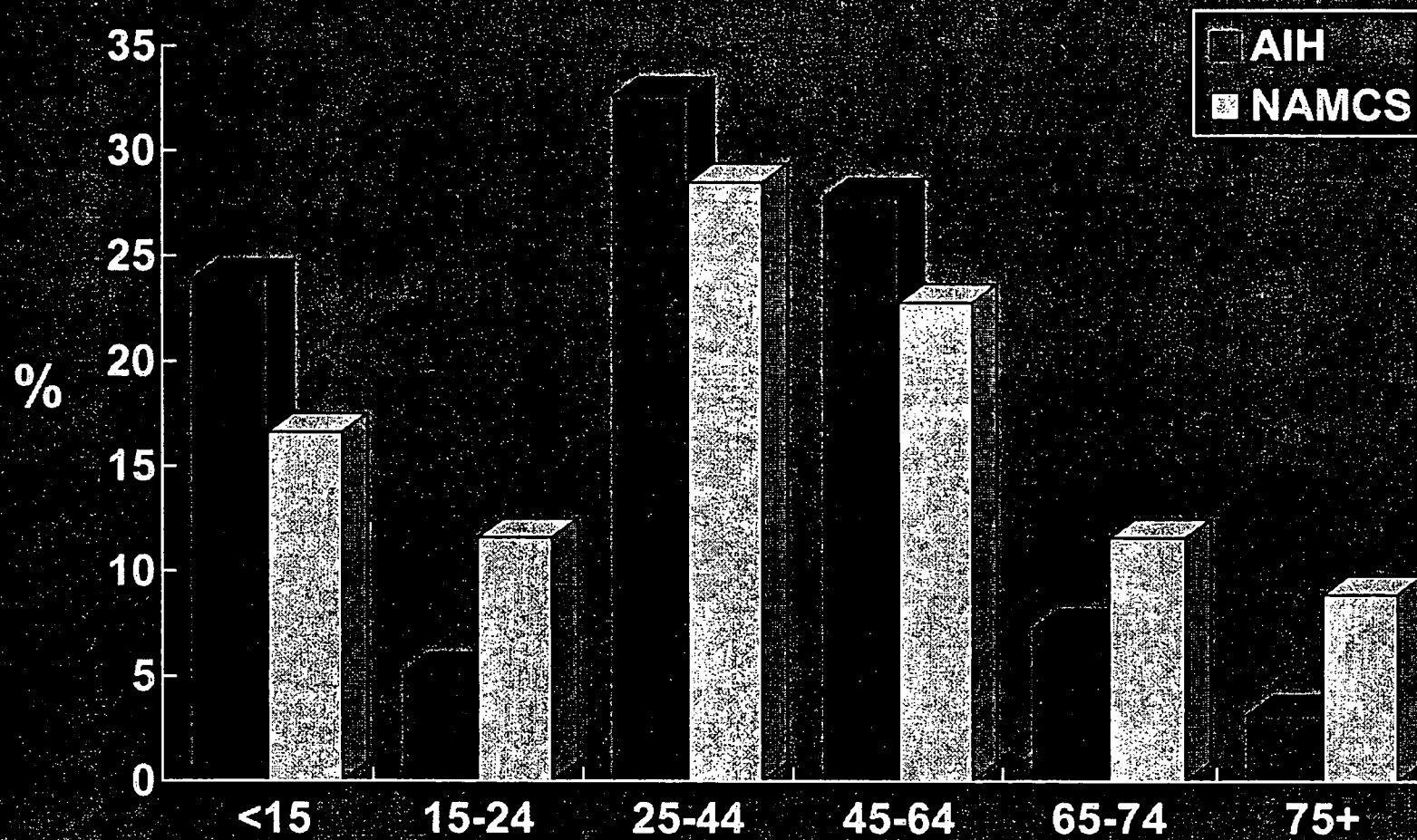
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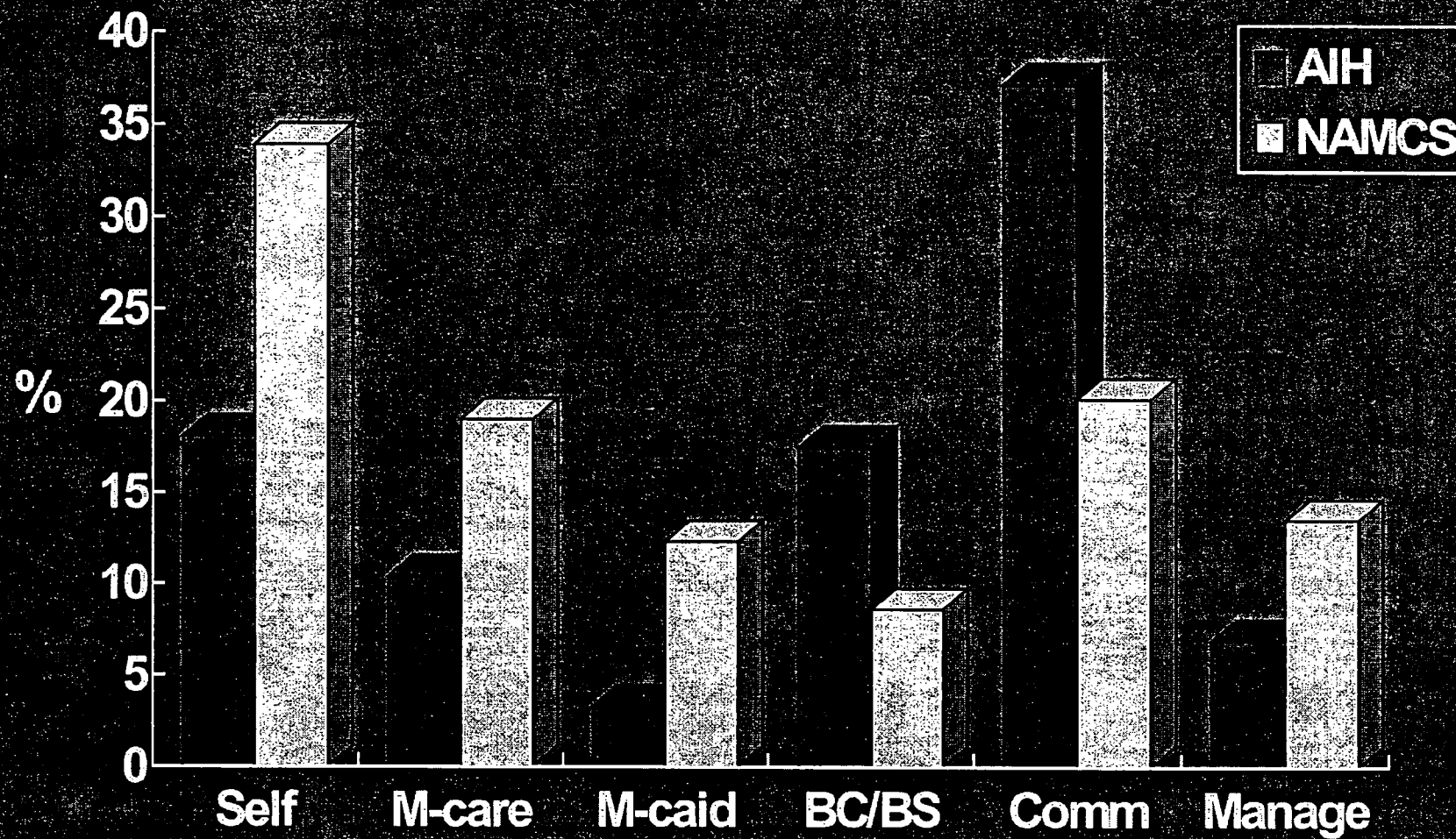
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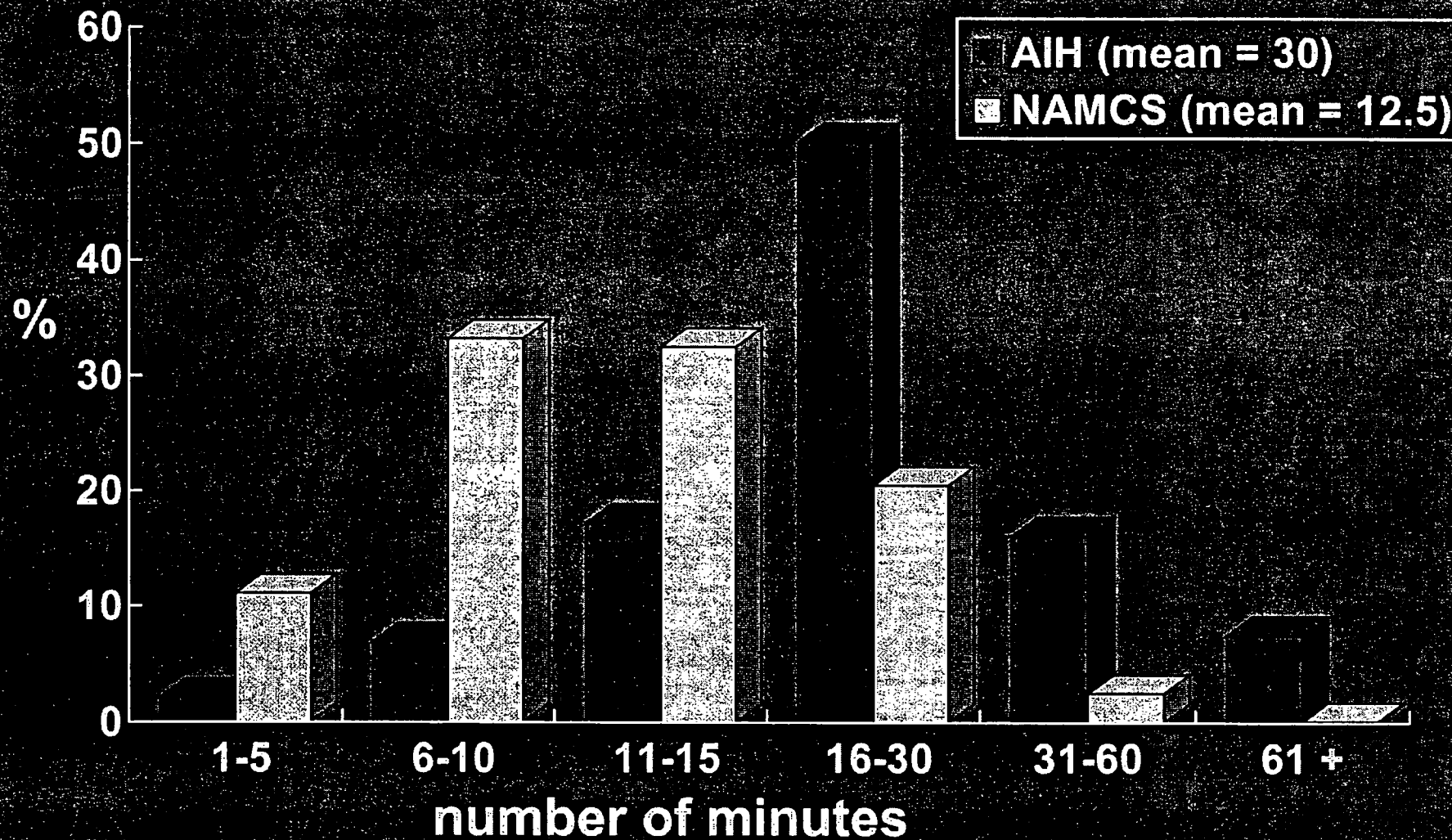
Patient age



