



## An Introduction to Chiropractic Health Care

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# OVERVIEW

## *Chiropractic: Healing with a Human Touch*

Doctors of chiropractic (DCs) are primary health care professionals focused on diagnosis, care and prevention of disorders of the spine as well as other parts of the musculoskeletal system\*, and the associated effects on the neurological system. These disorders impact 44.6 million Americans annually, with an estimated cost to society of \$267.2 billion<sup>1</sup>, and are increasingly the result of poor posture, workplace and sports-related injuries, car accidents or simply sedentary lifestyles.

Studies demonstrate that back pain is the leading cause of work-related disability and absenteeism. Chronic back pain is associated with reduced mobility, quality of life and longevity,<sup>2</sup> and often includes increased rates of other health problems.<sup>3</sup>

Today, chiropractic (Greek, meaning “done by hand”) is taught and practiced throughout the world. The profession has earned broad acceptance from national health care systems as well as the public. The chiropractic profession is the third-largest physician- level independent health profession in the Western world.

Satisfaction with the chiropractic approach to spine care ranks in the 90th percentile as demonstrated by public, Medicare and Tricare patient polls. Indeed, throughout its history, satisfied patients have always been the mainstay of chiropractic care.<sup>4</sup> As primary care professionals for spinal health and well-being, doctors of chiropractic provide qualified, effective care to some 35.5 million American adults, representing more than 14 percent of the adult population, who seek chiropractic care each year to promote health, alleviate pain and improve quality of life. Approximately three in four of these adults (77 percent) describe the treatment received as “very effective,” with 80 percent agreeing that the quality of care was a good value for the money.<sup>5</sup>

\*The musculoskeletal system represents the bones, muscles, tendons, cartilage, joints and connective tissue used each day for the activities of daily living. This system supports your weight, enables body movement, and protects the vital organs including the nerves in and around the spinal column.

## *The Chiropractic Perspective and Practice*

The relationship between structure, primarily the spine and musculoskeletal system, and function, as coordinated by the nervous system, is central to chiropractic’s approach to patient care, health and well-being. Research demonstrates that the primary reasons patients consult chiropractors are:

- Back pain (approximately 60 percent)
- Other musculoskeletal pain i.e. neck, shoulder or extremities and arthritic pain (20 percent)
- Headaches including migraine (10 percent)

About 10 percent of patients present with a wide variety of conditions, either caused, aggravated or mimicked by neuro-musculoskeletal disorders (e.g., dysmenorrhea, pseudo angina, and digestive and respiratory dysfunctions).<sup>6</sup>

The profession's principles value the intrinsic biologic ability or innate tendency of the body to self-regulate, restore and maintain health through compensating homeostatic mechanisms, reparative processes and adaptive responses to environmental challenges.<sup>7</sup>

Further, the profession acknowledges the role of the nervous system in the control, coordination and regulation of the body, and that spinal or extremity joint dysfunction, termed *subluxation* or *subluxation complex*, can affect nerve function and interfere with the body's ability to regulate and maintain health. The core purpose of chiropractic practice and procedure is to relieve interference caused by disturbed joint biomechanics through skilled manual assessment and correction, termed *spinal adjustment* or *manipulation*.

The chiropractic paradigm represents a holistic biopsychosocial philosophy of health rather than a biomedical one, and embraces a belief in optimizing health through good nutrition, constructive exercise, stress management, and with a focus on the importance of good posture, as well as proper spinal and extremity joint biomechanics.

Chiropractic patient management includes manual techniques with particular competency in joint adjustment and/or manipulation, rehabilitation exercises, patient education in lifestyle and nutritional modification, and the use of adjunctive physical therapy modalities, orthotics and other supports. Current accreditation and state licensing standards in the United States give doctors of chiropractic the responsibility as a primary portal of entry provider, with the requirement to establish a diagnosis, determine indications for providing chiropractic care, and to consult with or refer to other health care practitioners when appropriate.<sup>8</sup>

## The Chiropractic Adjustment

Doctors of chiropractic are extensively educated in the assessment and management of conditions affecting the spinal and extremity joints and associated neurology, and based on examination findings and indication for care, will recommend a course of care to help relieve pain and improve function, without surgery or pharmaceuticals. Chiropractic care involves spinal adjustment or extremity manipulation, and may include mobilization, muscle stretching and soft tissue therapy, along with exercise, modalities (i.e. ultrasound or laser) and rehabilitation and active care.<sup>9</sup> Chiropractors are also trained to provide recommendation on injury prevention strategies.

The chiropractic *adjustment* or *manipulation* is a manual procedure applied to one or more dysfunctional joints, and is a procedure that requires highly refined skills developed during the doctor's intensive years of chiropractic education. The adjustive procedures and techniques are precise and controlled and designed to introduce motion into a dysfunctional joint. The patient is positioned on a specifically-designed adjusting table, chair, or other specialized equipment. The doctor typically uses his or her hands, or an instrument, to then skillfully apply a controlled force directing motion into the joints of the body in order to restore proper alignment or movement within the normal ranges of motion.

Particular attention is directed to the areas of the spine where vertebral joint dysfunction has been detected. The adjustment often helps restore joint mobility and function, resolves joint inflammation and reduces the patient's pain. These dysfunctional joint segments are often referred to as *subluxations*, or specific to the spine, termed *vertebral subluxations*.

Adjustment or manipulation of a joint may be accompanied by an audible popping sound. The noise is a result of a change of pressure within the joint, as part of the application of the adjustment, and is caused by disbursement of microscopic gas bubbles within the joint.<sup>10</sup> This is a harmless occurrence and is similar to one cracking the knuckles.

