Apply and Assess

EBP in Action

The Cost of Keeping Current

Summer 2008

Overview

- Who cares about cost?
- Why Bother?
- Finding the literature
- Accessing the literature
- Make it automatic
- Summary

Who Cares about cost..we're doctors? First the necessities:

- Rent or Mortgage
- Gas
- Electric
- Phone
- Liability insurance
- Malpractice insurance
- Property tax
- Internet
- Office supplies
- Medical supplies
- Credit card machine fees

- Cleaning and maintenance
- Marketing
- Business loans or line of credit
- Student loans
- Accountants, Attorneys and other professional fees
- Equipment
- Payroll
- Subscription to US weekly

Who Cares about cost..we're doctors? The necessities:

- Rent or Mortgage $3,000
- Gas $175
- Electric $150
- Phone $200
- Liability insurance $125
- Malpractice insurance $333
- Property tax $416
- Internet $35
- Office supplies $100
- Medical supplies $300
- Credit card machine fees $100

$12,098.48/month

- Cleaning and maintenance $150
- Marketing $1400
- Business loans or line of credit $800
- Accountants, Attorneys and other professional fees $150
- Equipment $100
- Payroll $4500
- Subscription to US weekly $64.48

Why Bother?

- Passion, enthusiasm, and philosophy are great. However, the need for evidence-based clinical decision making is growing stronger
  - With access to the internet, patients often do their own research before they present. Consequently, they have expectations and specific questions about conservative management AND medical interventions. If you want your patients to follow your recommendations for care, you will need to back them up with more than your opinion.
  - Third party payors are increasingly requiring that we demonstrate "medical necessity" before payment is rendered. Research provides the foundation for "medical necessity"

Why Bother Continued

- Covell, Uman and Manning found that on average, some aspect of scientific uncertainty is encountered three times for every two patients seen by experienced clinicians
- Using the best available information will lead to the best possible clinical outcome and will foster long-lasting doctor/patient relationships

Finding the literature

- By now all of you (hopefully) are pretty good at searching for a topic
- Just a few reminders:
  - Medline is great but if you don't find what you are looking for (or even if you do), check the other databases
    - MANTIS
    - Index to Chiropractic Literature
    - CINAHL
  - Before you make a decision based on what you have found, verify that the information you are reading is from a valid scientific source
    - Lots of "research" in the CAM world is in reality an advertisement for a product

Accessing the Literature
As a student, it's easy:

- Build a library now while you have access to literally any biomedical journal article in printed history
- Utilize the great search tools you have at your fingertips like EBSCO
- If you form a small group of 5 colleagues, and every week from now until graduation you each find one new relevant article to share with the group, you would accumulate a library of over 200 articles by the time you graduate…for FREE

Accessing The Literature In Practice

- Individual articles can usually be purchased directly from a journal. Prices range from approximately $1-$30
- Individual subscriptions to journals are a fun way to stay atop the ever growing mound of biomedical literature, but it will cost you
  - For example:
    - Science $144/year
    - Nature $199/year
    - BMJ $338
    - Spine $616

Accessing The Literature In Practice cont.

- Join your local library for access to many of the same journals and databases you have access to here
- MANTIS is available through membership to FCER MANTIS alone is $159/year, annual FCER dues are $154/year
  - FCER also has a new service called DC Consult www.fcer.org
- JMPT is available for Free with your ACA dues
  - ACA dues first year…Free
  - Second year through 4th year $10/month
  - 5th and beyond $50/month
  - www.amerchiro.org

Accessing The Literature In Practice cont.

- Biomedical research is increasingly available for free to medical professionals
  - Currently www.freemedicaljournals.com has open access to
    - 14 nutritional journals
    - 3 family practice journals
    - 2 geriatric specialty journals
    - 23 pediatrics journals
    - 5 public health journals
    - 1 pregnancy journal
    - 3 rehabilitation journals
    - 4 physical therapy journals
    - And many more with new journals constantly being added
  - Often these same journals will have a free full text tab when searching PubMed

Accessing The Literature In Practice cont.

- BioMed Central is a very large (and growing) database of open access journals www.biomedcentral.com
  - "an independent publishing house dedicated to providing immediate open access to peer-reviewed biomedical research"
  - Hundreds of open-access medical journals most are indexed on Medline and you will see a link when searching Medline

Accessing The Literature In Practice cont.

- Literature review services are available specifically for chiropractic literature, some for free, others for a charge. Dynamic Chiropractic does a good job of publicizing current hot chiropractic topics including literature.
  - DC offers a free online review at www.chiropracticresearchreview.com where they review current chiropractic literature. You can browse by topic.

Accessing The Literature In Practice cont.

- www.Chiro.org
  - Chiropractic news and research site. Created by and maintained by chiropractors.
  - Excellent research section by topic
    - For example: the 'Pediatrics' section has: over 60 articles where one can access partial or full text all related to chiropractic AND links to pediatric websites AND a list of pediatric journals AND a list of pediatric chiropractic associations…all on one convenient page…all for free

Make it Automatic

- As a busy practitioner you will want to make staying current as simple as possible, so make it automatic via email
  - For example:
    - On www.medpagetoday.com you can signup to receive daily email headlines that contain recent medical literature publications
    - Using my NCBI on PubMed www.ncbi.nlm.nig.gov you can save an infinite number of queries and you will receive a monthly email if any literature has been added to Medline that matches that query
    - Like my NCBI, you can formulate a search in BioMed central www.biomedcentral.com and receive any new additions in your inbox. You can also sync your PDA to the latest research related to your area of interest and read it on the go.
    - ACA www.amerchiro.org sends weekly newsletters that keep you up to date on current chiropractic goings on and recent literature hot topics
    - ACA also sends out JACA online via email
    - FCER www.fcer.org sends weekly emails detailing current chiropractic literature
    - Natural Standard www.naturalstandard.com sends a monthly newsletter that offers perhaps the most comprehensive review of recent CAM literature
    - State chiropractic associations are a great resource. The ICS sends a monthly newsletter (very similar to ACA news)
    - Many journals will automatically email you the table of contents for the current issue with links to each article's abstract

Summary

- So back to the cost of keeping current
- With ACA dues, FCER dues, and Illinois Chiropractic Society dues, Southport Grace Wellness Center Ltd. spends $103.81 per month on keeping current with the most up-to-date CAM literature or 0.86% of total monthly overhead

- THANK YOU!!

To view the EBP@NUHS All Events Calendar, please follow the following link:

http://www.google.com/calendar/embed?src=ebpatnuhs%40gmail.com&ctz=America/Chicago&pvttk=5adade44e50b2aab7cbb8ee87d1b1805

Or join EBP@NUHS and eLRC Resources on Cygnet

- Login to http://cygnet.nuhs.edu
- Select “All Courses” under the “My Courses” block
- Search EBP @ NUHS (include spaces)
- Select EBP @ NUHS and e-LRC Resources (no enrollment key needed)

PRACTICE GUIDELINES AND BEST PRACTICES

RE6003 EBP3

Thomas Grieve, DC

6/25/08

ISSUES RELATIVE TO PRACTITIONERS

- How can I get paid?
- How do I find evidence for a treatment protocol for a presentation that I have never seen?
- How do I adequately protect myself from malpractice?
- How do I evaluate this new protocol I just heard about?

IN THE LITERATURE

- Look for terms like review, systematic review, meta-analysis, guidelines, practice parameters, literature synthesis, strategies

MERCY GUIDELINES AND AHCPR

- At the Agency for Health Care Policy (AHCPR) and Research LBP meeting in 1994 in Washington, the “Mercy” document was presented in defense of chiropractic by Drs. Triano & Haldeman
- AHCPR called “Mercy” the “best guidelines document seen to date by any profession”
- AHCPR findings - chiropractic is one of only three effective choices for acute LBP

GUIDELINES HISTORY

- 1989: Congress of Chiropractic State Associations (COCSA) commissioned creation of chiropractic guidelines ("Mercy" document)
- Final document released in 1993
  - Haldeman S, et al. *Guidelines for Chiropractic Quality Assurance and Practice Parameters;* Aspen Publishers, Gaithersburg, Maryland, 1993

GUIDELINES HISTORY

- 1992: COCSA passed resolution to form a permanent organization to develop and revise national chiropractic guidelines

COUNCIL ON CHIROPRACTIC GUIDELINES AND PRACTICE PARAMETERS (CCGPP)

- "CCGPP was founded largely, but not only, to address problems revolving around issues of reimbursement." (Gene Lewis, DC, former Council Chair)
- Formed by COCSA
- CCGPP Commission: Scientific group to identify evidence and make recommendations for *best practices*
- http://www.ccgpp.org/

Guidelines vs. Best Practices

GUIDELINES

Over-reliance on randomized controlled trials

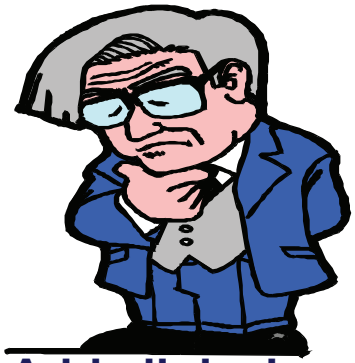
Narrow scope of recommendations

Often unrealistic and unsupported conclusions

BEST PRACTICES

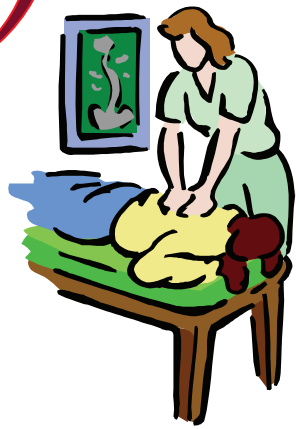
Employ wider information source

Provides ratings of multiple treatment options



Add clinical judgment, experience and patient values

Result: *more effective care*



"BEST PRACTICES" IS A PROCESS

"It is not a specific practice per se but rather a level of agreement about research based knowledge and an integrative process of embedding this knowledge into the organization and delivery of healthcare… [it] can bridge the practice-research gap."

Driever, MJ. "Are Evidence-Based Practice and Best Practice the Same?" West J Nurs Res 2002; 24: 591 –7.

WHAT THEY ARE NOT

- Could serve as a seed document for “best practice” development
- No PRACTICE recommendations were made; only ratings of the EVIDENCE
  - Broader base of practitioner experts would be required to make practice recommendations

WHAT THEY ARE

- Analysis of scientific literature on specified topic
- Uses formal process to rate literature:
  - accepted evaluation instruments
  - Reviewers independently rate articles, compare ratings and reach consensus on ratings
  - Ratings do not represent reviewers' beliefs but rather what the literature actually supports
- Literature synthesis is a starting point only.
- Appropriate therapeutic approaches will consider the literature synthesis along with clinical experience and patient preferences

CALIFORNIA WORKMAN'S COMPENSATION REQUIREMENTS

- **(e) For all injuries not covered by the ACOEM Guidelines or official utilization schedule after adoption pursuant to Section 5307.27, authorized treatment shall be in accordance with other** evidence based medical treatment guidelines generally recognized by the national medical community and that are scientifically based.