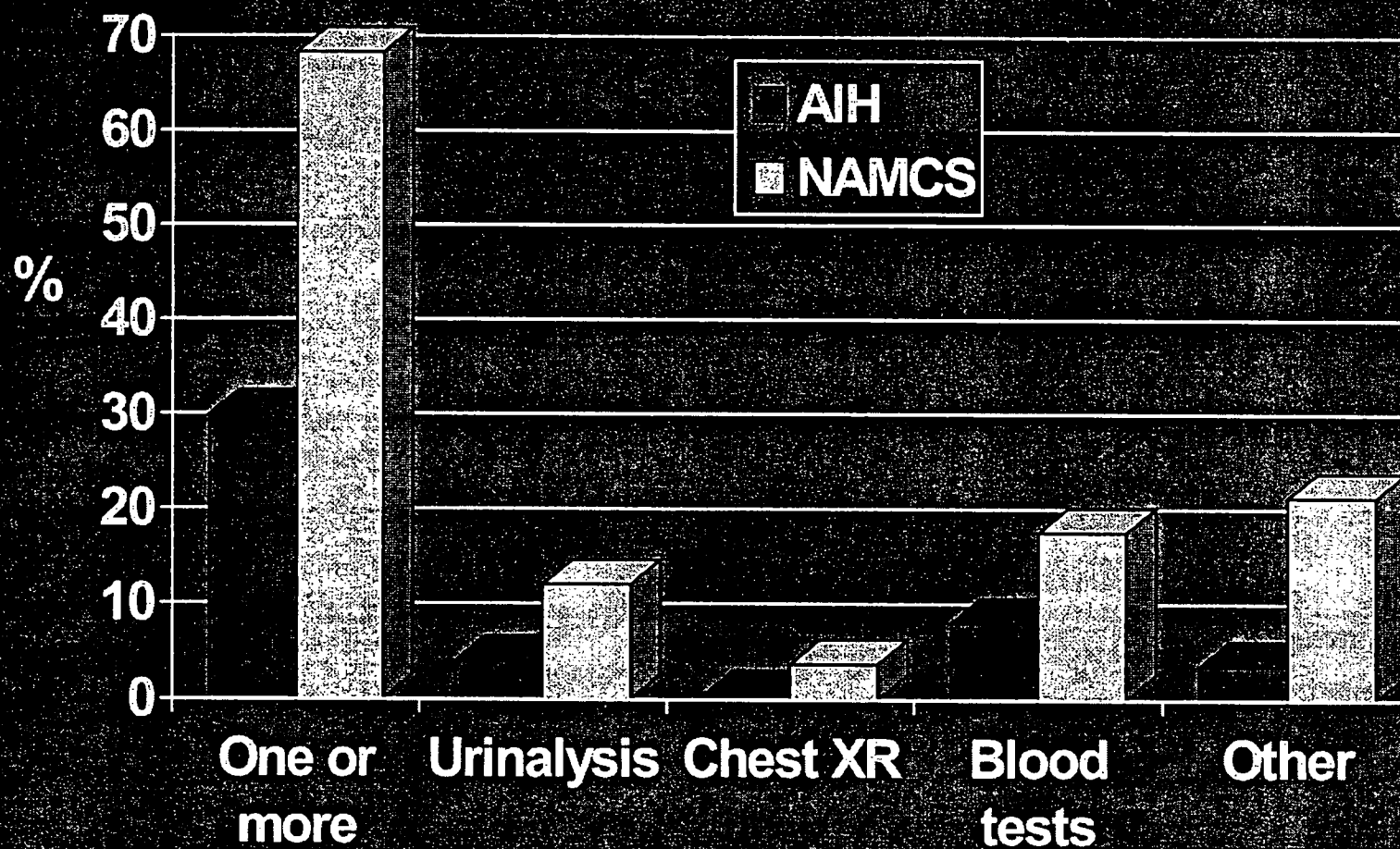
Insurance coverage



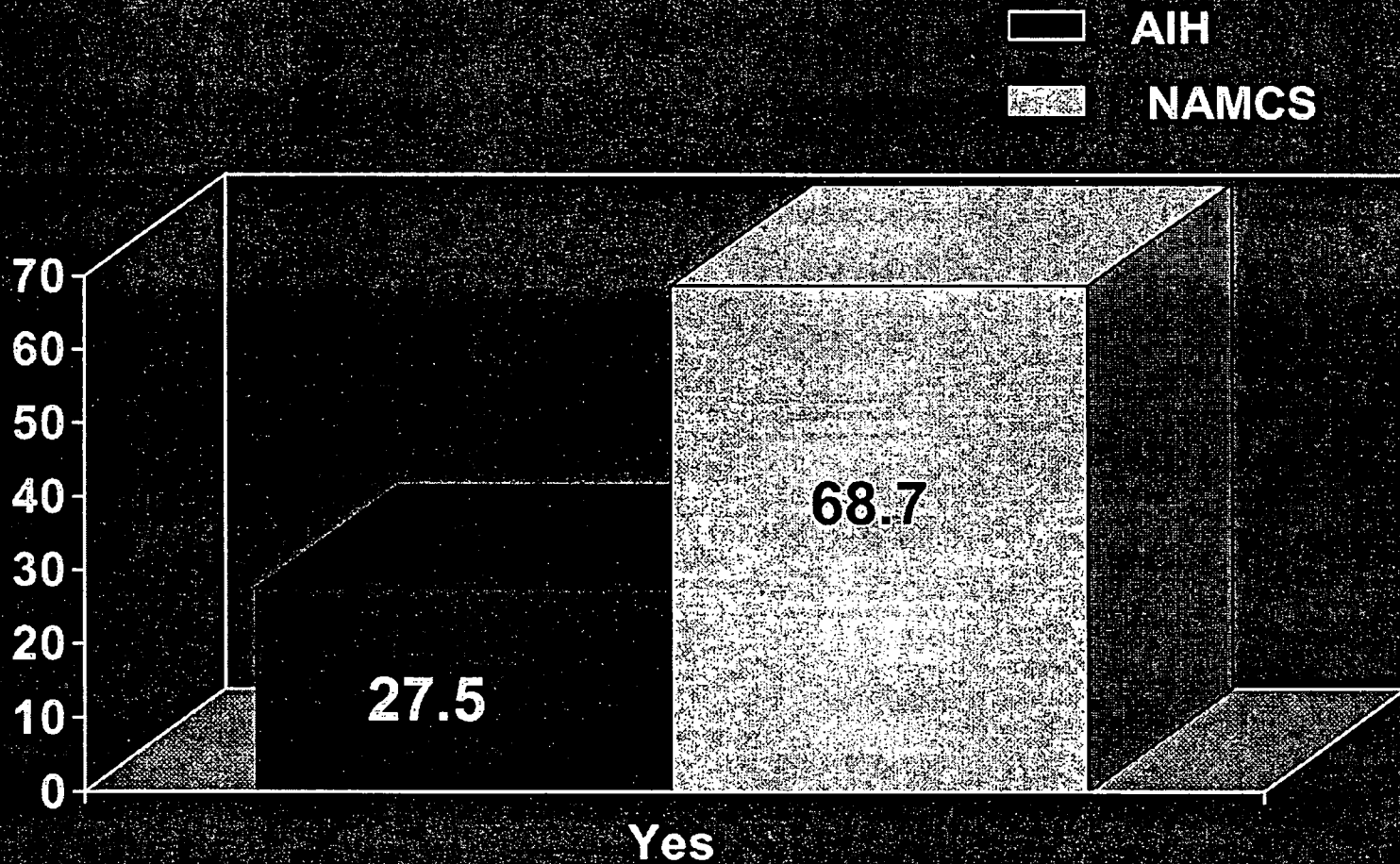
Duration of Visit



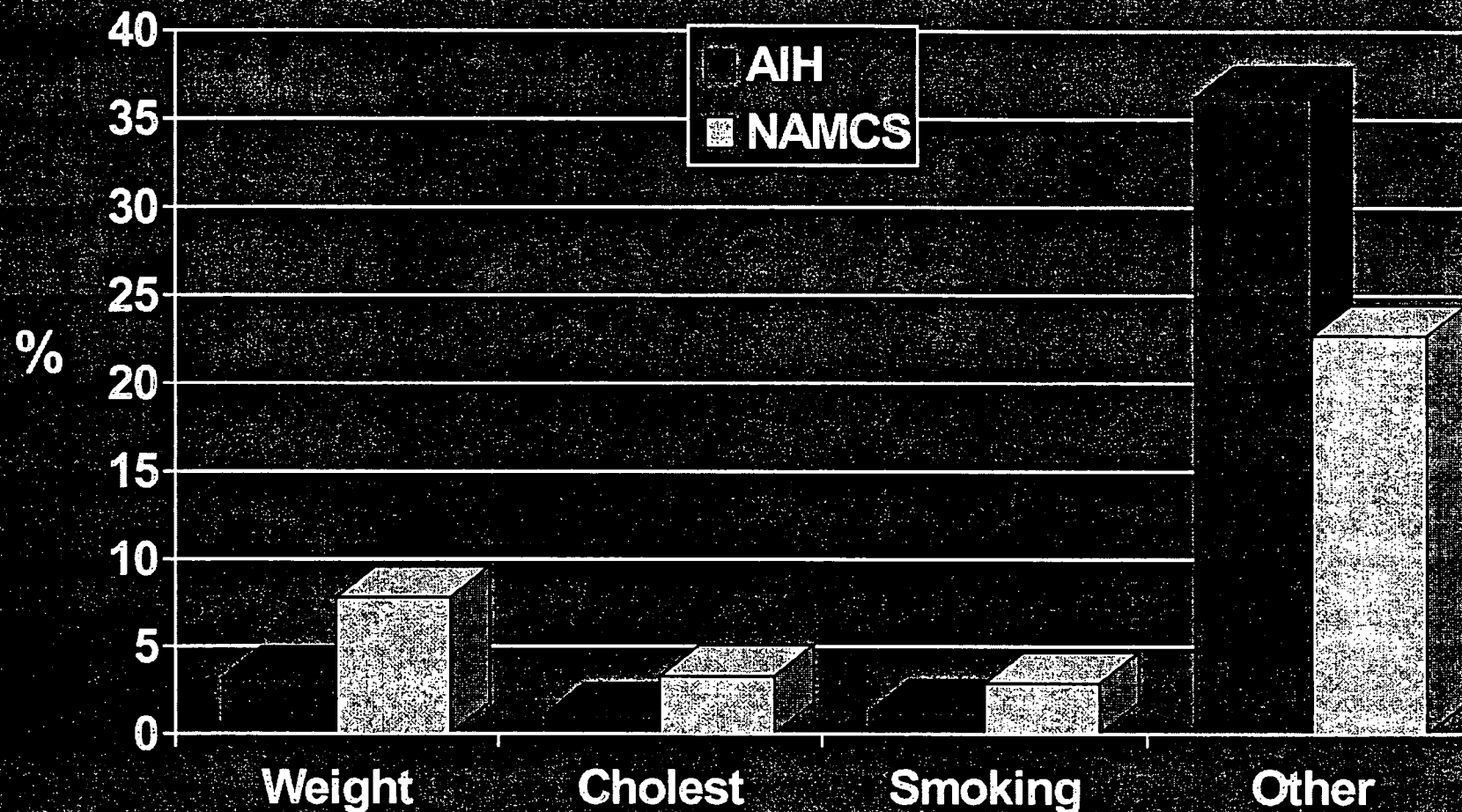
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AIH