The chiropractor adapts the adjustive technique and procedure to address the age, condition, and specific needs of each patient. Patients often note positive changes in their symptoms immediately following care. The chiropractic adjustment rarely causes discomfort.

Among the benefits of chiropractic care are included:

- Relief from back and neck pain <sup>21, 22, 23, 24, 25, 26, 27</sup>
- Relief from headaches <sup>28,29,30,31,32</sup>
- Relief from pregnancy-related backache <sup>11,35</sup>
- Correction of hip, gait, and foot problems <sup>12, 13</sup>
- Improved flexibility, stability and coordination <sup>14, 15, 16</sup>
- Prevention of work-related muscle and joint injuries <sup>57,59</sup>
- Improved function and ability to better perform everyday work activities <sup>17, 18, 57,59</sup>

### ***The Doctor of Chiropractic: An Emerging Role in the Future of Health Care***

Increasingly today, policy makers, third party payers and patients are seeking greater accountability from the health system, and from individual physicians and care providers. In a perfect world of science, this accountability is benchmarked by the three goals of *improved outcomes, lower costs, and patient satisfaction*.<sup>19</sup> For the profession of chiropractic, the good results speak for themselves.

Trends including consumer interest in a non-pharmacological approach to health, public concern for side effects of chemical medicine, the epidemic of opioid addiction, and an aging “boomer” population seeking to remain mobile and active in their golden years, is creating an expanding role for doctors of chiropractic. Couple these trends with decades of outcomes research demonstrating effectiveness, value and cost savings of chiropractic spine care, the profession is well positioned as the respected authority for safe and conservative, first-contact, primary spine care provider for structural health and well-being.<sup>20</sup>

# WHAT THE RESEARCH EVIDENCE SHOWS ABOUT CHIROPRACTIC CARE

A growing list of research studies and reviews demonstrate that the services provided by doctors of chiropractic are clinically effective, safe and cost-effective. Following are excerpts and summaries from a few of those studies.

The evidence supports the conservative, drug-free approach of chiropractic for managing a variety of conditions.

## *Acute, Subacute and Chronic Back and Neck Pain*

The American College of Physician (2017) Guidelines published in the *Annals of Internal Medicine*<sup>21</sup> present evidence and provide clinical recommendations on noninvasive management for low back pain. The guideline emphasized conservative noninvasive treatments for acute, subacute and chronic low back pain. In Recommendation 1 of the guideline, it states, "...clinicians and patients should select non-pharmacological treatment with superficial heat, massage, or acupuncture or spinal manipulative therapy."

Qaseem et al. (2017), *Annals of Internal Medicine*

"Many treatments are available for low back pain. Often exercises and physical therapy can help. Some people benefit from chiropractic therapy or acupuncture." The authors further states, "Surgery is not usually needed but may be considered if other therapies have failed."<sup>22</sup>

Goodman et al. (2013), *Journal of the American Medical Association*

"The results of this trial suggest that [Chiropractic Manipulative Therapy] in conjunction with standard medical care offers a significant advantage for decreasing pain and improving physical functioning when compared to standard care alone, for men and women between the ages of 18-35 with acute low back pain."<sup>23</sup>

Goertz et al. (2013), *Spine Journal*

Gross et al, in a review of randomized controlled trials found that for acute to subacute neck pain, cervical spine manipulation was more effective than various combinations of prescription medications for improving pain and functional improvement.<sup>24</sup>

Gross et al. (2015), *Cochrane Database Systemic Review*

A 2014 report, concluded that interventions commonly used in chiropractic care improved outcomes for the treatment of acute and chronic neck pain. Treatment recommendations for neck pain include manual manipulation and exercise in combination with other modalities. Strong recommendations were also made for the treatment of chronic neck pain with stretching, strengthening, and endurance exercises alone.<sup>25</sup>

Bryans et al. (2014), *Journal of Manipulative and Physiological Therapeutics*

Bronfort et al., in a randomized controlled trial funded by the NIH, National Institute of Complementary and Alternative Medicine, undertook a study of the effectiveness of different treatment approaches for mechanical neck pain. The 272 study participants were divided into three groups, one receiving spinal manipulative therapy from a doctor of chiropractic, a group receiving pain medication (over-the-counter pain relievers, narcotics and muscle relaxants), and another received exercise recommendations. After 12 weeks, approximately 57 percent of those under chiropractic treatment, and 48 percent of the subjects that exercised reported at least a 75 percent reduction in pain, compared to 33 percent of the subjects in the medication group.<sup>26</sup>

Bronfort et al. (2012), *Annals of Internal Medicine*

In a study of patients with mechanical neck pain randomized to receive a spinal manipulation compared to non-thrust mobilization, the results indicated that the participants, "... receiving a combination of upper cervical and upper thoracic spinal manipulation experienced significantly greater reductions in disability (50.5 percent) and pain (58.5 percent) than those of the non-thrust mobilization group following treatment." The study further concluded that the spinal manipulation group had significantly had greater improvement in both passive upper cervical (C1-2) rotation range of motion and motor performance.<sup>27</sup>

Dunning et al. (2012), *Journal of Orthopaedic and Sports Physical Therapy*

## Headaches

One hundred and ten participants with cervicogenic headache were randomized to receive both cervical and thoracic spinal manipulation, or combined mobilization and exercise. The findings indicated that manipulation was more effective at reducing headache intensity and disability. Additionally, the manipulation group experienced significantly reduced duration and frequency of headaches. These findings suggest that high-velocity low-amplitude manipulation was more effective in the treatment of cervicogenic headache than the slow mobilization technique intervention.<sup>28</sup>