DEFINITIONS FOR EVIDENCE RATINGS

GRADE A: Good evidence from relevant studies

- Appropriate designs and sufficient strength
- Results clinically important and consistent
- No significant doubts about generalizability, bias, design

GRADE B: Fair evidence from relevant studies

- Appropriate designs but inconsistencies or minor doubts
- Evidence from weaker designs, confirmed in separate studies

GRADE C: Limited evidence from studies/reviews.

- Substantial uncertainty due to design flaws or sample size.
- Limited number of studies, weak design (case series)

GRADE D: Expert opinion, usual & customary practice

- Expert opinion only; research has not been performed (case reports)

GRADE I: Insufficient or non-relevant evidence

- Studies have not been published, or are non-relevant.

A NOTE ON JCAHO

- Joint Commission on the Accreditation of Healthcare Organizations
- http://www.jointcommission.org/
- The Joint Commission evaluates and accredits more than 15,000 health care organizations and programs in the United States
- An independent, not-for-profit organization, The Joint Commission is the nation's predominant standards-setting and accrediting body in health care since 1951
- Targeted at allopaths and hospitals, but good information regarding patient safety, etc.
- For instance, a recent standard was issued that physicians, hospitals, etc. have to reconcile medications with any supplements the patient is taking

A DECENT PLACE TO START

- National Guideline Clearinghouse
  - http://www.guideline.gov/
  - Maintained by the Agency for Healthcare Research and Quality, Dept. of Health and Human Services
  - Not limited to healthcare guidelines, so you need to search or browse for pertinent information
  - Annotated bibliographies so you can check the primary references
  - Updated regularly
  - Subscribe for updates (free)

COUNCIL ON CHIROPRACTIC PRACTICE

- http://www.ccp-guidelines.org/
- “It is an apolitical, non-profit organization, and is not affiliated with the ACA, ICA, WCA, FSCO, COCSA, FCLB, or any state association. Instead, is was founded as a grass roots group to produce practice guidelines which serve the needs of the consumer, and are consistent with "real world" chiropractic practice.”
- Subluxation-based guidelines (read STRAIGHT) issued in 1998 and updated in 2003

NATURAL STANDARD

- http://www.naturalstandard.com/
- Under the “Education” tab, look for guideline documents
- Summarized, based upon current available CAM research with some anecdotal evidence described

WHAT TO WATCH FOR

- A preponderous number of guidelines have an allopathic slant
  - This is why initiatives like CCGPP are necessary
- Are all guidelines created equal?
  - Use EBP tools to evaluate

MEDICOLEGAL IMPLICATIONS

- Moses RE, Feld AD. Legal risks of clinical practice guidelines. Am J Gastroenterol. 2008 Jan;103(1).
  - Well-crafted systemically developed clinical practice guidelines (CPGs) are intended to frame current medical knowledge in a manner that will assist health care providers in delivering high quality care. CPGs are being used in the malpractice arena to define a credible standard of care to measure the accused physician for an alleged problem addressed.

MEDICOLEGAL IMPLICATIONS

- Moses RE, Feld AD. Legal risks of clinical practice guidelines. Am J Gastroenterol. 2008 Jan;103(1).
  - This may occur despite a medical society's disclaimer that they are not intended, nor devised, for that purpose. It can be argued that CPGs may be used with greater effect by the plaintiff's bar for inculpatory evidence than by the defense as an exculpatory standard. Physicians should be aware of the legal use of CPGs and the associated risk management implications.

MEDICOLEGAL IMPLICATIONS

- Moses RE, Feld AD. Legal risks of clinical practice guidelines. Am J Gastroenterol. 2008 Jan;103(1).
  - Physicians who write guidelines for medical societies may wish to consider the potential future courtroom use of CPGs as they attempt to use evolving research to enhance patient care. A fine line may separate a "best practice" from acceptable quality care; the former may not be expected to occur in all patient care interactions. Suggestions embedded in a CPG rather than other publication may be legally interpreted incorrectly as a baseline standard of care expectation.

Hot Topics in Clinical Practice

Hot Topics in Clinical Practice

Surface EMG

Hot Topics in Clinical Practice Surface EMG

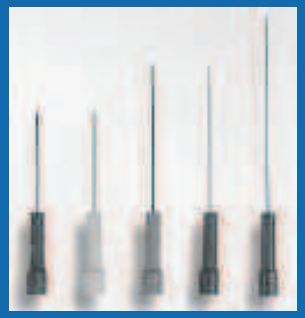
- Disclaimer
- What is it?
- How does it work?
- What is it used for?
- How much does it cost?
- Is it a useful clinical tool?
- Summary

Disclaimer

- This lecture is merely a description of my clinical thought process as an evidence based practitioner exploring the possibility of adding a new technology to my practice. I am not a neurologist nor an expert in electromyography. I am not endorsing or recommending any product(s). I am also a big fan of REO Speedwagon (the band, not the car).

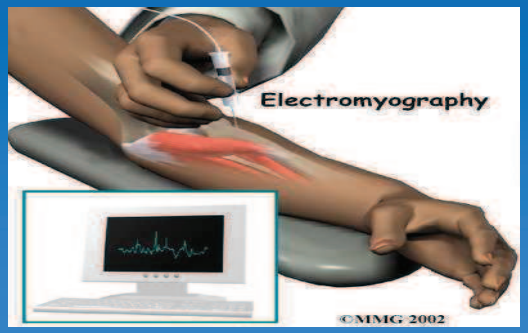
Surface EMG
What is it?

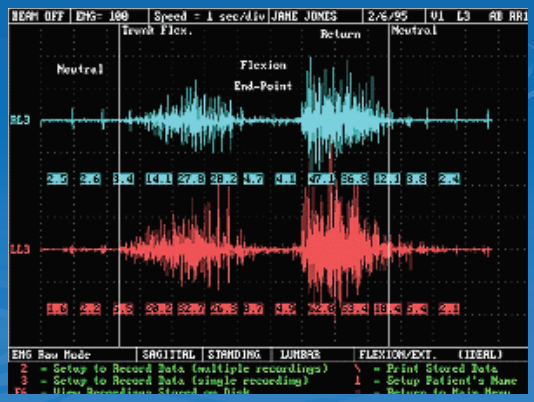
- EMG (electromyography) is a technique used to record and quantify electrical potential of muscles cells during contraction and at rest.
  - Traditionally performed using needle electrodes for intramuscular activity.
    - Often used in conjunction with NCV (nerve conduction velocity)
    - This combination of tests are the Gold Standard when neuropathy or myopathy is suspected
  - More recently surface electrodes have been used to record broader muscle function or dysfunction.



EMG
How does it work?

- Electrodes detect intrinsic skeletal muscle fiber electrical activity and the resulting signal is displayed on an oscilloscope or decomposed by a computer and displayed on a monitor. (unlike NCV where an electrical impulse is applied to a peripheral nerve, and a separate electrode detects the signal, the time the impulse took to travel is measured, and velocity is calculated)
  - Additionally the signal can be visualized and audioized (why is visualized a word and audioized is not?) and used as biofeedback for neuromuscular reeducation.



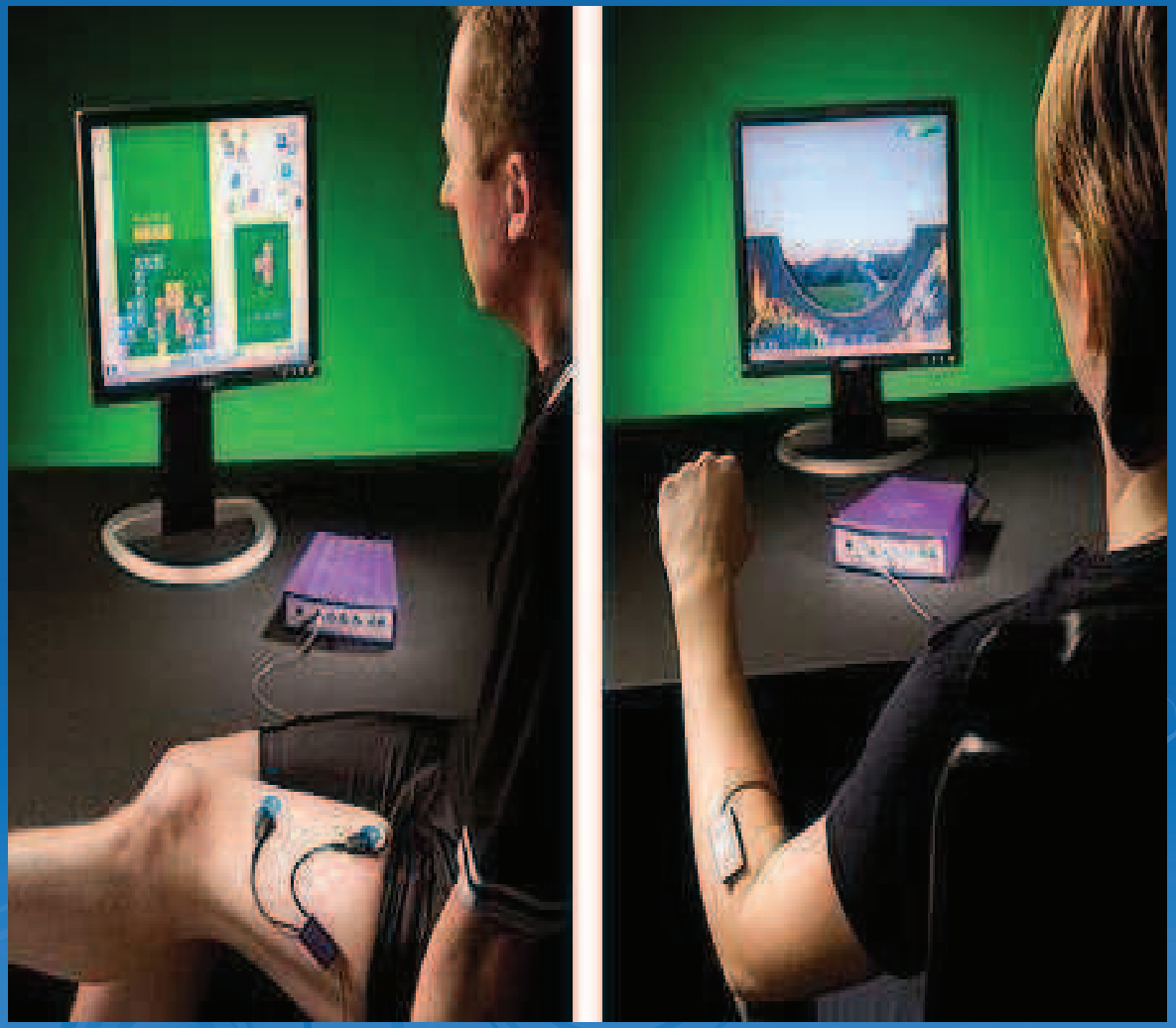


Needle EMG and NCV are Typically Used to Diagnose:

- Alcoholic neuropathy
- Axillary nerve dysfunction
- Becker's muscular dystrophy
- Brachial plexopathy
- Carpal tunnel syndrome
- Centronuclear myopathy
- Cervical spondylosis
- Charcot-Marie-Tooth disease
- Common peroneal nerve dysfunction
- Denervation (reduced nervous stimulation)
- Dermatomyositis
- Distal median nerve dysfunction
- Duchenne muscular dystrophy
- Facioscapulohumeral muscular dystrophy (Landouzy-Dejerine)
- Familial periodic paralysis
- Femoral nerve dysfunction
- Fields condition [1]
- Friedreich's ataxia
- Guillain-Barre
- Lambert-Eaton Syndrome
- Mononeuritis multiplex
- Mononeuropathy
- Motor neurone disease
- Myasthenia gravis
- Myopathy (muscle degeneration, which may be caused by a number of disorders, including muscular dystrophy)
- Myotubular myopathy
- Neuromyotonia
- Peripheral neuropathy
- Poliomyelitis
- Polymyositis
- Radial nerve dysfunction
- Sciatic nerve dysfunction
- Sensorimotor polyneuropathy
- Shy-Drager syndrome
- Sleep bruxism
- Spinal stenosis
- Thyrotoxic periodic paralysis
- Tibial nerve dysfunction
- Ulnar nerve dysfunction

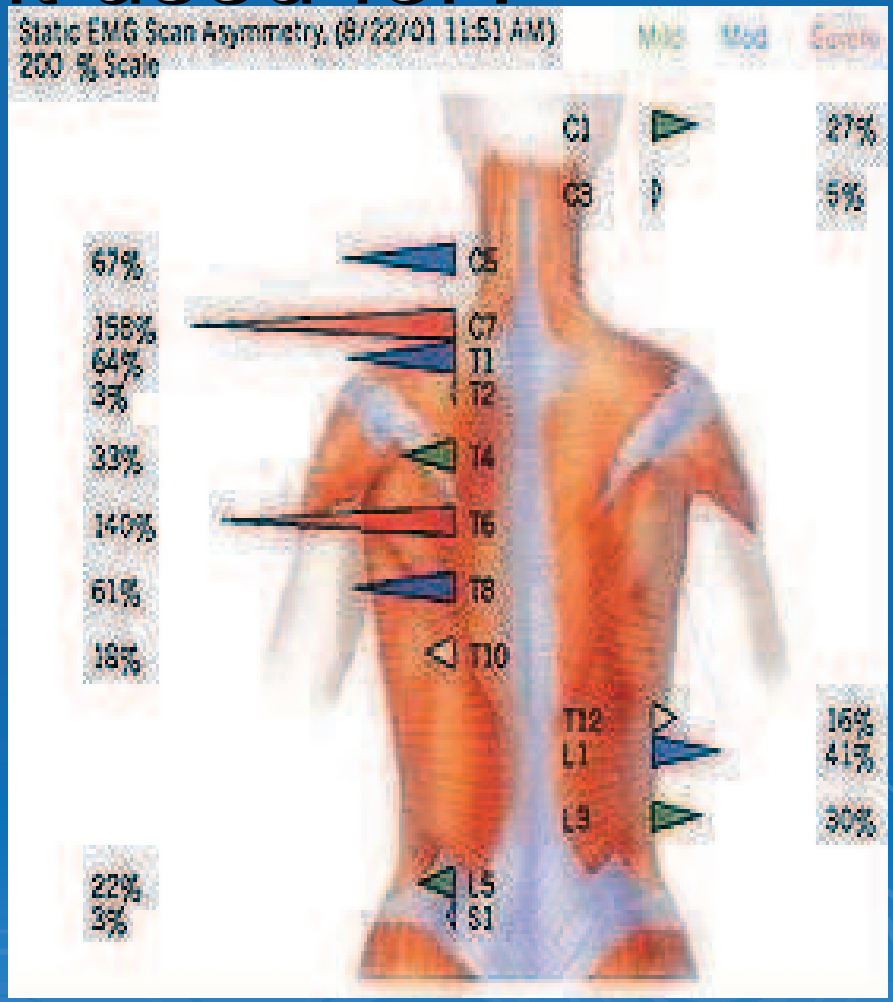
Surface EMG
What is it used for?

- Both surface and needle EMG measure muscle activity at rest (Static) and during active (Dynamic) contraction
- Chiropractors, Physical Therapists, and Occupational Therapists use dynamic surface EMG as a source of biofeedback for neuromuscular training



Surface EMG
What is it used for?

- Chiropractors use static and dynamic EMG to perform spinal screenings
- Results are computerized into a very nice display of muscle activity at each spinal level



Surface EMG
What is it used for?

- Static EMG of the spine is typically performed with hand held electrodes that take measurements at each spinal level (or every 2-3 depending on electrode size)

- Dynamic EMG of the spine uses surface electrodes that are affixed to the skin

Surface EMG
How Much Does it Cost?

- There is a rather dramatic range of cost depending on what you want, needle or surface, static or dynamic, and the cost escalates with each bell and whistle added

For Example:

- A “gently used” Neurometrix NCV and EMG full setup can be purchased on eBay for the ‘buy it now’ price of $1,250 with free shipping

- While Myovision’s “Stealth Bomber” with fully Digital and Wireless: Surface Static EMG, Dynamic EMG, and Range of Motion comes in with a much heftier price tag of $14,980

Surface EMG
How Much Does it Cost?

- The “competitively priced” CLA (Chiropractic Leadership Alliance) Subluxation Station has static and dynamic sEMG, as well as digital range of motion, digital algometry, and digital thermal scanning (available with Myovision).

Surface EMG
Is it a Useful Clinical Tool?

- Here is where the disclaimer applies. As the presenter I owe it to you, the audience, who has been lulled to a state of drowsy purgatory, a conclusion. Unfortunately, I have yet to arrive at that destination myself.
- So with my apologies I will provide what I have so far:

Surface EMG
Is it a Useful Clinical Tool?
First: The Research

- As evidence-based practitioners, this is a clinical question that we might want to and should investigate before we make a purchase and start using the technology.
- In short, what I have found:
  - There is decent evidence to support the use of dynamic surface EMG as biofeedback
  - There is insufficient but growing evidence supporting the use of dynamic surface EMG to assist in the objective diagnosis of spinal conditions and for monitoring progress of spinal conditions
  - There is insufficient evidence to support the use of static surface EMG to assist in objective evaluation or monitoring of progress…HOWEVER→

Surface EMG
Is it a Useful Clinical Tool?
Intuition

- The technology and concept of spinal surface EMG does make sense (to me). Why?
  - We are taught and accept the idea that spinal restriction, or fixation, or subluxation, or intersegmental dysfunction, or the chiropractic lesion, will produce hypertonicity due to irritation of local efferents.
  - It is generally accepted that healthy skeletal muscle, at rest, is electrically silent on EMG
  - Therefore, if a surface EMG scan demonstrates paraspinal muscle activity at rest, then something must be activating the muscles

Surface EMG
Is it a Useful Clinical Tool?
Proponents

- Claim that interexaminar reliability is better with sEMG than palpation and the results are quantified
- Claim that while the correlation of findings and pain is supported in a few studies, the correlation is not necessary for what we treat as chiropractors
- Both CLA and Myovision are endorsed by Guy Riekemen, current president of Life University. Past president of Palmer
- Colleges that endorse or use sEMG include Palmer, Parker, Life East and West, New Zealand, Bridgeport, Northwestern, and Cleveland
- Speakers and instructors: Bill Esteb (Patient Media), Bob Hoffman (Masters Circle) Mark Charrette, Ted Morter (BEST), Fortune Management, The Colts, The Lions, Dan O'Brien, Terry McCosky (NUCCA), ICA, John Gerhardt, and many more. www.myovision.com and www.subluxation.com

Surface EMG
Is it a Useful Clinical Tool?
Experts

- I spoke with a neurologist familiar with the technology and a physical medicine clinician at Mayo Clinic familiar with the technology and they both had similar sentiments
  - Surface EMG is too “noisy” and “quirky” to have practical clinical application as a diagnostic tool. Currently some application is acceptable in rehab (biofeedback)
  - However, with advances in technology, increased specificity is possible with better electrodes and computer filtering, decoding, and analysis of signals

Surface EMG
Is it a Useful Clinical Tool?
Field Docs

- I spoke with four practicing chiropractors who use/used the technology:
  - From a Chicago chiropractor: “The test has some validity. I can correlate test results with subjective and objective findings. It’s great for marketing” She said that an average street fair will produce 15-20 new patients over a weekend.
  - From a Chicago Western Suburb chiropractor who sees over 400 patient per week “not sure you want my opinions, I have not used it in 4 years”
  - From a Chicago chiropractor “it is our primary marketing tool, patients love having something to look at” He said his best week was a patient appreciation week where he screened new patients all week long for free. He converted “over 50” new patients.
  - From a chiropractor in Virginia who owns and manages 9 clinics. “we used to use it, but the results were not reproducible. At the time it seemed too gimmicky. I have considered looking into the newer technology, but everything I buy I need 9 of and that will get pricy” He does x-ray nearly every patient.

Surface EMG
Closing Thoughts-Discussion

- The companies that sell these products draw (in my opinion) false conclusions from the available literature to validate the technology.
- They also make no claims as to using the equipment for diagnosis, rather as a practice building and marketing tool with some reference to outcome assessment (like with the digital ROM and algometry)
- Are street fair spinal screenings good for our collective reputation?
- Can the ethical use of a questionably valid diagnostic tool be the 'greater good' (no, I am not talking about scare tactics, 100 visit or $3000 dollar prepaid treatment plans)?
- The technology is very cool and visually appealing to patients. Patients do need visuals and visuals make a report of findings much easier to conduct, more understandable to patients, and produces better compliance.
- The digital range of motion and algometry are very handy validated outcome assessments (but come with a hefty price tag). Thermography and sEMG look promising and it appears that a lot of money is being invested to research and develop these technologies. Myovision's virtual consultation software looks amazing.
- A distinct advantage of sEMG is that chiropractors can perform surface EMG and NCV as they ere non-invasive (less than routine x-ray). Chiropractors can also perform and bill for needle EMG in some states. If the state allows acupuncture or venipuncture then needle EMG is likely allowable.
    - COMMENTS?

THANK YOU

I know it hurts to say goodbye, But it's time for me to fly. –Terry Lettrell

Axial Decompression Discussion

RE6003 - EBP III

T. Grieve, DC

7/2/08

AXIAL DECOMPRESSION

- Does it work?

- YES

AXIAL DECOMPRESSION

- Should I spend $100K on a unit?
- Hey, it’s your money.
- Any questions?

SUMMARY

- What it is…by any other name
- How does it work
- The evidence
- Types of units – cost and comparison

- NB: I focused my search on LBP – essentially lumbar NOT cervical decompression
- NB: Need to carefully search the literature to avoid articles concerned with Sx treatments

What Is It?

- Axial decompression is traction – a distractive force along the Y-axis
- The term “vertebral axial decompression” is usually associated with automated (read unassisted or unattended) traction
- Can be performed supine or prone
- Can utilize a harness, shoulder or foot restraints, etc.