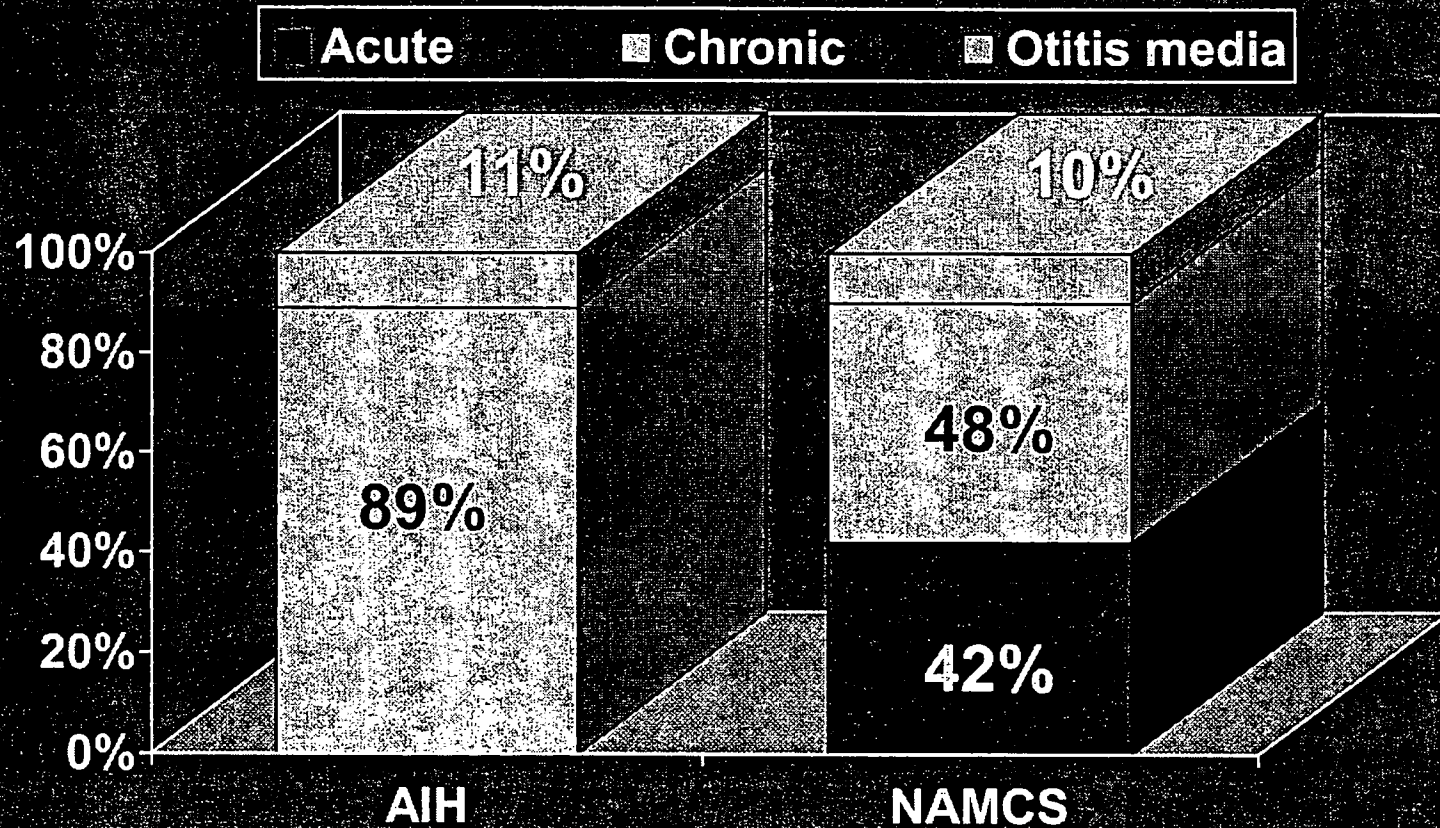
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NAMCS