Dunning, et al.(2016), *BioMed Central Musculoskeletal Disorders*

Evidence suggests that chiropractic care, including spinal manipulation, improves migraine and cervicogenic headaches. The type, frequency, dosage, and duration of treatment should be based on guideline recommendations, clinical experience, and findings. Evidence for the use of spinal manipulation as an isolated intervention for patients with tension-type headache remains equivocal.<sup>29</sup>

Bryans et al. (2011), *Journal of Manipulative and Physiological Therapeutics*

Hass et al. in a randomized study looking at pain intensity, and frequency of cervicogenic headache found spinal manual therapy (SMT) to be more effective at reducing pain intensity and disability when compared to light massage. The effects were greater after 16 treatment sessions than after 8 sessions. The mean number of cervicogenic headache was reduced for the SMT group, with improvement maintained at a 24 week follow-up.<sup>30</sup>

Haas, M, et al. 2010, *Spine Journal*

A report issued by the Duke University Evidence-based Practice Center<sup>31</sup>, in a review of behavioral and physical treatments for tension-type and cervicogenic headache concluded, "Cervical spine manipulation was associated with significant improvement in headache outcomes in trials involving patients with neck pain and/or neck dysfunction and headache." The report further concluded that, "Adverse effects are uncommon with manipulation."

McCroly et al. (2001), *Duke Evidence Report*

"The results of this study show that spinal manipulative therapy is an effective treatment for tension headaches...four weeks after cessation of treatment...the patients who received spinal manipulative therapy experienced a sustained therapeutic benefit in all major outcomes in contrast to the patients that received amitriptyline therapy, who reverted to baseline values."<sup>32</sup>

Boline et al. (1995), *Journal of Manipulative and Physiological Therapeutics*

## Comparing Chiropractic to Other Treatments

A randomized controlled trial with follow-up to 6 months<sup>33</sup> reports that, "Manual-thrust manipulation provides greater short-term reductions in self-reported disability and pain compared with usual medical care - 94 percent of the manual-thrust manipulation group achieved greater than 30 percent reduction in pain compared with 69 percent of usual medical care."

Schneider et al. (2015), *Spine Journal*

In a prospective population-based study to identify early predictors of the likelihood of spine surgery for workers with back injuries<sup>34</sup> the authors found that, "Reduced odds of surgery were observed for...those whose first provider was a chiropractor; 42.7 percent of workers [with back injuries] who first saw a surgeon had surgery, in contrast to only 1.5 percent of those who saw a chiropractor."

Keeney et al. (2012), *Spine Journal*

A randomized controlled trial of 169 women reported in the *American Journal of Obstetrics and Gynecology* concluded that a combination of chiropractic spinal manual therapy, exercise and patient education reduces low back and pelvic pain, improved joint range of motion and stability, and provided global improvements in daily activities. This multimodal approach to musculoskeletal low back and pelvic pain instituted in the late second and third trimester of pregnancy benefits patients above and beyond standard obstetrical provider care received.<sup>35</sup>

George et al. (2013), *American Journal of Obstetrics and Gynecology*

A 2013 analysis of Medicare data through 2008<sup>36</sup> showed that chiropractic claims represented less than one tenth of one percent of Medicare costs. Chiropractic claims peaked in 2005 and then declined through 2008, contrasting to an overall increase in Medicare costs.

Whedon et al. (2013), *Spine Journal*

Acute and chronic chiropractic patients experienced better outcomes in pain, functional disability, and patient satisfaction; clinically important differences in pain and disability improvement were found for chronic patients.<sup>37</sup>

Haas et al. (2005), *Journal of Manipulative and Physiological Therapeutics*

"In our randomized, controlled trial, we compared the effectiveness of manual therapy, physical therapy, and continued care by a general practitioner in patients with nonspecific neck pain. The success rate at seven weeks was twice as high for the manual therapy group (68.3 percent) as for the continued care group (general practitioner). Manual therapy scored better than physical therapy on all outcome measures. Patients receiving manual therapy had fewer absences from work than patients receiving physical therapy or continued care, and manual therapy and physical therapy each resulted in statistically significant less analgesic use than continued care."<sup>38</sup>

Hoving et al. (2002), *Annals of Internal Medicine*

## Cost Effectiveness

For older adults with chronic mechanical neck pain, spinal manipulative therapy (SMT) plus home exercise and advice (HEA) results in better clinical outcomes and lower costs versus supervised rehabilitative exercise (SRE) plus HEA, according to a study published by researchers from the University of Minnesota in Minneapolis. The study examined the clinical outcomes and cost-effectiveness of HEA, SMT plus HEA, and SRE plus HEA in a sample of 241 older adults with chronic mechanical neck pain over a one-year time horizon.<sup>39</sup>

Leininger et al. (2016), *Spine Journal*

Findings from a study utilizing data from the North Carolina State Health Plan collected between 2000-2009 show that care by a doctor of chiropractic (DC) alone or DC care in conjunction with care by a medical doctor (MD) incurred "appreciably fewer charges" for uncomplicated lower back pain than MD care with or without care by a physical therapist.<sup>40</sup>

Hurwitz et al. (2016), *Journal of Manipulative and Physiological Therapeutics*

Older Medicare patients with chronic low back pain and other medical problems who received spinal manipulation from a chiropractic physician had lower costs of care and shorter episodes of back pain compared to patients in other treatment groups. Patients who received a combination of chiropractic and medical care had the next lowest Medicare costs, and patients who received medical care only incurred the highest costs.<sup>41</sup>

Weeks et al. (2016), *Journal of Manipulative and Physiological Therapeutics*



In a 2016, systematic review of the interventions that are cost-effective for management of whiplash-associated and neck pain-associated disorders, the authors found that structured education is cost-effective for whiplash-associated disorder and that for neck pain and associated disorders, advice, exercise and multimodal care including manual therapy are cost effective.<sup>42</sup>