How Does It Work? – Cellular Level

- Spine. 1999 Feb 15;24(4):315-9.
  - Matsumoto et. al. isolated nucleus pulposus cells from white rabbits and subjected them to mechanical cyclic stretch stress
  - DNA synthesis rate, collagen synthesis rate, and cell cycle progression were measured
  - CONCLUSIONS: Mechanical stress on nucleus pulposus cells promotes cell proliferation and alters the properties of IVD cells – IVD adapts to increased motion and stress

How Does It Work? – Cellular Level

- Spine. 2007 Nov 1;32(23):2521-8.
  - Wang et. al. studied histologic changes in rabbit IVDs following static and dynamic stress in vivo
  - Histological changes in collagen I & II, aggrecan, IL-1b and TNF-a expression, and apoptosis were measured
  - CONCLUSIONS: Static – *suppression* of gene expression for collagens and aggrecan; Dynamic – *increase* in gene expression for collagens and aggrecan; Both – up-regulation of IL-1b and TNF-a

How Does It Work? – Cellular Level

- Am J Phys Med Rehabil. 2008 Jan 17 [Epub]
  - Sowa and Agarwal looked to examine the mechanisms behind motion-based therapies on annulus fibrosis fibrochondrocyte cells in rats
  - Changes in gene expression in the fibrochondrocytes were measured in response to inflammatory stimulus and tensile stress
  - CONCLUSION: Moderate levels of tensile stress act as a protective signal by decreasing catabolic mediators under inflammatory conditions, suggesting motion-based therapies that create stress on the annulus may exert beneficial effects through anti-inflammatory actions

How Does It Work? – Effects on IVD

- J Neurosurg. 1994 Sep;81(3):350-3.
  - Ramos and Martin measured in vivo pressure changes in IVD while using VAX-D
  - A cannula, connected to a pressure transducer, was inserted into L4/L5 disc space of a prone patient; intradiscal pressures were measured at rest and while controlled pressures applied
  - CONCLUSION: An increase in applied tension related inversely to the intradiscal pressures, decompressing the nucleus pulposus to pressures <100 mm Hg at the upper range

How Does It Work? – Effects on IVD

- **ABSTRACT FROM THE PROCEEDINGS OF THE INTERNATIONAL SOCIETY FOR THE STUDY OF THE LUMBAR SPINE, SINGAPORE, 1998**
  - Gudavalli et. al. measured (at National) intradiscal pressures, using a pressure transducer, in cadavers during flexion amd traction forces
  - at the L2-L3, L3-L4 and L4-L5 levels
  - CONCLUSION: Decrease in pressures noted at 39-192 mm Hg (depending on spinal level); hydrated disc pressures elicited a decrease in pressures of 117-720 mm Hg

Does it actually work?

- There are numerous articles on the effectiveness of mechanical traction (static and dynamic), flexion/distraction (Cambron J, et. al. One-year follow-up of a randomized clinical trial comparing flexion distraction with an exercise program for chronic low back pain. JACM. 2006;12(7):659-68.), etc.

Does it actually work?

- One study compared the effectiveness of VAX-D to TENS (Sherry E, Kitchener P, Smart R. A prospective randomized controlled study of VAX-D and TENS for the treatment of chronic low back pain. Neurol Res. 2001 Oct;23(7):780-4.) but did not include in this discussion
- Patients presenting with chronic low back pain (> 3 months duration) with associated leg pain.
- Successful outcome was defined as a 50% reduction in pain utilizing a 10 cm Visual Analog Pain Scale and an improvement in the level of functioning as measured by patient-nominated disability ratings.
- Patients were randomly assigned to VAX-D or to TENS which was used as a control treatment or placebo. The TENS treatment demonstrated a success rate of 0%, while VAX-D demonstrated a success rate of 68.4% ($p < 0.001$).
- A statistically significant reduction in pain and improvement in functional outcome was obtained in patients with chronic low back pain treated with VAX-D

Does it actually work?

- So, I wanted to find a systematic review on axial decompression only, and to look into our friend, Axiom Worldwide's DRX9000 a little closer

Systematic Review

- Pain Practice. 2006;6(3):171-9.
  - Macario and Pergolizzi, both MDs, conducted a systematic search of MEDLINE and Cochrane for prospective clinical trials on adults with LBP, from 1975-2005, that included motorized spinal decompression as an intervention – 10 studies analyzed
  - CONCLUSION: The efficacy of spinal decompression achieved with motorized traction for chronic, discogenic LBP pain remains unproven – 6 of 7 randomized studies reported no difference in pain or disability, the other randomized study reported a reduction in pain, not disability; 3 unrandomized (no control group) studies found a 77-86% reduction in pain

Systematic Review 2

- Chiropractic & Osteopathy. 2007;15-7.
  - Daniel, a DC at Parker, searched MEDLINE, CINAHL and MANTIS, as well as manufacturer websites, using various search strategies, for articles published in peer-reviewed journals from 1990-2006
  - CONCLUSION: Only limited evidence is available to warrant the routine use of non-surgical spinal decompression, particularly when many other well-investigated, less expensive alternatives are available

Study

- Pain Practice. 2008;8(1):11-7.
  - Macario et. al. conducted a retrospective chart review of 94 patients with chronic LBP treated with the DRX9000
  - Treatment was daily, 30-minute sessions for 2 wks., 3x/wk. for 2 more weeks, then tapering to 1x/wk. for a total treatment period of 8 wks.; other modalities were used as well, including stretching, myofascial release, heat (pre-), cold or e-stim. (post-)
  - Primary measured outcome was a verbal numerical pain rating before and after 8 wk. treatment period
  - CONCLUSION: Chronic LBP may improve with DRX9000 spinal decompression – randomized, double-blind trials are needed to measure efficacy

Outcomes after a prone lumbar traction protocol for patients with activity-limiting low back pain: a prospective case series study.

Beattie PF, Nelson RM, Michener LA, Cammarata J, Donley J. Arch Phys Med Rehabil. 2008 Feb;89(2):269-74.

OBJECTIVE: To determine outcomes after administration of a prone lumbar traction protocol. DESIGN: Prospective, longitudinal, case series. SETTING: Suburban, chiropractic practice. PARTICIPANTS: A total of 296 subjects with low back pain (LBP) and evidence of a degenerative and/or herniated intervertebral disk at 1 or more levels of the lumbar spine. We excluded patients involved in litigation and those receiving workers' compensation. INTERVENTION: An 8-week course of prone lumbar traction, using the vertebral axial decompression (VAX-D) system, consisting of five 30-minute sessions a week for 4 weeks, followed by one 30-minute session a week for 4 additional weeks. MAIN OUTCOME MEASURES: The numeric pain rating scale and the Roland-Morris Disability Questionnaire (RMDQ) were completed at preintervention, discharge (within 2 weeks of the last visit), and at 30 days and 180 days after discharge. Intention-to-treat strategies were used to account for those subjects lost to follow-up. RESULTS: A total of 250 (84.4%) subjects completed the treatment protocol. On the 30-day follow-up, 247 (83.4%) subjects were available; on the 180-day follow-up, data were available for 241 (81.4%) subjects. We noted significant improvements for all postintervention outcome scores when compared with preintervention scores (P<.01). CONCLUSIONS: Traction applied in the prone position using the VAX-D for 8 weeks was associated with improvements in pain intensity and RMDQ scores at discharge, and at 30 and 180 days after discharge in a sample of patients with activity-limiting LBP. Causal relationships between these outcomes and the intervention should not be made until further study is performed using randomized comparison groups.

OK, OK – WE GET IT

- Distractive, axial forces, applied to the spine, reduce intradiscal pressure and can stimulate repair and can provide some protection against inflammation in the disc.
- By the way, the research conducted by Dr. Macario, both articles, was sponsored by Axiom Worldwide, makers of the DRX9000
- So, where does that leave us?

Other Factors

- Reimbursement
- Medicolegal
- Cost
- Marketing
- Versatility

Getting Paid

- Managed care organizations view axial decompression as traction…a modality…and will reimburse you as such…if at all (97012)
  - Edwards JD, Vaughn CS. Decompression facts, myths and hyperbole. Dynamic Chiropractic June 3, 2008;26(12) which discusses reimbursement issues with the American Chiropractic Network (CAN)
- Whereas, flexion/distraction therapy is considered a chiropractic manipulation, so you can bill as an adjustment (98940)
- Why?
  - Axial decompression is an unassisted therapy
  - Patient contact made with flexion/distraction

Medicolegal

- In August 2007, FBI indicted two chiropractors (and brothers) who billed BC/BS of GA for over $1M in services not covered not covered for VAX-D between 2003-2005
  - They knew services were not covered
  - Instructed employees to submit bills using inappropriate codes (including Sx procedures)
- In 2007, a Florida attorney was contacted by 10 doctors who purchased a DRX-9000 because the salesman says it was covered by Medicare and their claims were denied (Legal Term: Fraudulent Inducement)
- According to Centers for Medicare & Medicaid Services (CMS) Coverage Issues Manual (35-97) and National Coverage Determination Manual (160.16), “There is insufficient scientific data to support the benefits of this technique. Therefore, VAX-D is not covered by Medicare”

Axiom Worldwide (DRX-9000)

- The Tampa Tribune reported that on 3/8/07, the FBI raided Axiom Worldwide – no follow-up story was filed in that paper
- RUMORED allegations were:
  - The company instructs clinicians how to defraud insurance companies
  - False advertising materials
  - Claims of FDA approval are distorted and misrepresented
  - The claim that their machine is based on NASA research is false

DRX9000

- $95,000 cost for basic unit
- $45,000 for cervical attachment
- $125,000 for bundle, includes marketing

SpineMED

- CERT Health Sciences
- Lumbar $95,000
- Lumbar/Cervical $119,000 ($2,200/month), includes marketing
- Claim to average $3,900/patient

VAX-D

- $25,500 to $65,000+ depending on vendor and extras
- Patient prone v. supine
- Other manufacturers of tables include DRS, Accu-Spina

ATX

- $11,990-$14,000
- Spinal decompression and flexion/distraction

COX TABLE

- $10,495
- Multiaxial cervical and lumbar ROM
- Automated cervical distraction

LLOYD TABLE

- $7,750
- Does everything the Cox table does except automated cervical distraction

In Conclusion

- Does axial decompression work? Yes…in theory, however current evidence isn't terribly strong, although traction and flexion/distraction are well studied
- Should I spend $100K on a unit? It depends on what you want to accomplish in your practice
  - Not as versatile as Cox or Lloyd tables (uniaxial v. multiaxial)
  - Some cheaper units do pretty much the same thing
  - Can offer unattended therapy – frees you to treat other patients concurrently
  - Patient required to come up with $$$
  - It's shiny and has lots of parts – and it could be all about the marketing