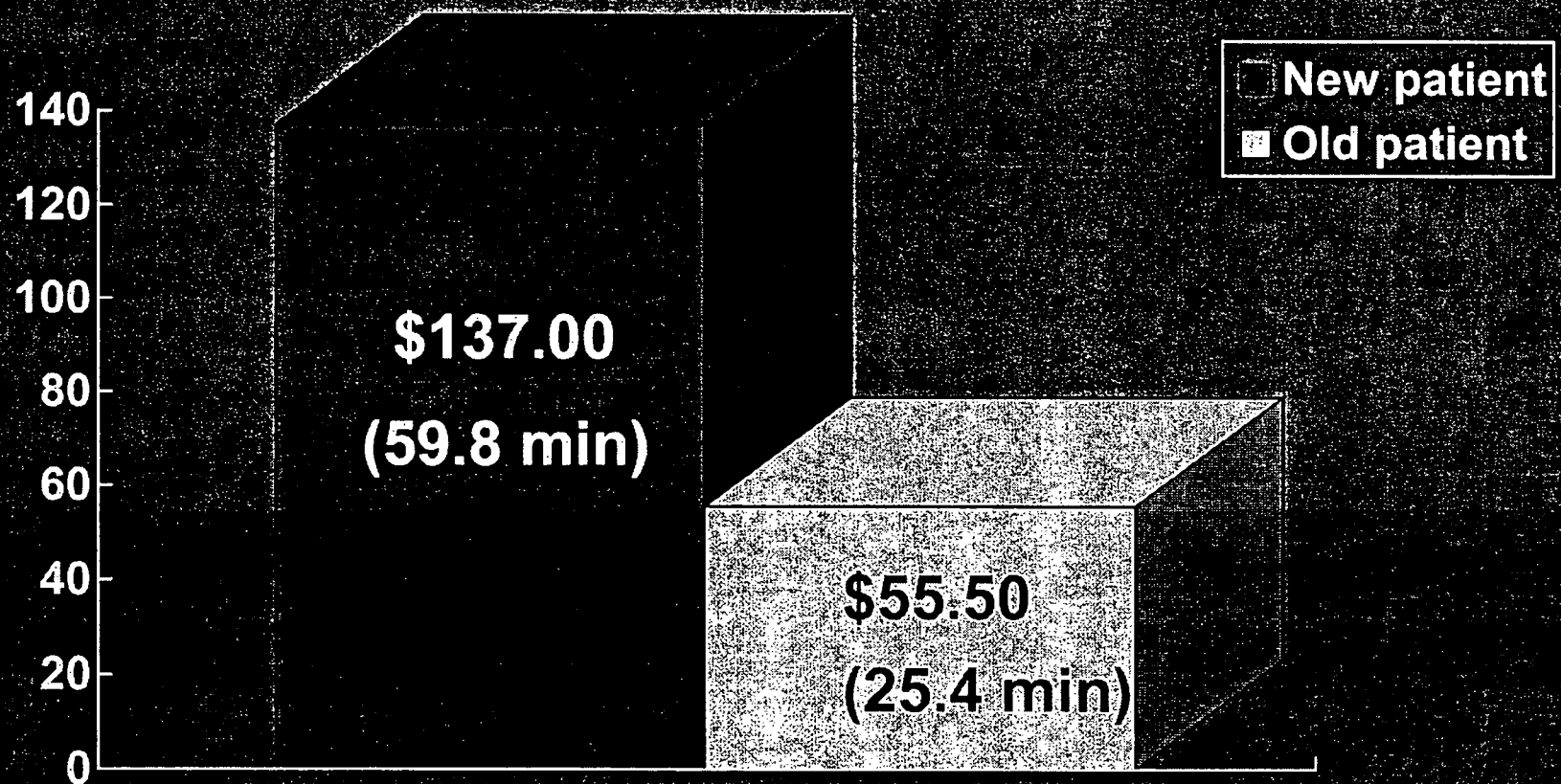
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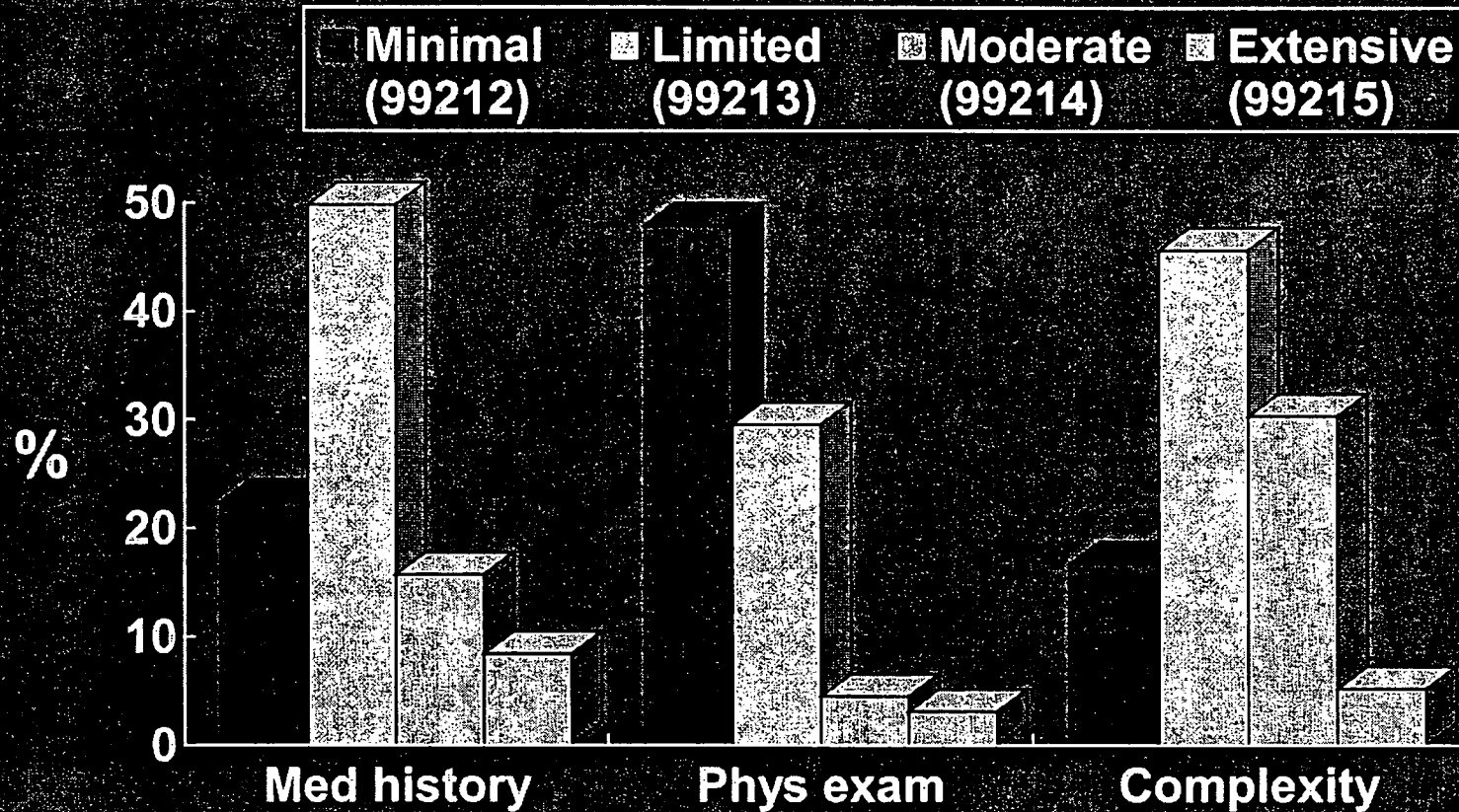
Ten most common diagnoses