Van Der Velde et al. (2016), *Spine Journal*

A 2015 cross-sectional study of 17.7 million older adults enrolled in Medicare indicated that greater availability of chiropractic care in some areas may be offsetting Primary Care Provider services for back and/or neck pain among older adults.<sup>43</sup>

Davis et al. (2015), *Journal of the American Board of Family Medicine*

Low back pain initiated with a doctor of chiropractic (DC) saves 40 percent on health care costs when compared with care initiated through a medical doctor (MD), according to a study that analyzed data from 85,000 Blue Cross Blue Shield (BCBS) beneficiaries in Tennessee over a two-year span. Researchers estimated that allowing DC-initiated episodes of care would have resulted in an annual cost savings of \$2.3 million for BCBS of Tennessee. The authors conclude that insurance companies restrict access to chiropractic care for low back pain treatment may inadvertently pay more for care than if they removed such restrictions.<sup>44</sup>

Liliedahl et al. (2010), *Journal of Manipulative and Physiological Therapeutics*

Niteesh Choudhry, MD, PhD of Harvard Medical School, and Arnold Milstein, MD, Chief Physician at Mercer Health and Benefits and Medical Director of the Pacific Business Group on Health, co-authored the 2009 report, *Do Chiropractic Physician Services for Treatment of Low-Back and Neck Pain Improve the Value of Health Benefit Plans? An Evidence-Based Assessment of Incremental Impact on Population Health and Total Healthcare Spending*.<sup>45</sup> Using data from high-quality randomized controlled trials, this report combined a rigorous analysis of direct and indirect costs with the evidence concerning clinical effectiveness of chiropractic care. Including both the clinical effectiveness and cost, chiropractic care was far more valuable than medical treatment for neck and low back pain.

These authors found that for neck pain, chiropractic care decreases annual spending by \$302 compared to medical physician care, and that for low back pain, chiropractic increases total annual per patient spending by \$75 compared to medical physician care.

This report concludes that, “when considering effectiveness and cost together, chiropractic physician care for low back and neck pain is highly cost effective, represents a good value in comparison to medical physician care and to widely accepted cost-effectiveness thresholds.” Further, the authors state that, “Because we were unable to incorporate savings in drug spending commonly associated with US chiropractic care, our estimate of its comparative cost-effectiveness is likely to be understated.”

Choudhry and Milstein (2009), Mercer Report

## Patient Satisfaction

### Consumer Reports and Gallup-Palmer Surveys

From the June 2016 issue of Consumer Reports ranking chiropractic care the number one preferred treatment in its member survey for low back pain<sup>46</sup>, to the August 2016 Gallup-Palmer Report<sup>47</sup>, surveys show that health care consumers rank the services from their doctor of chiropractic high. The Gallup-Palmer findings show that:

- 93 percent of recent chiropractic users rate chiropractic effective
- 97 percent of past-year chiropractic users are likely to see a chiropractor if having neck or back pain
- 89 percent of the past-year chiropractic users recommended it to family and friends
- 88 percent of past-year chiropractic users agree that it is a good value for the money <sup>48</sup>

# MANAGING JOINT FUNCTION AND MOBILITY: TRACKING THE EPIDEMIC OF INACTIVITY

Physical inactivity is considered the fourth leading risk factor for global mortality and the cause of an estimated 3.2 million deaths annually across the globe.<sup>49</sup> Inactivity is a fast-growing public health concern and contributes to a variety of chronic diseases and health complications.<sup>50</sup>

Lack of motion within joints can result in disturbed biomechanics, even while not presenting with subjective pain or other symptoms. Disturbed joint biomechanics can:

- Reduce optimal performance
- Alter load distribution
- Increase risk of injury
- Accelerate degeneration

It is the role of the doctor of chiropractic to identify dysfunctional joints and provide spinal and extremity adjustments to help restore normal biomechanics. Chiropractic adjustments specifically applied to joints can restore motion when the body's own muscles cannot. This helps relieve pain, as well as to restore and maintain normal movement, biomechanics and function. Maintaining good motion is critical to the health of discs, muscles and joints, which may reduce the risk of future problems or injuries.

## *Joint Function and Motion in the Aging Patient*

Senior citizens often experience structural problems such as degenerative joint disease or osteoarthritis, and frequently present with pain and stiffness related to the spine and extremities. In the United States and across the globe, chronic back pain in the senior population (ages 65 and older) gives rise to increasing health care costs, and is of increasing concern to the third-party payers.

Older adults are more likely to have neuro-musculoskeletal and joint problems, and are increasingly seeking treatment from doctors of chiropractic for these conditions as they lead longer, more active lives.<sup>51</sup> As the health care of this aging population is covered by the U.S. federal government through Medicare, this underscores the importance of a recent study funded by the National Institutes of Health (NIH) demonstrating that upon study of Medicare data for comparable patient groups, overall costs of care, back surgery rates and pharmaceutical costs were substantially lower for those receiving chiropractic treatment.<sup>52</sup> The report findings suggest chiropractic as a first line approach for management of senior, comorbid, patients with chronic low back pain.