Chiropractic Career Options:
Public Health and Health Care Administration

Jaeson T. Fournier, DC, MPH
April 9, 2008

Academic Background

Bachelors of Science– 1990 to 1994

Doctor of Chiropractic – 1994 to 1998

Clinical Research Residency – 1998 to 2001

Masters of Pubic Health – 1999 to 2001

Employment Experiences

National University of Health Sciences

Anatomy Diener/Fellow – 1996 to 1998
Clinical Research Residency – 1998 to 2001

UIC School of Public Health
University of Illinois at Chicago

Prevention Research Center – 1999 to 2001
ASPH/CDC Internship – 2000

Greater Elgin Family Care Center

Chief Executive Officer – 2001 to 2004

Ingham County Health Department

Primary Care Director – 2004 to 2007
Deputy Health Officer – 2007 to Current

Also:
Academic positions held at various institutions:

Volunteer/Professional Activities Primary Care Related

IPHCA
Illinois Primary Health Care Association

Various Committees – 2001 to 2004
Board of Directors – 2001 to 2004

MICHIGAN Primary Care ASSOCIATION

Health Policy Chair – 2005 to 2006
Vice Chair Board – 2005 to 2007
Chair Board of Directors – 2007 to Current

MDCH

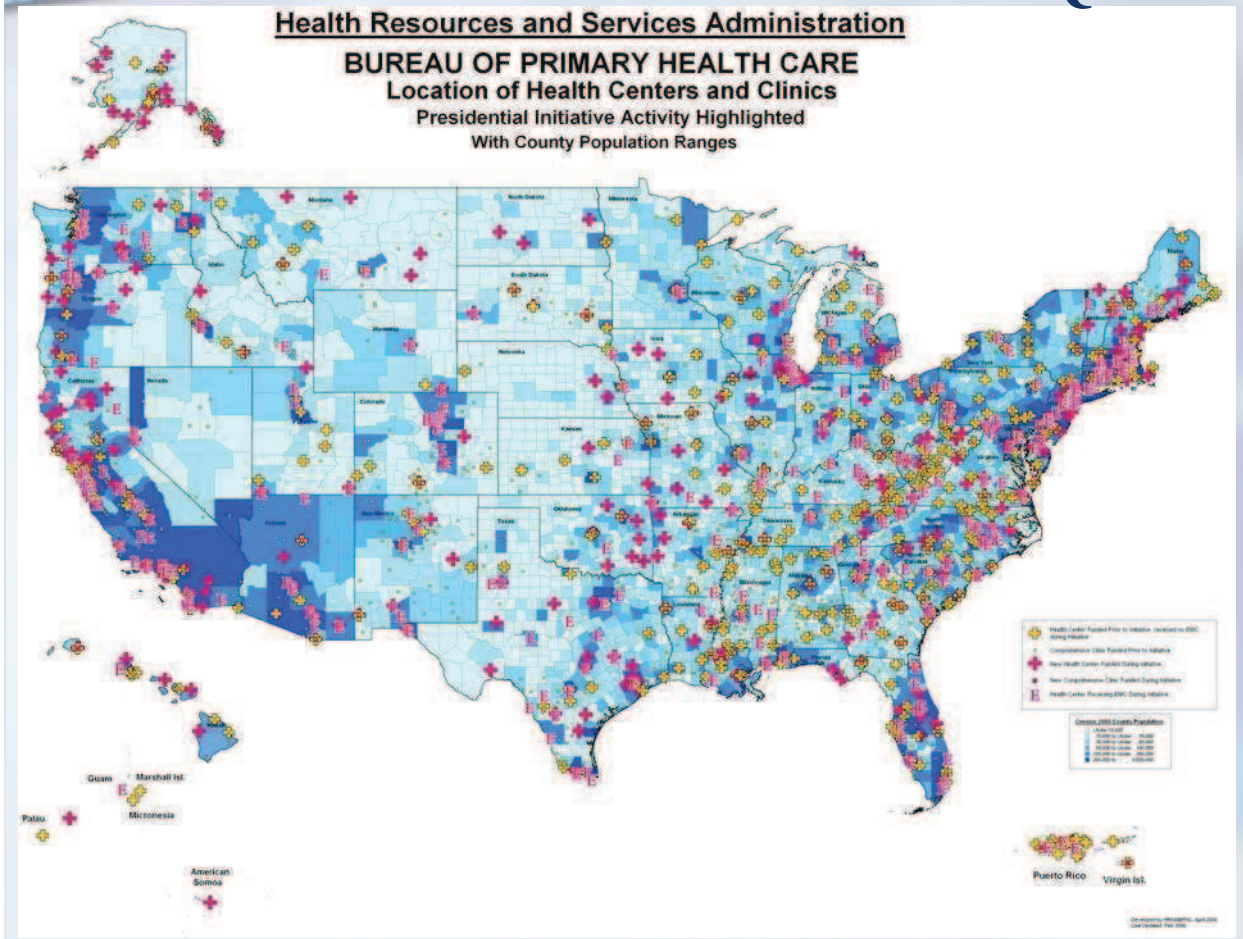
Statewide Strategic Planning Committee - 2006
Medicaid Long Term Planning Committee
2005 to Current

CAPITAL AREA HealthAlliance

Steering Committee for
Capital Area Regional Health Information Exchange (Health Information Exchange)
2006 to Current

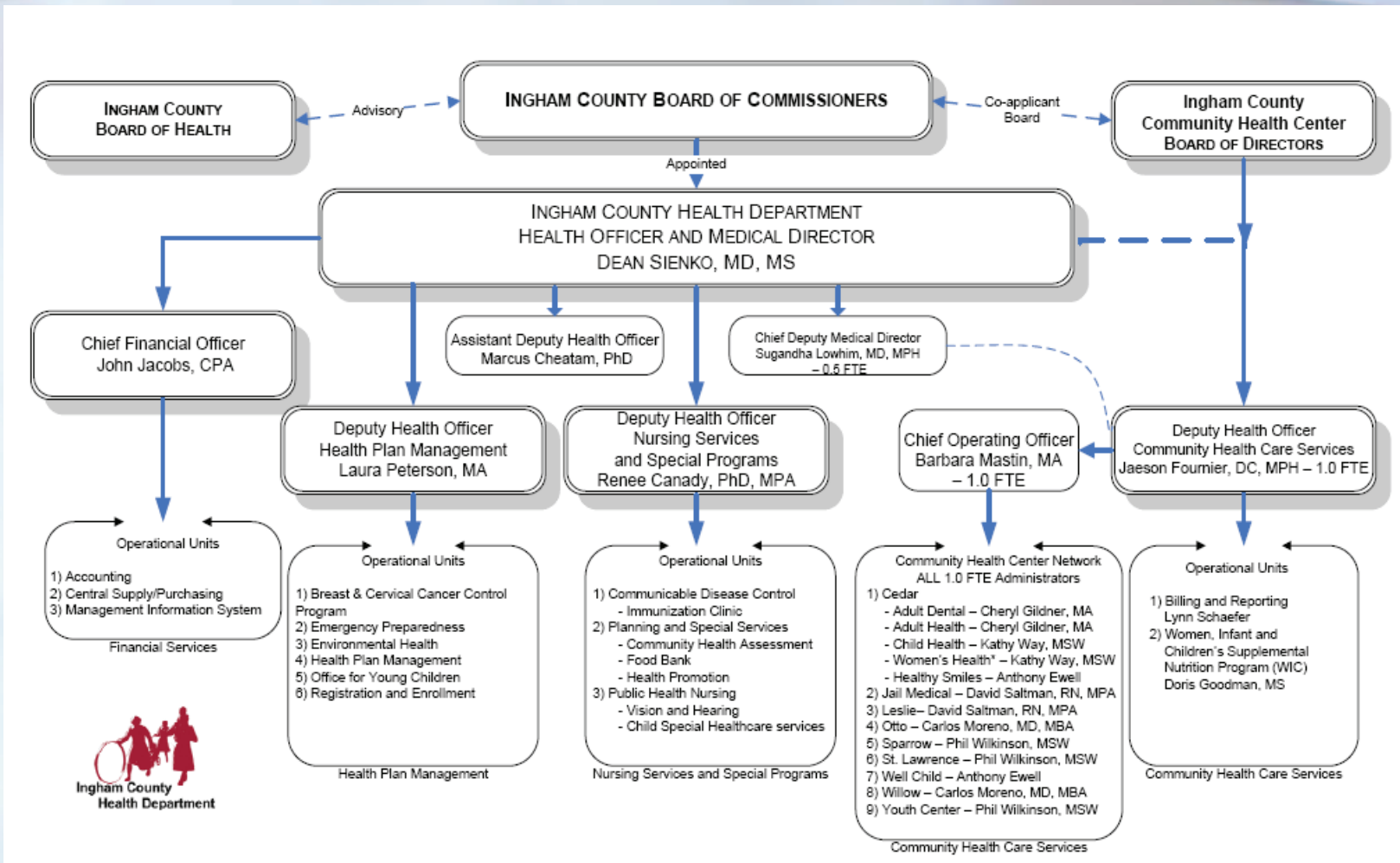
Community Health Centers: Federally Qualified Health Centers

What are FQHCs?



- 17+ Million served
- 60+ Million patient encounters
- 91.5% below 200% poverty
- 39.8% uninsured
- 63.6% racial/ethnic minority
- 3,745 service sites
- 51.8% rural grantees

Current Role – Mix of Public Health and Primary Care



Current Role – Mix of Public Health and Primary Care

Ingham County's Community Health Center Network

- Providing medical care to over 20,000 individuals (over 45,000 office visits)
- Providing dental care to almost 6,000 (over 12,000 visits)
- Services targeted towards medically vulnerable
- Over 120,000 procedures provided annually
- Service two federally designated Medically Underserved Areas

Current Role – Mix of Public Health and Primary Care

Ingham County's Community Health Center Network

- Services to all life cycles
- Programs – Family Planning, School Based, Ryan White, BCCCP, WIC Program, FQHC
- Mix of providers:
  - Internists, Family Practice Physicians, Pediatricians, OB/GYN, Nurse Practitioners
- Residency Training programs and various affiliations

Michigan State University College of Osteopathic Medicine

MSU COLLEGE OF HUMAN MEDICINE

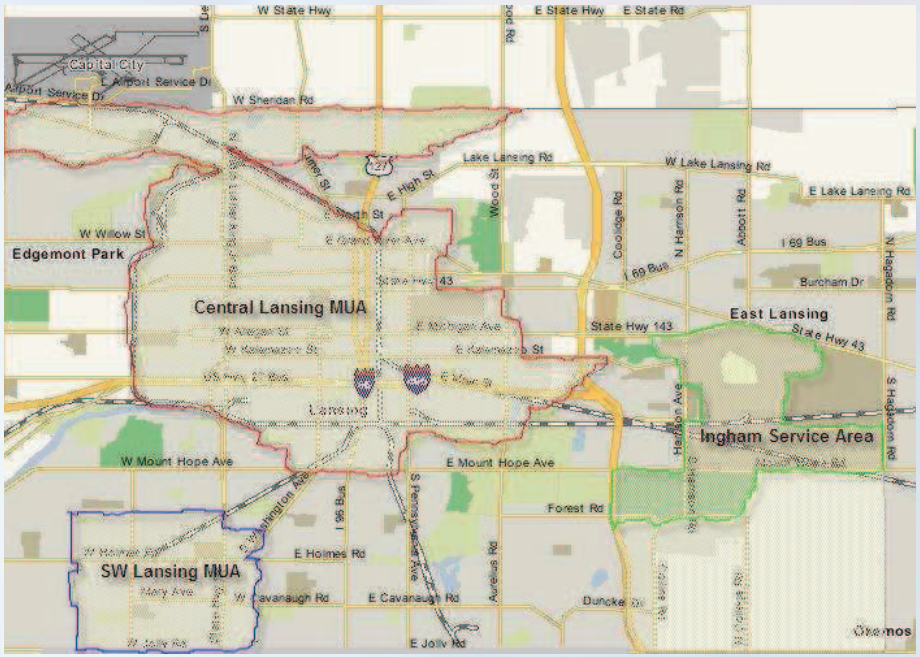
MSU Nursing MICHIGAN STATE UNIVERSITY COLLEGE of NURSING