Cost of Visit- AIH Survey



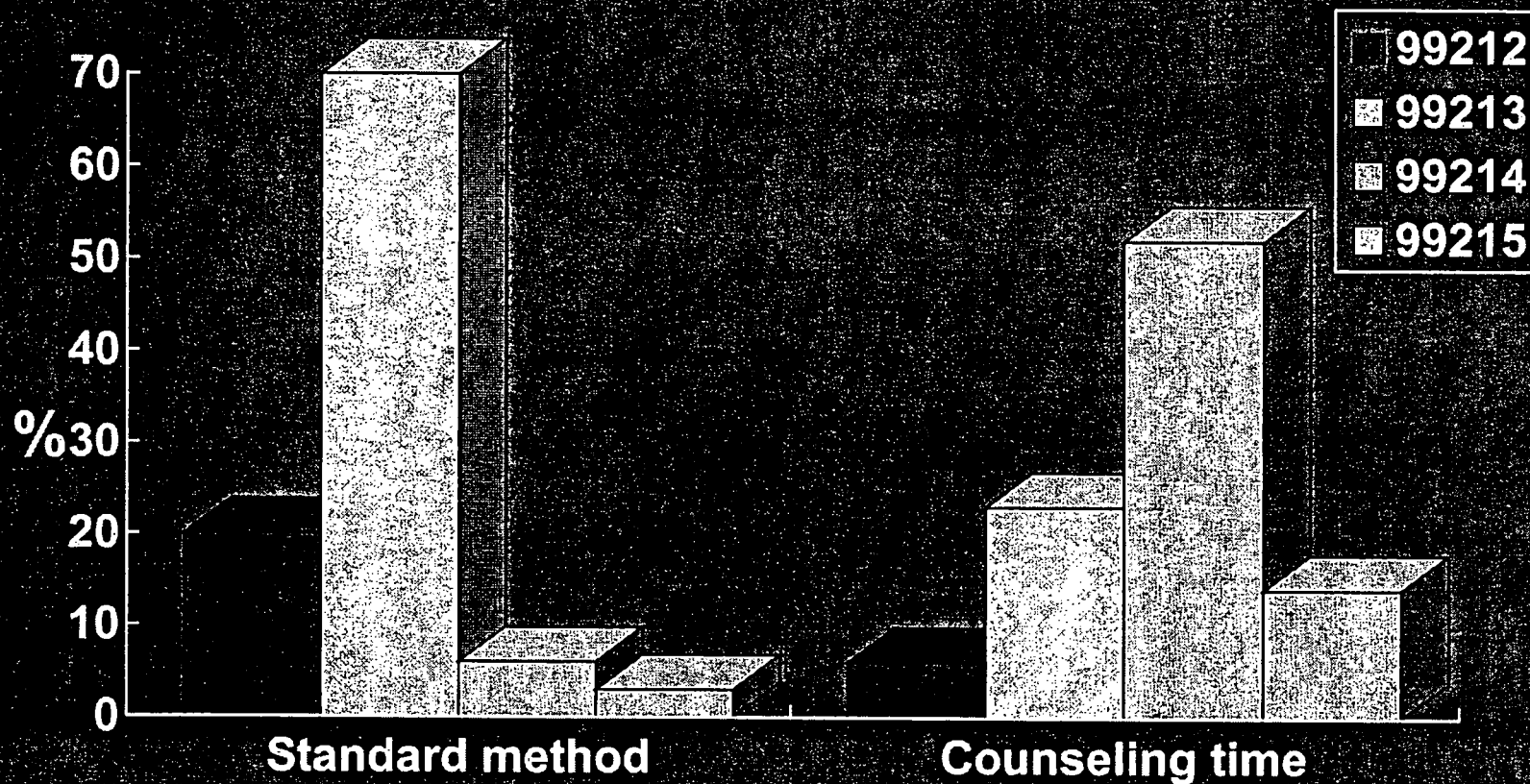
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Recent Studies of Clinical Efficacy in Homeopathy