The doctor of chiropractic may outline a program of exercise that allows them to personally monitor the patient's progress, with a focused objective to rehabilitate and strengthen specific muscle groups. Alternatively, the chiropractor may recommend regular moderate-intensity physical activity – such as walking or cycling, as these activities can have significant benefits for health. This physical activity may include age-appropriate group activities or sports. It is well known that regular moderately intensive activities can reduce the risk of cardiovascular diseases, diabetes, colon and breast cancer, and depression. Moreover, adequate levels of physical activity will decrease the risk of a hip or vertebral fracture and help control weight.<sup>53</sup>

Simply stated, a solution for the growing physical inactivity problem in America is *movement*. Doctors of chiropractic are well positioned to include guidance for exercise and physical activity when designing care plans for patients, as it is well substantiated that exercise and mobility are integral to prevention and management of chronic disease.<sup>54</sup>

# INTERDISCIPLINARY CARE, OCCUPATIONAL HEALTH AND WORKPLACE WELLNESS, AND CHIROPRACTIC IN THE MILITARY

## *Being Part of Interdisciplinary Care*

While most chiropractic services are community-based in private offices, interdisciplinary practices are now common, with chiropractic doctors, medical doctors, physical therapists and others working as partners in private practices, occupational health and rehabilitation centers, multidisciplinary corporate health and wellness centers, and national sports medicine teams. Doctors of chiropractic provide care to the U.S. Military and in veterans' hospitals.

Interdisciplinary management of sports injuries and athletic performance management in professional, collegiate, high school and recreational athletes are well-represented by the profession nationally and across the globe. All NFL teams and most professional sports teams have doctors of chiropractic as part of the medical staff.<sup>55</sup> The formal participants as members of the interdisciplinary U.S. medical team at the 2016 Rio Olympics included 28 medical doctors/doctors of osteopathic medicine, 18 doctors of chiropractic, 16 massage therapists and 10 physical therapists.<sup>56</sup>

## *The Growing Role in Occupational Health and On-Site Workplace Health Clinics*

Employers across the country are taking a more direct approach to improving the health and well-being of their employees. The inclusion of doctors of chiropractic as part of the on-site corporate health clinic services has become increasingly popular among employers. Employer funded on-site care programs that provide chiropractic services include companies such as Google, Cisco Systems Inc., Cerner Corporation and Facebook. This interest by the corporate community is driven by the favorable outcomes based upon research demonstrating the effectiveness of chiropractic care in the management of the increasingly prevalent and costly neuro-musculoskeletal conditions that represent a common cause of long-term pain and physical disability in the workplace today.

Doctors of chiropractic are well trained to serve as a conservative, first contact, drug-free and non-invasive approach for care for neuro-musculoskeletal care and pain management. Findings published a 2012 issue of the *Journal of Occupational and Environmental Medicine* suggest that chiropractic services offered at on-site corporate health clinics, contrasted to off-site physical therapy services, result in lower costs of care, while improving neuro-musculoskeletal function.<sup>57</sup> Further, on-site chiropractic services in the workplace were directly connected with lower utilization of radiology services, lower utilization of outpatient and emergency settings, and lower utilization of physical therapy.<sup>58</sup>

In collaboration with the Sweere Center at Northwestern University of Health Sciences, Henriksen and Wolner, in a 2016 study, completed a review of the reduction in workplace injuries through inclusion of an employer sponsored on-site chiropractic care program at Friendship Homes, a Minnesota custom home builder. The evidence of value of on-site chiropractic care as a successful health care delivery model, in year-over-year cost comparisons of workplace sprain-strain and cumulative trauma injuries, is demonstrated by a 63 percent reduction in neuro-musculoskeletal injuries, a 67 percent reduction in average case cost, and an 88 percent cost reduction associated with those injuries. Further, for every \$ 1.00 invested to include on-site chiropractic services, this resulted in an \$8.35 savings. Although employees had access to on-site chiropractic services during company business hours, Friendship Homes of Minnesota reported no negative effect on productivity.<sup>59</sup>

A key observation in this study of this on-site chiropractic services model is that the employee is provided on-the-job access to chiropractic health care, with the focus on injury and illness prevention and early intervention. The benefit to the employer is the reduction in workplace injuries, and the opportunity to control cost of care, a reduction in absenteeism, enhance employee loyalty and retention. Further, the on-site chiropractic services model may be instituted at minimal capital expense, and at low liability risk. For the on-site chiropractic provider, this represents a new and emerging market of service delivery, one that eliminates a need for third party reimbursement, and at a significantly reduced overhead.

Doctors of chiropractic can be integrated within the on-site corporate health clinic in a variety of ways, ranging from part-time to full-time practitioners to executive positions responsible for leading key internal departments. On-site corporate health clinics are evolving to meet the specific needs of employers of various sizes and industries, and predicted to gain in popularity with a projected grow of 15 to 20 percent annually.<sup>60</sup>

### ***Integration of Chiropractic Services in Military and Veteran Health Care Facilities***

As of the date of this publication, doctors of chiropractic provide services to active-duty military personnel in 65 interdisciplinary military treatment facilities worldwide (63 in the U.S., others in Japan and Germany).<sup>61</sup> Chiropractic services have been included in the standard medical benefits package available to all enrolled veterans through the U.S. Department of Veterans Affairs, and today chiropractic practitioners are employed in as many as 65 Veterans Administration (VA) hospitals throughout the country.<sup>62</sup>

A 2016 study of the use of chiropractic in the Veterans Administration,<sup>63</sup> found that 2004 to 2015 the annual number of patients seen in VA chiropractic clinics increased 822 percent. The total number of VA chiropractic clinics grew from 27 to 65 (9.4 percent annually). The VA also purchased care from private sector chiropractors starting in 2000, growing to 159,533 chiropractic visits for 19,435 patients at a cost of \$11,155,654 annually.

Green, et al. in a systematic literature review,<sup>64</sup> report that services are successfully integrated within the military and Veterans Affairs health systems with chiropractors managing common musculoskeletal and related neurological conditions, and to include injuries obtained in combat, complex cases, and cases that include psychosocial factors. The study reports that chiropractors collaboratively manage patients with other providers and focus on reducing morbidity for veterans and rehabilitating military service members to full duty status. Further, preliminary findings reflect that chiropractic management of common musculoskeletal conditions shows significant improvement, and with high patient satisfaction.