INGHAM REGIONAL MEDICAL CENTER A McLAREN HEALTH SERVICE

SPARROW HEALTH SYSTEM

Current Role – Mix of Public Health and Primary Care

Ingham County's Medically Underserved Area



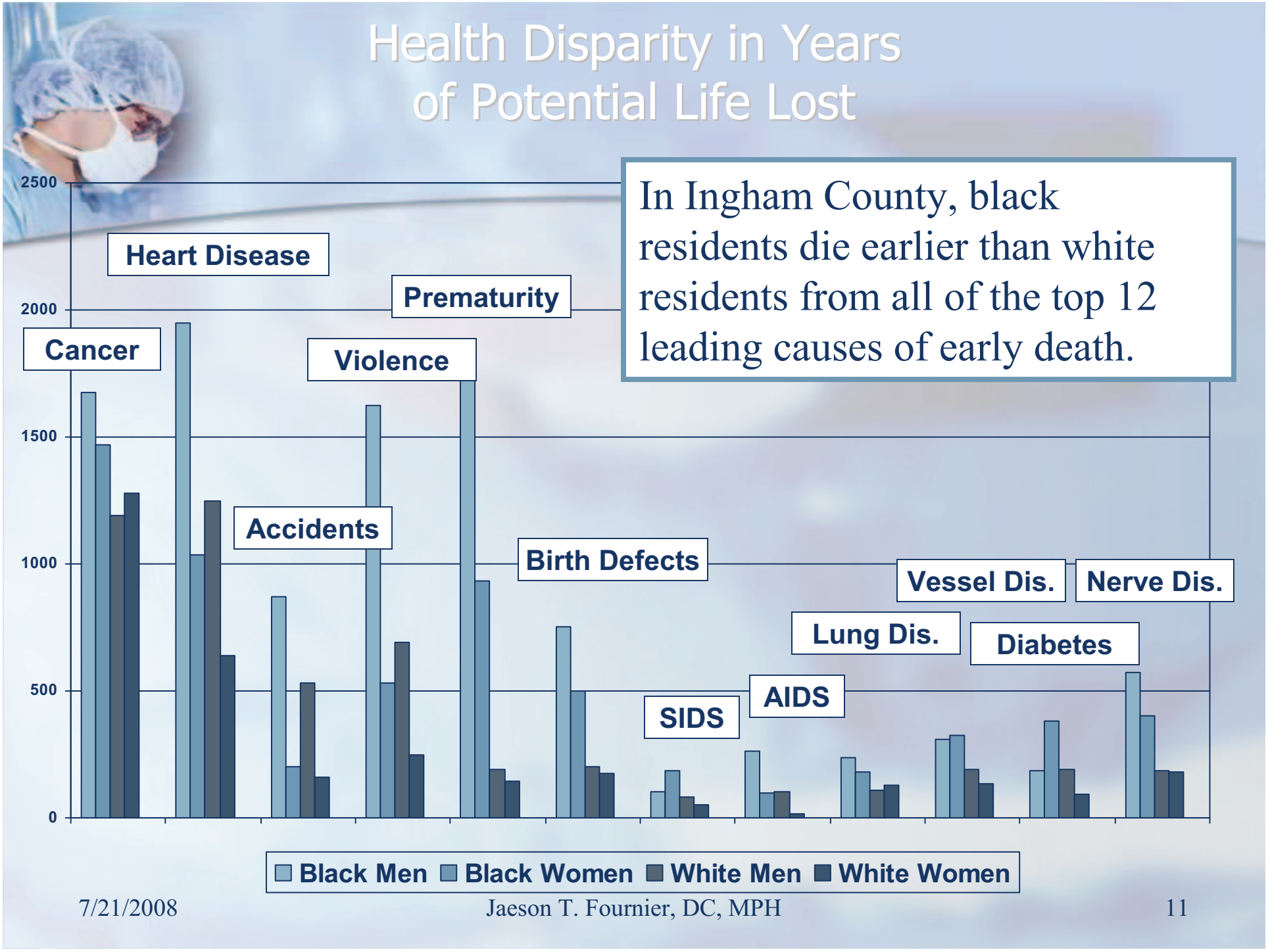
- Determination is based on Index of Medical Underservice
  - Ratio of primary medical care physicians per 1,000 population
  - Infant mortality rate
  - Percentage of the population with incomes below the poverty level
  - Percentage of the population age 65 or over.

Current Role – Mix of Public Health and Primary Care

Medically Underserved Area – Why are These Important?

- Shortage of primary care providers
- Myriad of Health Disparities due to socio-economic barriers to care (i.e. financial, racial, ethnic, etc.)
- Health Disparity leads to adverse health outcomes and greater burden of chronic diseases

Health Disparity in Years of Potential Life Lost



In Ingham County, black residents die earlier than white residents from all of the top 12 leading causes of early death.

Providers are Needed to Serve MUAs

- Health Professional Shortage Areas (HPSAs) coincide with MUAS
- Recruit and retain providers to medically underserved areas

National Health Service Corps
AMERICA'S HEALTH CARE HEROES

- Opportunities for scholarship/loan repayment
- Where do CAM providers fit in? Are we part of the solution?

NHSC and Chiropractic Demonstration Program

- **Allied Health and Other Disciplines – Section 755**
- Chiropractic demonstration grants help to build collaborative efforts between chiropractors and physicians for patient care, and develop research protocols that will significantly expand documented research in the chiropractic field. Some money for Chiropractic Training in underserved areas.

Funding Levels for the Allied Health and Other Disciplines Program	
FY 2002	$9,495,000
FY 2003	$11,922,000
FY 2004	$11,849,000
FY 2005	$11,753,000
FY 2006	$3,960,000
FY 2007	--

Importance of Legislative Advocacy

- Advocacy is extremely important

NATIONAL ASSOCIATION OF Community Health Centers

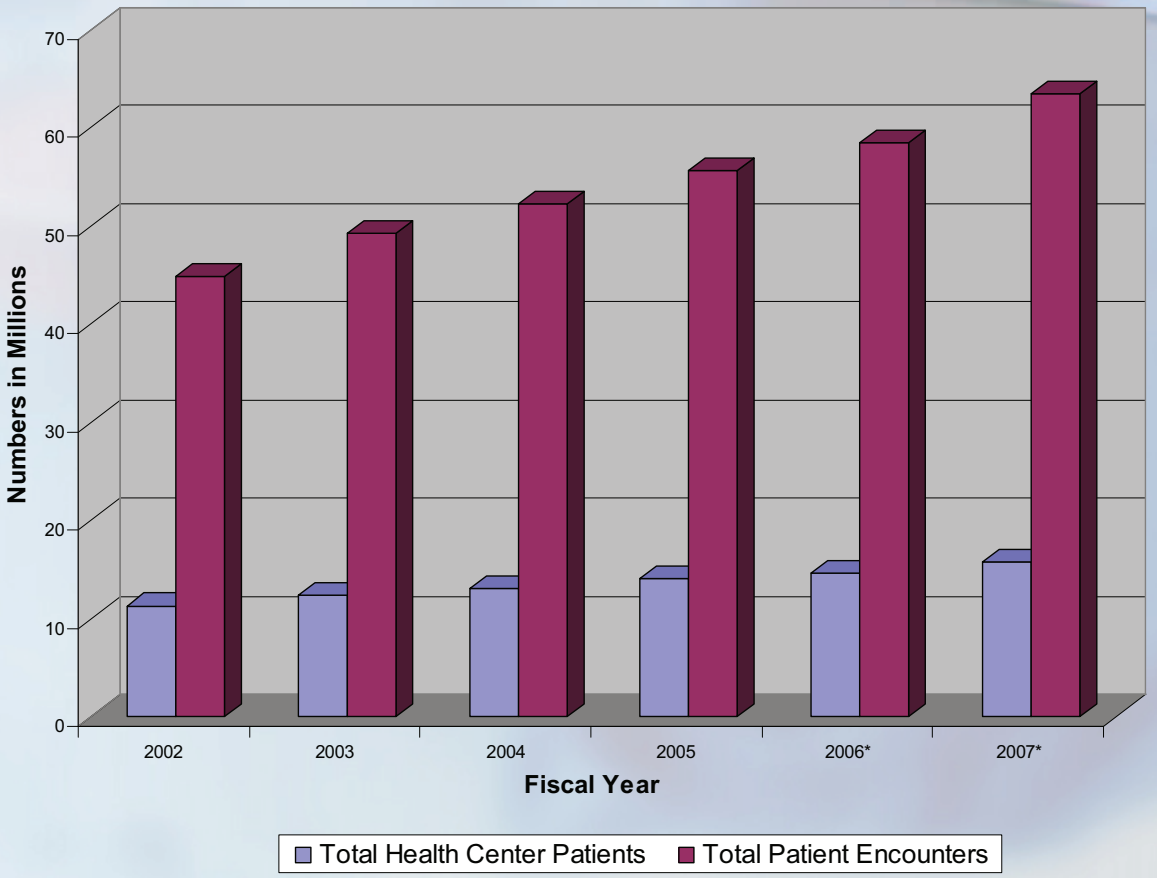
- Difference between Advocacy and Lobbying
  - Not-for-profit organizations (501c3) can only engage in advocacy
  - Some trade associations fall into this category