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*Welcome to the web home of the
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Our mission at the National Center for Homeopathy is to promote health through homeopathy. By providing general education to the public about homeopathy, and specific education to homeopaths, we help to make homeopathy available throughout the United States.

This web site, our "open to the public" annual meeting, and our work with the media helps us reach people who are new to homeopathy with accurate, current, and helpful information. We make a press package available for inquiries from the media (now available on this site). Our staff answers more than 10,000 inquiries a year.

Our summer school in homeopathy has provided instruction for more than 70 years. Classes range from those designed to provide a background in homeopathy, to those providing self help skills for family use, to highly specialized classes for health care professionals in medical specialties veterinarians, dentists, nurses, chiropractors, medical doctors, and other health practitioners.

As an NCH member you will take part in this important mission. You will receive eleven issues per year of our informative and educational publication *Homeopathy Today*. The magazine contains up-to-date news, tips, book reviews, short articles, and a calendar of events. In addition, you will also have access to our invaluable *Membership Directory and Homeopathic Resource Guide* which, along with member information, will provide you with practitioners, study groups, pharmacies, and resources. Most likely, there is someone nearby who can help you with your first steps in homeopathy. You also may use the library at the National Center, one of the largest collections of homeopathic literature in the United States, which is open only to our members.

NCH's supply of homeopathic books and products has provided thousands of people with their first introduction to self care through homeopathy. We make these conveniently available to you by mail or at the Center at special member discounts.

The activities outlined here and more are carried out by a small, dedicated staff, committed volunteers, and a working Board of Directors that is elected by you, our membership.

The NCH is at the forefront of homeopathy in North America. **We urge you to join us in promoting health through homeopathy.**

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Berkeley Springs, WV

Stephen Messer, ND DHANP
Eugene, OR

Harry Swope, ND, DHANP, CCH
LaCrescenta, CA

David Warkentin, PA
San Rafael, CA

Board Member Emeritus
Julian Winston
Tawa, New Zealand

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Fields

Divider Title: _____

Tiffany Fields

1. List of Studies (see attached)
2.
 - A. Given on list
 - B. Given on list
 - C. Always in conjunction with conventional medicine
 - D. Massage therapists or parents if children are patients
3. Example of cost-effectiveness
 - 450,000 premature infants born each year in the U.S.
 - Massage therapy for preterm infants (conducted by elderly volunteers) leads to significant weight gain (47% greater weight gain) and significantly earlier hospital discharge (6 days earlier @ 10,000/infant hospital cost savings) resulting in 4.7 billion annual hospital cost savings (and additional benefits for the elderly including fewer trips to their physicians)
4. Has not been used as a substitute for conventional care so those data are unavailable at this time
5. Unavailable except that stress hormone (cortisol) decreased in every study we have conducted
6. Current barriers are non-coverage by insurance companies and physicians' lack of knowledge that massage therapy was primary form of medicine prior to advent of pharmaceuticals and that it has physiological and biochemical effects that enhance immune function
7. Should be delivered with conventional treatment until such time as research has been conducted on massage therapy alone

Touch Research Institute Studies

1. **Anorexia:** Massage therapy reduced anxiety, and resulted in decreased body dissatisfaction associated with anorexia.

Hart, S., Field, T., Hernandez-Reif, M., Shaw, S., Schanberg, S. & Kuhn, C. (In Press). Anorexia Nervosa symptoms are reduced by massage therapy. Eating Disorders: The Journal of Treatment & Prevention.

2. **Asthma:** This study showed positive effects of parents massaging their asthmatic children including increased peak air flow, improved pulmonary functions, less anxiety and reduced stress hormone (cortisol) in the children. Parental anxiety also decreased.

Field, T., Henteleff, T., Hernandez-Reif M., Martinez, E., Mavunda, K., Kuhn C., & Schanberg S. (1998). Children with asthma have improved pulmonary functions after massage therapy. Journal of Pediatrics, 132, 854-858.

3. **Attention Deficit Hyperactivity Disorder:** Adolescents with ADHD rated themselves as happier and were observed to fidget less after massage sessions. Also, teachers rated children receiving massage as less hyperactive and as spending more time on-task.

Field, T., Quintino, O. & Hernandez-Reif, M., & Koslovsky, G. (1998). Adolescents with attention deficit hyperactivity disorder adolescents benefit from massage therapy. Adolescence, 33, 103-108.

4. **Autistic Children:** Touch sensitivity, attention to sounds and off-task classroom behavior decreased and relatedness to teachers increased after massage therapy.

Field, T., Lasko, D, Mundy, P., Henteleff, T., Talpins, S., & Dowling, M. (1997). Autistic children's attentiveness and responsivity improve after touch therapy. Journal of Autism & Developmental Disorders, 27, 333-338.

5. **Breast Cancer:** Massage therapy reduced anxiety and depression and improved immune function including increased natural killer cell number.

Hernandez-Reif, M., Field, T., Ironson, G., Weiss, S., & Katz, G. (In Review). Immunological responses of breast cancer patients to massage therapy.

6. **Bulimia:** Bulimic adolescent girls received massage therapy 2 times a week for 5 weeks. Effects included an improved body image, decreased depression and anxiety symptoms, decreased cortisol levels and increased dopamine and serotonin levels.

Field, T., Shanberg, S., Kuhn, C., Fierro, K., Henteleff, T., Mueller, C., Yando, R. & Burman, I. (1997). Bulimic adolescents benefit from massage therapy. Adolescence, 33, 131.