### ***Chiropractic VA Externship Programs***

Selected VA medical facilities maintain formal academic affiliation agreements with chiropractic colleges, providing clinical education and training opportunities for chiropractic students through Chiropractic Externship Programs. The Department of Veterans Affairs reports that since 2004 over 1,500 chiropractic students have completed clinical rotations at 24 VA facilities.<sup>65</sup>

## Chiropractic VA Residency Programs

Graduate doctors of chiropractic are eligible to participate in VA resident training hospitals side by side with medical graduates receiving clinical training in these facilities.<sup>66</sup>

The VA has implemented hospital-based Chiropractic Residency Programs focused on integrated clinical practice, with training emphasizing the provision of chiropractic care in an integrated health care system, collaborating with primary care Patient Aligned Care Teams (PACTs), specialty care, and other medical and associated health providers and trainees. The residencies provide advanced clinical training in complex case management, allowing recent graduates to increase their scope and depth of clinical knowledge, experience and acumen.

Residents are mentored by senior VA chiropractors who are experienced in integrated chiropractic practice, and who share their expertise in inpatient care, academics and research to provide a robust educational experience. These training programs expand the residents' ability to collaborate with other health care professionals in team care, and prepare the resident for future positions in VA, other health care systems, and/or academic settings.

Residents provide diagnostic and management services of musculoskeletal and neuromuscular conditions under the mentorship of senior VA doctors of chiropractic. This includes team-based management of complex conditions in collaboration with other medical specialists and health care providers.

The national residency program is administered by VA Office of Academic Affiliations, in conjunction with Rehabilitation and Prosthetic Services. Each VA facility partners with an affiliated Council on Chiropractic Education (CCE) member institution in conducting the program.<sup>67</sup>

## SAFETY OF CHIROPRACTIC

Researchers from the Departments of Neurosurgery, at Penn State Hershey Medical Center, Loma Linda University Medical Center and The Pennsylvania State University, in conducting a systematic review and meta-analysis of chiropractic neck manipulation and cervical artery dissection, found no convincing evidence to support a causal link. Further, the authors conclude that the unfounded belief in causation may lead to episodes of litigation.<sup>68</sup>

Church et al. (2016) *Cureus*

Whedon et al. in a 2015 cohort study published in *Spine Journal* found that, “among Medicare beneficiaries aged 66 to 99 years with an office visit for a neuro-musculoskeletal problem, risk of injury to the head, neck, or trunk within 7 days was 76 percent lower among subjects with a chiropractic office visit than among those who saw a primary care physician.”<sup>69</sup>

Whedon et al. (2015), *Spine Journal*

In a separate 2015 cohort study, Whedon et al. found that “among Medicare B beneficiaries aged 66 to 99 years with neck pain, incidence of vertebrobasilar stroke was extremely low. Small differences in risk between patients who saw a chiropractor and those who saw a primary care physician are probably not clinically significant.”<sup>70</sup>

Whedon et al. (2015), *Journal of Manipulative and Physiological Therapeutics*

The results of a case-control study in U.S. commercial and Medicare Advantage patient populations by Kosloff et al. concluded, “We found no significant association between exposure to chiropractic care and the risk of vertebrobasilar artery (VBA) stroke. We conclude that manipulation is an unlikely cause of VBA stroke. The positive association between primary care provider (PCP) visits and VBA stroke is most likely due to patient decisions to seek care for the symptoms (headache and neck pain) of arterial dissection. We further conclude that using chiropractic visits as a measure of exposure to manipulation may result in unreliable estimates of the strength of association with the occurrence of VBA stroke.”<sup>71</sup>

Kosloff et al. (2015), *Chiropractic Manual Therapy*

In a 2008 population-based, case-control and case-crossover study published in *Spine Journal*, Cassidy et al. concluded that “Vertebrobasilar Artery (VBA) stroke is a very rare event in the population. The increased risks of VBA artery stroke associated with chiropractic and primary care medical provider visits is likely due to patients with headache and neck pain from vertebrobasilar artery dissection seeking care before their stroke.” The authors found no evidence of excess risk of VBA stroke associated chiropractic care compared to primary care.<sup>72</sup>

Cassidy et al. (2008) *Spine Journal*

## CHIROPRACTIC – A SAFER STRATEGY THAN OPIOIDS

The new Guidelines of the American College of Physicians (ACP) published in the *Annals of Internal Medicine*, February 2017,<sup>73</sup> call for non-drug therapy as a first approach in the treatments of acute, subacute and chronic low back pain. “Clinicians and patients should select non-pharmacologic treatment with superficial heat massage, acupuncture or spinal manipulation,” according to the guideline.

The guideline states that, “Exercise, rehabilitation, acupuncture...and spinal manipulation are shown to improve symptoms with little risk of harm.” Further, “If these non-medicine treatments do not work, patients...and their doctors should discuss medicines...” The ACP *Summaries for Patients* document states, “Opioids should be considered only if no other treatments work and only if there are more benefits than risks for an individual patient.”

The cover of *Time Magazine*, June 15, 2015,<sup>74</sup> conveyed the crushing impact of opioid drug use and abuse clearly: “They’re the most powerful pain killers ever invented. And they’re creating the worst addiction crisis America has ever seen.” Accidental death from prescription drug overdose is the biggest man-made epidemic in the United States.

CNN’s Dr. Sanjay Gupta, on May 16, 2016, featured Dr. Gary Franklin, medical director for the Washington State Department of Labor and Industries in a presentation titled “Let’s end the prescription drug death epidemic,”<sup>75</sup> which summarized that:

- Addiction to prescribed opioids is leading to the most common cause of preventable death in America today
- A person dies every 19 minutes, on average, from an accidental prescription drug overdose
- And now is a leading cause of accidental deaths in the United States, surpassing car crashes

The presentation continued, stating that, “The most common scenario involves a man in his 40s or 50s who visits a doctor with a backache and walks out with a pain pill prescription. About three years later, typically, the man dies in his sleep from taking too many pills, or mixing them with alcohol.”