Impact of Effective Advocacy

An Example

President's Health Centers Initiative: FY 2002-2007

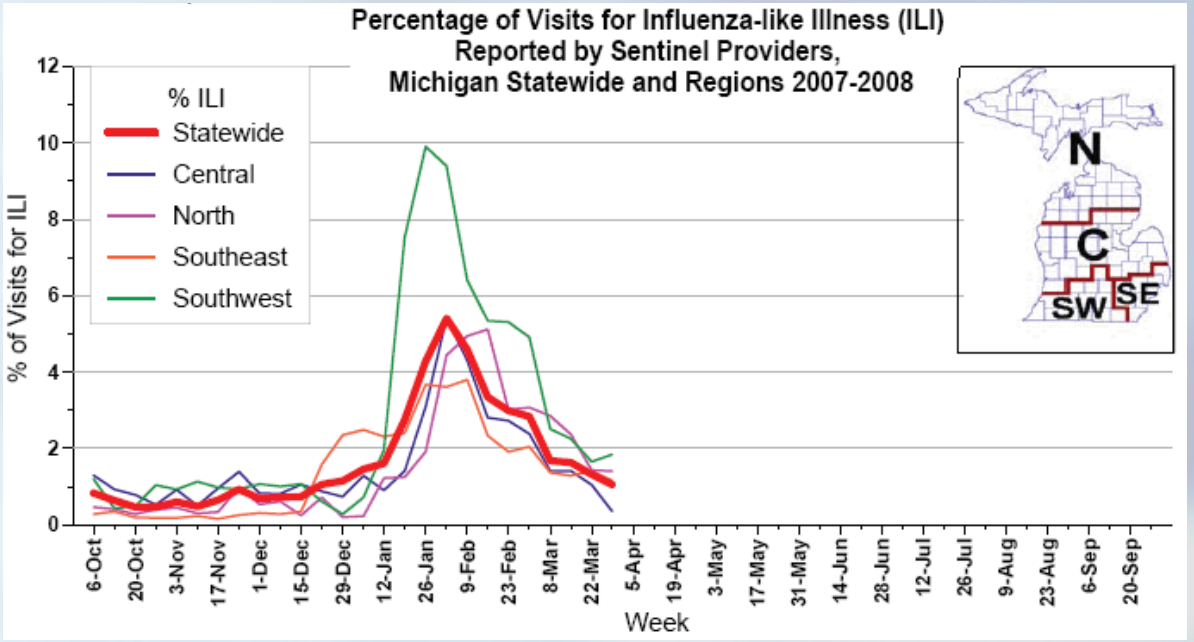
Fiscal Year	Appropriation	Grantees
2007	$1.963 B*	1,098*
2006	$1.782 B	1,007*
2005	$1.735 B	954
2004	$1.617 B	914
2003	$1.505 B	895
2002	$1.343 B	848



* Estimates based on budget assumptions for FY 2007 President's Budget Request

Public Health and Chiropractic

- Importance of Public Health
- What should you as a Chiropractor be aware of?



Career Options

- Is a Public Health Career or Health Care Administration Career a viable option for Chiropractic Physicians?
- Are there future opportunities?
- My final thoughts
  - Mentors
  - Business of Health Care
  - Importance of Quality Measures and translational research

Questions?

jfournrier@ingham.org or (517) 887-4434

MIAMI UNIVERSITY

Improved running performance immediately following chiropractic adjustments in a patient with xeroderma pigmentosum

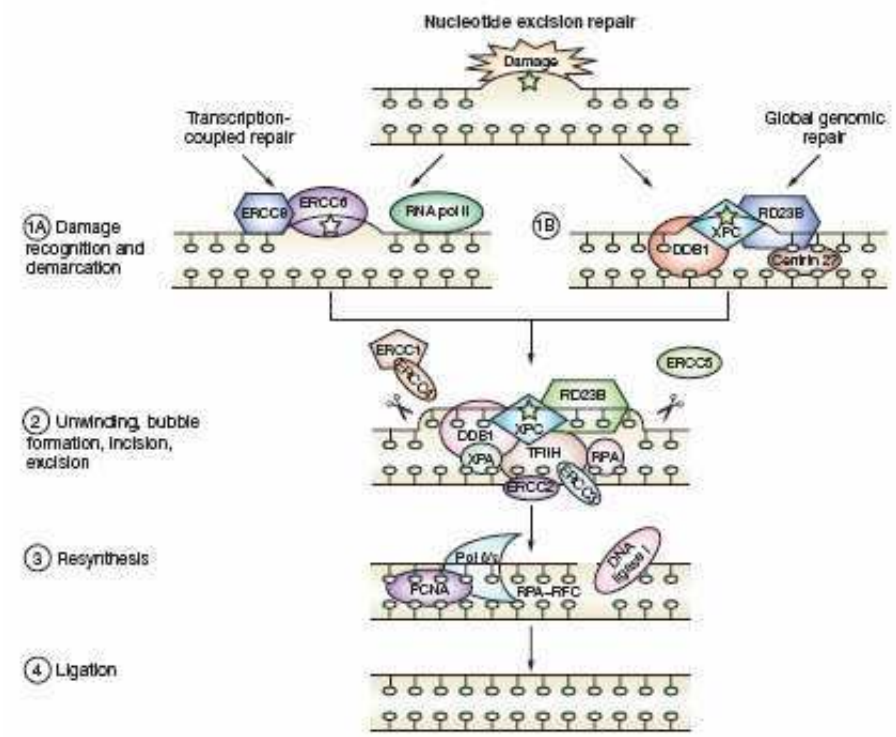
Dean L. Smith, D.C., Ph.D.[1,2]
Mark Walsh, Ph.D.[2]
Jane P. Smith, D.C.[1]

[1] Private Practice of Chiropractic, Essence of Wellness Chiropractic Center, Eaton, OH
[2] Department of Physical Education, Health and Sports Studies, Miami University, Oxford, OH

Introduction

What is XP?

- rare neurological disorder
- autosomal recessive
- problem is defective DNA repair (NER)
- S/S: sensitivity to light, slow neurogeneration, **cancer**
- problems with motor control and coordination similar to MS



Introduction

How could chiropractic help?

- chiropractic research has demonstrated impact on many of the factors that influence motor behavior

  - ↑muscular strength
  - ↓muscular inhibition
  - ↓movement time
  - ↓mental reaction time
  - reflex activity
  - improved proprioception
  - ↑stride length in Parkinsonian patients (osteopath)

Smith DL, Dainoff MJ, Smith JP. The effect chiropractic adjustments on movement time: a pilot study using Fitts' Law. JMPT 2006;29:257-266.

Kelly DD, Murphy BA, Backhouse DP. Use of a mental rotation reaction time paradigm to measure the effects of upper cervical adjustments on cortical processing: A pilot study. Journal of Manipulative and Physiological Therapeutics 2000;23(4):246-251.

Dishman JD, Ball KA, Burke J. Central motor excitability changes after spinal manipulation: a transcranial magnetic stimulation study. Journal of Manipulative and Physiological Therapeutics 2002;25:1-9.

Palmgren PJ, Sandstrom PJ, Lundqvist FJ, Heikkila H. Improvement after chiropractic care in cervicocephalic kinesthetic sensibility and subjective pain intensity in patients with nontraumatic chronic neck pain. J Manipulative Physiol Ther 2006;29(2):100-6.

Suter E, McMorland G. Decrease in elbow flexor inhibition after cervical spine manipulation in patients with chronic neck pain. Clinical Biomechanics 2002;17(7):541-544.

Methods

Participant

- 5 year old female with XP (Type A)
- MU IRB approval, assent of child, consent of parents
- fine motor (writing, coloring, cutting) delays and gross motor dysfunction (falling while running, coordination) and delayed speech
- excessive forward lean during walking/running that appeared to result in collisions/falls

Methods

Apparatus

- 2 digital video cameras synchronized with SIMI motion analysis software
- reflective markers, manual digitization
- Motor Behavior Laboratory, Miami U

Methods

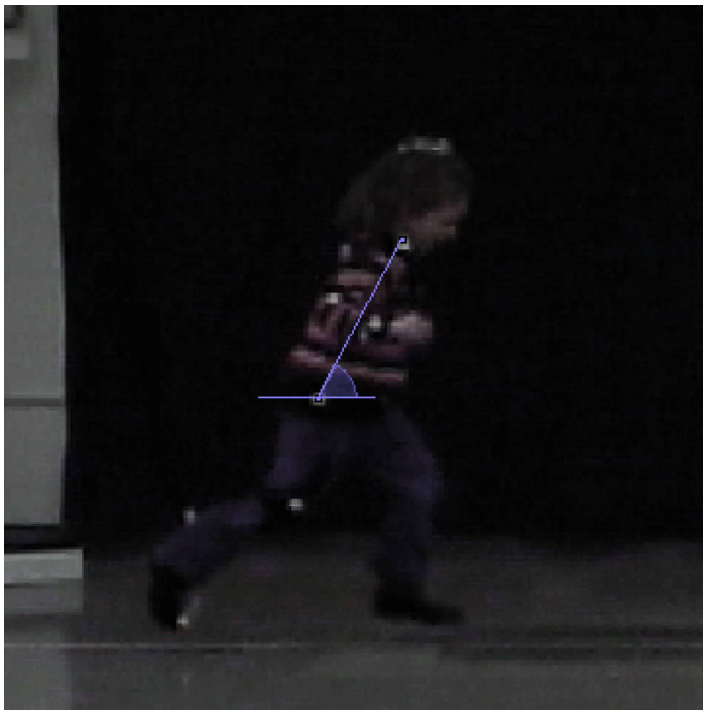
Design/Procedure

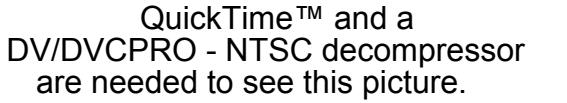
- n=1, prospective, AB design
- 6 running trials before and 6 trials after adjustments
- run “as fast as you can”
- 1 minute rest between trials
- full spine diversified adjustments after the initial 6 runs

Analysis

1. Trunk Forward Lean Angle (θ) - taken at 9 events (initial contact, foot flat) during 2 strides
2. Step Length - ipsilateral to contralateral contact distance
3. Hip horizontal distance between events