7. **Burn in Adults:** Massage therapy sessions given prior to debridement (skin brushing) decreased depression and anger, and the subjects appeared less anxious during behavior observations and reported less pain. Lower pulse and cortisol suggested lower stress levels.

Field, T., Peck, M., Krugman, S., Tuchel, T., Schanberg, S., Kuhn, C., & Burman, I. (1997). Burn injuries benefit from massage therapy. Journal of Burn Care and Rehabilitation, 19, 241-244.

8. **Carpal Tunnel Syndrome:** Massage therapy is self administered for stretching tendons and alleviating pain.

Cullen, C., Field, T., Hartshorn, K., Gruskin, A., Hernandez-Reif, M., Escalona, A., Sunshine, W., & Burman, I. (In Review). Carpal tunnel syndrome is lessened following massage therapy.

9. **Cerebral Palsy:** Massage therapy helped infants with CP reduce spasticity, gain more muscle flexibility, and increase posture, motor function and social interaction.

Hernandez-Reif, M., Field, T., & Bornstein, J. (In Press). Cerebral Palsy infants benefit from massage therapy.

10. **Chronic Fatigue Syndrome:** Immediately following massage therapy depressed mood, anxiety and cortisol stress hormone levels were reduced. Following 10 days of massage therapy, fatigue related symptoms, particularly anxiety and somatic symptoms, were reduced, as were depression, difficulty sleeping and pain. Stress hormone (cortisol) also decreased and dopamine increased.

Field, T., Sunshine, W., Hernandez-Reif, M., Quintino, O., Schanberg, S., Kuhn, C., & Burman, I. (1997). Chronic fatigue syndrome: Massage therapy effects on depression and somatic symptoms in chronic fatigue syndrome. Journal of Chronic Fatigue Syndrome, 3, 43-51.

11. **Cocaine Exposed Newborns:** The massaged newborns had fewer postnatal complications and showed increased weight gain, and better performance on the Brazelton Neonatal Behavior Assessment Scale (particularly on the motor scale), and less stress behaviors following 10 days of massage.

Scafidi, F., Field, T., Wheeden, A., Schanberg, S., Kuhn, C., Symanski, R., Zimmerman, E., & Bandstra, E. S. (1996). Cocaine exposed preterm neonates show behavioral and hormonal differences. Pediatrics, 97, 851-855.

12. **Cystic Fibrosis:** Children receiving daily bedtime massages from their parents reported being less anxious, and their mood and peak air flow readings improved.

Hernandez-Reif, M., Field, T., Krasnegor, J., & Martinez, E. (1999). Cystic fibrosis symptoms are reduced with massage therapy intervention. Journal of Pediatric Psychology, 24, 183-189.

13. Depressed Teenage Mothers: Teenage mothers who received massage therapy versus those who received relaxation therapy were less depressed and less anxious both by their own report and based on behavior observations. In addition, their urinary cortisol levels were lower and their serotonin levels were higher, indicating they were less stressed and less depressed.

Field, T., Grizzle, N., Scafidi, F., & Schanberg, S. (1996). Massage and relaxation therapies' effects on depressed adolescent mothers. Adolescence, 31, 903-911.

14. Dermatitis in Children : Children's affect and activity levels improved as did all measures of skin condition including less redness, lichenification, excoriation, and pruritis after massage therapy. Parents' anxiety levels also decreased.

Schachner, L., Field, T., Hernandez-Reif, M., Duarte, A., & Krasnegor, J. (1998). Atopic Dermatitis Symptoms Decrease in Children Following Massage Therapy. Pediatric Dermatology, 15, 390-395.

15. Diabetes: Following one month of parents massaging their children with diabetes, the children's glucose levels decreased to the normal range and their increased dietary compliance increased. Also the parents' and children's anxiety and depression levels decreased.

Field, T., Hernandez-Reif, M., LaGreca A., Shaw, K., Schanberg, S., & Kuhn, C. (1997). Massage therapy lowers blood glucose levels in children with Diabetes Mellitus. Diabetes Spectrum 10, 237-239.

16. Down Syndrome: Infants with Down syndrome improved in muscle tone and in performance on motor tasks.

Hernandez-Reif, M., Ironson, G., Field, T., Largie, S., Deigo, M., Mora, D., & Bornstein, J. (In Review). Children with Down Syndrome improved in motor function and muscle tone following massage therapy.

17. Elderly Retired Volunteers Providing Versus Receiving Massage: Elderly Retired volunteers were assessed after giving infants massage for a month versus receiving massage for a month themselves. Results were: 1) they reported less anxiety and fewer depressive symptoms and an improved mood after giving infants massage; 2) their pulse decreased; 3) their cortisol levels decreased; and 4) they reported improved self esteem and a better lifestyle (e.g. fewer doctor visits and more social contacts) after the one month period. These effects were stronger for giving infants the massages than receiving massages themselves, suggesting that the massager can benefit from simply giving massages.

Field, T., Hernandez-Reif, M., Quintino, O., Schanberg, S. & Kuhn, C. (1998). Elder retired volunteers benefit from giving massage therapy to infants. Journal of Applied Gerontology, 17, 229-239.

18. Fibromyalgia Syndrome: Massage therapy (as compared to transcutaneous electrical stimulation) improved sleep patterns and decreased pain, fatigue, anxiety, depression and cortisol levels.

Sunshine, W., Field, T., Schanberg, S., Quintino, O., Fierro, K., Kuhn, C., Burman, I., & Schanberg, S. (1996). Fibromyalgia benefits from massage therapy and transcutaneous electrical stimulation. Journal of Clinical Rheumatology, 2, 18-22.

19. HIV Exposed Newborns: Increased weight gain and improved performance on the Brazelton Newborn Scale (motor and state scales) were experienced by the massaged newborns.

Scafidi, F. & Field, T. (1997). Massage therapy improves behavior in neonates born to HIV positive mothers. Journal of Pediatric Psychology, 21, 889-897.

20. HIV in Adolescents: Natural killer cells, CD4 cells and CD4/CD8 ratio increased after one month of massage therapy.

Diego, M.A., Hernandez-Reif, M., Field, T., Friedman, L., & Shaw, K. (In Press). Massage therapy effects on immune function in adolescents with HIV. International Journal of Neuroscience.

21. HIV Positive Adults: This study examined massage therapy effects on anxiety and depression levels and on immune function. The subjects received a 45-minute massage five times weekly for a 1-month period. The findings were that: 1) anxiety, stress and cortisol levels were significantly reduced; and 2) natural killer cells and natural killer cell activity increased, suggesting positive effects on the immune system.

Ironson, G., Field, T., Scafidi, F., Hashimoto, M., Kumar, M., Kumar, A., Price, A., Goncalves, A., Burman, I., Tetenman, C., Patarca, R., & Fletcher, M. A. (1996). Massage therapy is associated with enhancement of the immune system's cytotoxic capacity. International Journal of Neuroscience 84, 205-218.

22. Hospital Job Stress: Hospital nursing and physician staff members were provided massage therapy, relaxation therapy and music therapy. These therapies significantly reduced anxiety, depression and fatigue as well as increased vigor.

Field, T., Quintino, O., Henteleff, T., Wells-Keife, L., & Delvecchio-Feinberg, G. (1997). Job stress reduction therapies. Alternative Therapies in Health and Medicine, 3, 54-56.