In the face of this epidemic of opioid addiction there is growing interest within health care for how to best blend conventional and complementary non-drug approaches in the management of musculoskeletal disorders. This is especially true for the costly and burdensome effects of low back pain, which has prompted increased research into the mechanisms, benefits and risks of the complementary approach to spine care provided by doctors of chiropractic.<sup>76</sup>

The Institute of Medicine in 2011 called for cultural transformation in pain prevention, its diagnosis and management, and recommended greater collaboration between the different clinical disciplines.<sup>77</sup> In November 2014, The Joint Commission revised its Pain Management Standard PC.01.02.07, for ambulatory care, critical access hospital, home care, hospital, nursing care center, and office-based surgery accreditation programs, stating upon extensive literature review by clinical authorities providing guidance on the future direction of pain management, that:

*“The experts affirmed that treatment strategies may consider both pharmacologic and non-pharmacologic approaches. In addition, when considering the use of medications to treat pain, organizations should consider both the benefits to the patient, as well as the risks of dependency, addiction, and abuse of opioids.*”

The following examples are not exhaustive, but strategies may include the following:

- *Non-pharmacologic strategies: physical modalities (for example, acupuncture therapy, chiropractic therapy, osteopathic manipulative treatment, massage therapy and physical therapy), relaxation therapy and cognitive behavioral therapy.*
- *Pharmacologic strategies: nonopioid, opioid, and adjuvant analgesics.”<sup>78</sup>*

The American Society of Interventional Pain Physicians published that Americans constitute 4.6 percent of the world population, yet consume 80 percent of the global opioid supply, and 99 percent of the global hydrocodone supply. At stake is the health and the lives of millions of Americans hanging in the balance.<sup>79</sup>

For the overwhelming numbers of Americans who suffer with chronic pain, chiropractic care offers a non-pharmaceutical, non-invasive and cost-effective alternative for pain management. Third party payers and insurance plan sponsors, both governmental and commercial, have opportunity to improve member satisfaction and benefit programs by making chiropractic services an accessible and affordable option for chronic pain relief, through reimbursement of doctors of chiropractic as covered providers.

The United States has awakened on every level to the crushing impact of opioid abuse epidemic. Calls have come forward from the Centers on Disease Control and Prevention, the Institute of Medicine, the Food and Drug Administration, and Joint Commission,<sup>80</sup> for a shift away from opioid use toward non-pharmacologic approaches to manage chronic pain.<sup>81</sup>

The data speaks for itself. Overdose deaths involving prescription opioids have quadrupled since 1999,<sup>82</sup> as have sales of these prescription drugs.<sup>83</sup> From 1999 to 2014, more than 165,000 people – three times the U.S. military deaths during the twenty years of the Vietnam War – have died in the U.S. from overdoses related to prescription opioids.<sup>84</sup> An important non-pharmacologic approach to helping to solve this opioid crisis is chiropractic care.



# CHIROPRACTIC EDUCATION AND LICENSURE, AND LEGAL RECOGNITION

## *Doctors of Chiropractic in the United States Complete Seven Years Minimum Higher Education*

The Council on Chiropractic Education USA (CCE-USA), recognized by the U.S. Office of Education since 1974, is the national accrediting body for the fifteen chiropractic degree programs offered at eighteen locations in the US. The Council establishes minimum standards for chiropractic education; individual member chiropractic programs may establish additional requirements for admissions, curricular content and clinical competency.

The Accreditation Standards of the CCE-USA<sup>85</sup> require that applicants seeking admission to the doctor of chiropractic program have completed the equivalent of three academic years of undergraduate study (90 semester hours) at an institution accredited by an agency recognized by the U.S. Department of Education, or an equivalent foreign agency. A minimum of 24 semester hours in life and physical science courses, with at least half of these courses to include a laboratory component, is to be included within the 90 hours, along with well-rounded general education courses in humanities and social sciences.

The curriculum for the doctor of chiropractic degree in the US typically represents a four academic year program with a minimum of 4,200 instructional hours beyond the undergraduate prerequisite requirements. The CCE-USA Educational Standards identify the following subject categories and courses:

- Foundations in Chiropractic – principles, practices, philosophy and history of chiropractic.
- Basic Sciences – anatomy; physiology; biochemistry; microbiology and pathology.
- Clinical Sciences – physical, clinical and laboratory diagnosis; diagnostic imaging; spinal analysis; orthopedics; biomechanics; neurology; spinal adjustment/manipulation; extremities manipulation; rehabilitation and therapeutic modalities/procedures (active and passive care); toxicology; patient management; nutrition; organ systems; special populations; first aid and emergency procedures; wellness and public health; and clinical decision making.
- Professional Practice – ethics and integrity; jurisprudence; business and practice management and professional communications.
- Information Literacy and Research Methodology - ability to access and understand information and critically analyze outcomes associated with research and scholarly activities.

The CCE-USA Educational Standards document identifies mandatory meta-competencies outlining the skills, attitudes, and knowledge required to prepare graduates to serve as primary care chiropractic physicians. These competencies require the chiropractic graduate to demonstrate the ability to:

- perform an initial assessment and diagnosis;
- create and execute an appropriate case management/treatment/intervention plan;
- promote health, wellness, safety and disease prevention;
- communicate effectively with patients, doctors of chiropractic and other health care professionals, regulatory agencies, third party payers, and others as appropriate;
- produce and maintain accurate patient records and documentation;
- be proficient in neuro-musculoskeletal evaluation, treatment and management;
- access and use health related information;
- demonstrate critical thinking and decision making skills, and sound clinical reasoning and judgment;
- understand and practice the ethical conduct and legal responsibilities of a health care provider;
- critically appraise and apply scientific literature and other information resources to provide effective patient care;
- understand the basic, clinical, and social sciences and seek new knowledge in a manner that promotes intellectual and professional development.