Paired t-tests, α = .05

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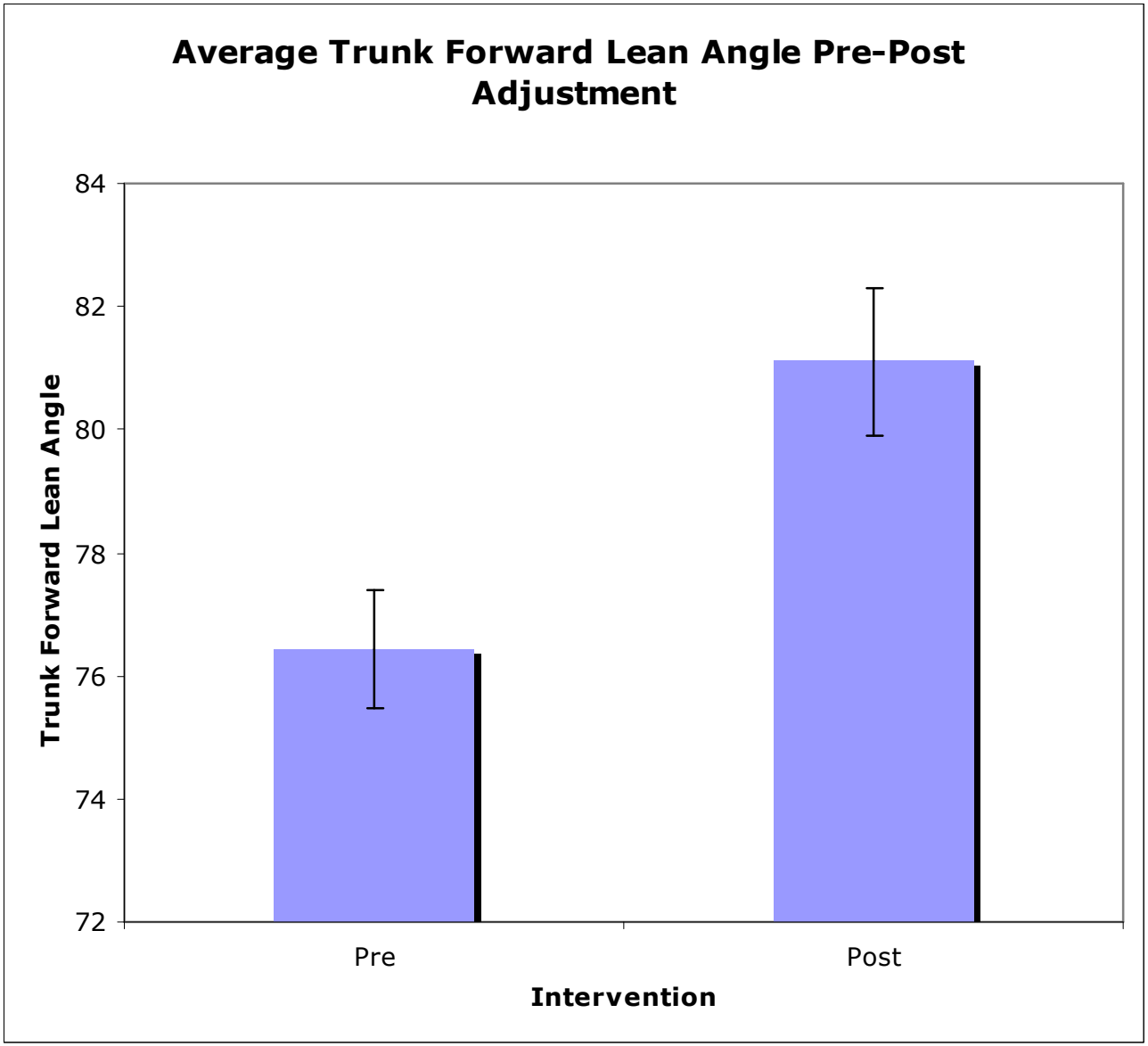
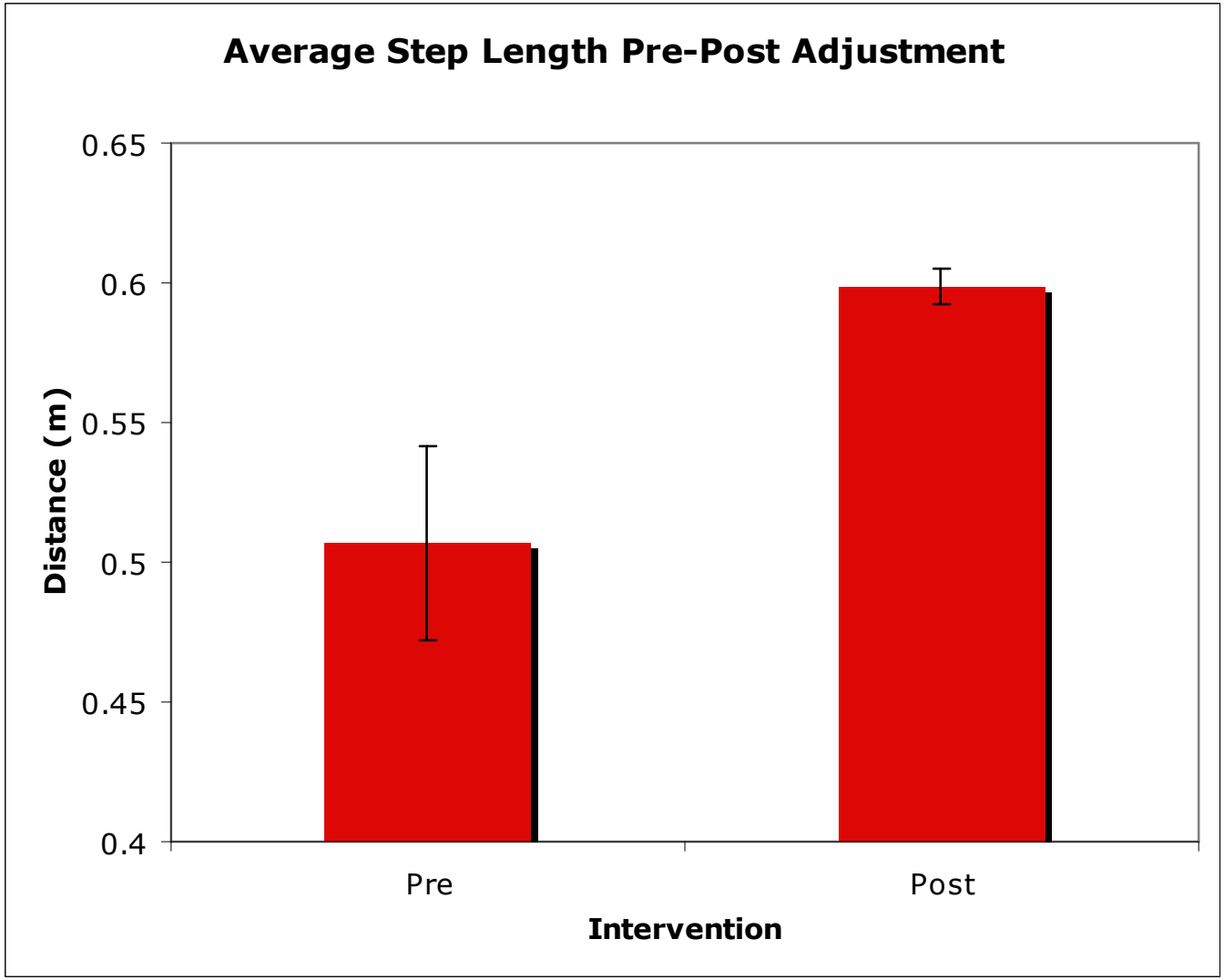
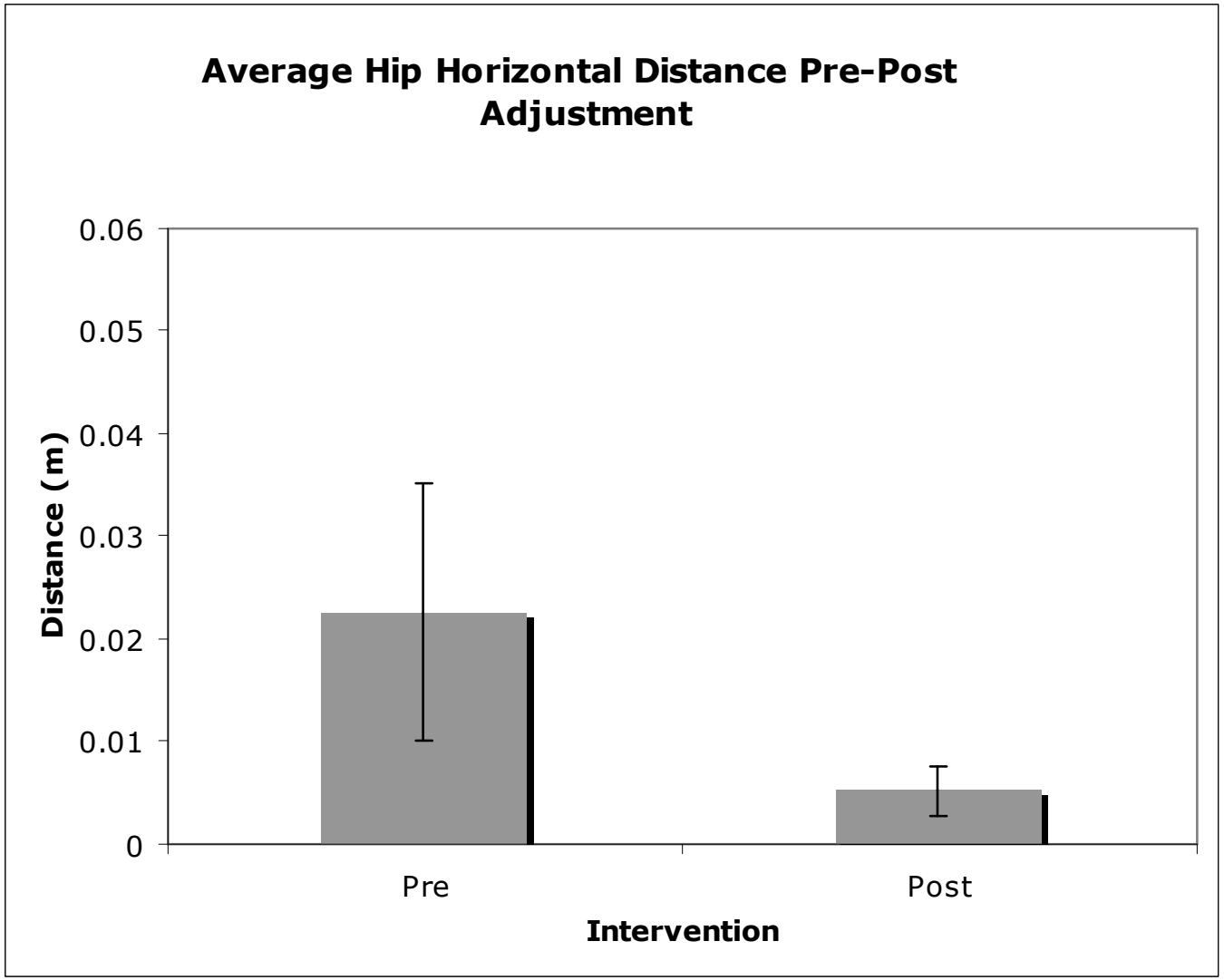
DV/DVCPRO - NTSC decompressor
are needed to see this picture.

Results

- Demonstrated significant changes in 2 out of 3 running variables
- Mean reduction in ***trunk forward lean*** was 4.68 degrees post adjustments, $p = 0.000$
- Mean increase in ***step length*** was 0.09 m post adjustments, $p = 0.031$
- No significant difference in **hip horizontal distance**, $p = 0.116$


Average Trunk Forward Lean Angle Pre-Post Adjustment
84
82
80
78
76
74
72
Trunk Forward Lean Angle
Pre
Post
Intervention


Average Step Length Pre-Post Adjustment
0.65
0.6
0.55
0.5
0.45
0.4
Distance (m)
Pre
Post
Intervention


Average Hip Horizontal Distance Pre-Post Adjustment
0.06
0.05
0.04
0.03
0.02
0.01
0
Distance (m)
Pre
Post
Intervention

Discussion/Conclusion

- immediate, significant change in sagittal plane running variables after adjustments
- advantages (individual, change over time, etc) and disadvantages (cause-effect?, threats to internal validity) of single subject designs
- prospective, n=1 studies rare in chiropractic literature
- can chiropractic help locomotion dysfunction in those with spinal pain? Asymptomatic patients?