23. Hypertension: Massage therapy decreased diastolic blood pressure, anxiety and cortisol (stress hormone) levels.

Hernandez-Reif, M., Field, T., Krasnegor, J., & Burman, I. (In Press). Hypertension symptoms are reduced by massage therapy. Journal of Bodywork and Movement Therapies.

24. Infants of Depressed Mothers: The infants who received massage therapy versus those who were rocked experienced 1) greater daily weight gain; 2) more organized sleep/wake behaviors; 3) less fussiness; 4) improved sociability and soothability, 5) improved interaction behaviors; and 6) lower cortisol and norepinephrine and increased serotonin (suggesting less depression).

Field, T., Grizzle, N., Scafidi, F., Abrams, S., & Richardson, S. (1996). Massage therapy for infants of depressed mothers. Infant Behavior and Development, 19, 109-114.

25. Job Performance/Stress: Massaged subjects showed 1) decreased EEG alpha and beta waves and increased delta activity consistent with enhanced alertness; 2) math problems were completed in significantly less time with significantly fewer errors after the massage; and 3) anxiety and job stress levels were lower at the end of the 1-month period.

Field, T., Ironson, G., Scafidi, F., Nawrocki, T., Goncalves, A., Burman, I., Pickens, J., Fox, N., Schanberg, S., & Kuhn, C. (1996). Massage therapy reduces anxiety and enhances EEG pattern of alertness and math computations. International Journal of Neuroscience, 86, 197-205.

26. Juvenile Rheumatoid Arthritis: Positive effects of parents massaging their arthritic children included less pain (particularly at night) and morning stiffness as assessed by the Parent, Child and Physician's Assessment and lower anxiety and cortisol levels.

Field, T., Hernandez-Reif, M., Seligman, S., Krasnegor, J., Sunshine, W., Rivas-Chacon, R., & Schanberg, S. (1997). Juvenile rheumatoid arthritis benefits from massage therapy. Journal of Pediatric Psychology, 22, 607-617.

27. Labor Pain: Massage therapy during the first fifteen minutes of each hour of childbirth decreased anxiety and pain, as well as decreased the need for medication and the length of labor.

Field, T., Hernandez-Reif, M., Taylor, S., & Quintino, O., & Burman, I. (1997). Labor pain is reduced by massage therapy. Journal of Psychosomatic Obstetrics and Gynecology, 18, 286-291.

28. Migraine Headaches: Massage therapy decreased the occurrence of headaches, sleep disturbances and distress symptoms.

Hernandez-Reif, M., Field, T., Dieter, J., Swerdlow, & Diego, M., (1998). Migraine headaches are reduced by massage therapy. International Journal of Neuroscience, 96, 1-11.

29. Multiple Sclerosis: Massage therapy decreased anxiety and depressed mood, and improved self-esteem, body image and social functioning.

Hernandez-Reif, M., Field, T., Field, T., & Theakston, H. (1998). Multiple Sclerosis patients benefit from massage therapy. Journal of Bodywork and Movement Therapies, 2, 168-174.

30. Parkinson Patients: Massage therapy is expected to improve motor coordination, cognitive and self-help skills in patients with Parkinson's disease.

Largie, S., Hernandez-Reif, M., Field, T., & Weiner, W. (In Review). Symptoms of Parkinson Disease symptoms are reduced by massage therapy.

31. Post burn: Ten massage therapy sessions led to lower anxiety, anger, depression, pain and itching.

Field, T., Peck, M., Hernandez-Reif, M., Stern, S., Burman, I., Krugman, S., & Ozment-Schenck, L. (In Press). Massage therapy effects on postburn scar. Journal of Burn Care and Rehabilitation

32. Post Traumatic Stress Disorder: Massage therapy decreased the anxiety, depression and stress hormone levels (cortisol) of children who survived Hurricane Andrew. In addition, their drawings became less depressed.

Field, T., Seligman, S., Scafidi, F., & Schanberg, S. (1996). Alleviating posttraumatic stress in children following Hurricane Andrew. Journal of Applied Developmental Psychology, 17, 37-50.

33. Pregnancy: This study showed decreased anxiety and stress hormones (norepinephrine) during pregnancy and fewer obstetric and postnatal complications including lower prematurity rates following pregnancy massage.

Field, T., Hernandez-Reif, M., Hart, S., Theakston, H., Schanberg, S., Kuhn, C., & Burman, I. (1999). Pregnant women benefit from massage therapy. Journal of Psychosomatic Obstetrics and Gynecology, 19, 31-38.

34. Preterm Infants Develop Better: Preterm infants who received massage therapy as newborns showed greater weight gain and more optimal cognitive and motor development eight months later.

Field, T., Scafidi, & Schanberg, S. (1987). Massage of preterm newborns to improve growth and development. Pediatric Nursing, 13, 385-387.

35. Preterm Newborns Have a Better Clinical Course: Preterm Infants received tactile/kinesthetic stimulation over a 10-day period. The infants averaged 21% greater weight gain per day and spent more time awake and active during sleep/wake behavior observations.

Scafidi, F., Field, T., Schanberg, S., Bauer, C, Tucci, K., Roberts, J., Morrow, C., & Kuhn, C.M. (1990). Massage stimulates growth in Preterm infants: A replication. Infant Behavior and Development, 13, 167-188

36. Preterm Newborns Gain More Weight: Preterm infants gained 47% more weight, became more socially responsive, and were discharged 6 days earlier at a hospital cost savings of \$10,000 per infant (or 4.7 billion dollars if the 470,000 preemies born each year were massaged). The underlying biological mechanism for weight gain in the massaged preterm newborns may be an increase in vagal tone and, in turn, an increase in insulin (food absorption hormone).

Field, T., Schanberg, S. M., Scafidi, F., Bauer, C. R., Vega-Lahr, N., Garcia, R., Nystrom, J., & Kuhn, C. M. (1986). Tactile/ kinesthetic stimulation effects on preterm neonates. Pediatrics, 77, 654-658.

37. Psychiatric Patients (Child and Adolescent) : Following five 30-minute massages these children/ adolescents had better sleep patterns, lower depression, anxiety and stress hormone levels (cortisol and norepinephrine) and better clinical progress.

Field, T., Morrow, C., Valdeon, C., Larson, S., Kuhn, C., & Schanberg, S., (1992). Massage therapy reduces anxiety in child and adolescent psychiatric patients. Journal of the American Academy of Child and Adolescent Psychiatry, 31, 125-130.

48. Sleep by Preschoolers: Preschool children who received massage fell asleep sooner, exhibited more restful nap time periods, had decreased activity levels and better behavior ratings.

Field, T., Kilmer, T., Hernandez-Reif, M., & Burman, I. (1996). Preschool Children's Sleep and Wake Behavior: Effects of massage therapy. Early Child Development & Care, 120, 39-44.

49. Smoking: Cravings, anxious behaviors and the number of cigarettes smoked were reduced by self-massage (rubbing ear lobes or hands whenever subjects experienced a craving).

Hernandez-Reif, M., Field, T., & Hart, S. (1999). Smoking cravings are reduced by self-massage. Preventive Medicine, 28, 28-32.

50. Spinal Cord Injuries: Massage therapy improved functional abilities, range of motion and muscle strength in spinal cord injury patients.

Diego, M., Hernandez-Reif, M., Field, T., Brucker, B., Hart, S. & Burman, I. (In Press).
Spinal cord injury benefits from massage therapy.