Visit the Council on Chiropractic Education website [www.cce-usa.org](http://www.cce-usa.org) for more information on chiropractic accreditation, and the Association of Chiropractic Colleges website [www.chirocolleges.org](http://www.chirocolleges.org) for information on chiropractic education.

## LICENSURE AND LEGAL RECOGNITION

All 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands have statutes recognizing and regulating the practice of chiropractic as an independent portal of entry health provider. Although specific requirements vary by state, all jurisdictions require the completion of a doctor of chiropractic program.

Requirements for licensure include successful completion of the examinations conducted by the National Board of Chiropractic Examiners, which includes the basic and clinical science subjects, clinical case studies and a practical exam. Certain jurisdictions may require applicants be examined over the law governing the practice of chiropractic in that state. Requirements for continuing education for license renewal vary with each state.<sup>86</sup>

Chiropractic services are recognized and reimbursed through Medicare, and most state Medicaid acts include doctors of chiropractic as primary health providers.<sup>87</sup> Chiropractic services are covered by the vast majority of health insurance policies. The U.S. Department of Labor, Office of Workers' Compensation Programs, Division of Federal Employees' Compensation, recognizes chiropractors as physicians for treatment of manual manipulation of the spine.<sup>88</sup>

Including the U.S., the practice of chiropractic is recognized and regulated by law in 48 countries.<sup>89</sup> Common features of legislation and practice include a role as a primary care provider, allowing direct contact with patients, and the right and duty to diagnose, including taking and/or ordering skeletal imaging.

For information on chiropractic licensure and regulation go to the Federation of Chiropractic Licensing Boards website: [www.fclb.org](http://www.fclb.org).

## END NOTES

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- <sup>1</sup> The Burden of Musculoskeletal Disease in the United States, Bone and Joint Decade, Copyright, 2008, American Academy of Orthopedic Surgeons. ISBN 978-089203-533-5 pp 21).
- <sup>2</sup> Zhu K, Devine A, Dick IM, Prince RL. Association of back pain frequency with mortality, coronary heart events, mobility and quality of life in elderly women. *Spine*. Aug 15 2007; 32 (18):2012-2018.
- <sup>3</sup> Fanuele JC. et al., The impact of spinal problems on the health status of patients: have we underestimated the effect? *Spine*. June 15 2000;25(12):1509-1514).
- <sup>4</sup> Stason, W. et al., "Report to Congress on the Evaluation of the Demonstration of Coverage of Chiropractic Services Under Medicare," (June 16, 2009).
- <sup>5</sup> Gallup-Palmer College of Chiropractic Annual Report: Americans' perceptions of chiropractic [Internet]. Washington, DC: Gallup, Inc. 2016 [updated 2016 Oct 18; cited 2017 Feb 22.] Available from: <http://www.palmer.edu/uploadedFiles/Pages/Alumni/gallup-report-palmer-college-2016.pdf> at [www.palmer.edu/gallup-report](http://www.palmer.edu/gallup-report) Joint publication of Gallup, Inc. and Palmer College of Chiropractic.
- <sup>6</sup> Christensen, M, et al. Practice Analysis of Chiropractic 2010, Greeley: National Board of Chiropractic Examiners, 2010. 13-22.
- <sup>7</sup> Cleveland, A, Phillips, R, Clum, G, "The Chiropractic Paradigm." *Fundamentals of Chiropractic*, Ed. Daniel Redwood, Ed. Carl Cleveland III, St. Louis: Mosby, 2003. 17-18, Print.
- <sup>8</sup> "Licensure Snapshot." Federation of Chiropractic Licensing Boards. FCLB, 2014, accessed 8-1-14. <http://www.fclb.org/AboutFCLB/FutureDCs.aspx>
- <sup>9</sup> Scaringe, J.G., & Cooperstein, R. (2003). Chiropractic Manual Procedures. In Redwood and Cleveland III (eds.) *Fundamentals of Chiropractic* (pp. 257-293). St. Louis, Missouri: Mosby
- <sup>10</sup> (Evans, D.W., 2002. Mechanism and effects of spinal high-velocity low-amplitude thrusts manipulations. Previous theories. *JMPT*. 23, 251-262.)
- <sup>11</sup> Haavik, H, Murphy BA, Kruger J. Effect of Spinal Manipulation on Pelvic Floor Functional Changes in Pregnant and Nonpregnant Women: A Preliminary Study. *J Manipulative Physiol Ther*. 2016; 39:339-347.
- <sup>12</sup> Romeo A, Parazza S, Boschi M, Nava T, Vanti C. 2013. Manual therapy and therapeutic exercise in the treatment of osteoarthritis of the hip: a systematic review. *Ruematismo*. 2013 May 27; 65(2): 63-74.
- <sup>13</sup> Brantingham JW, Bonnefin D, Perle SM, et al. 2012. Manipulative therapy for lower extremity conditions: update of a literature review. *J Manipulative Physiol Ther*. Feb 2012; 35 (2): 127-166.
- <sup>14</sup> Dougherty PE, Hawk C, Weiner DK, Gleberzon B, Andrew K, Killinger L. 2012, The role of chiropractic care in older adults. *Chiropr Man Therap*. 2012; 20 (1):3.
- <sup>15</sup> Holt KR, Haavik H, Lee AC, Murphy B, Elley CR. 2016, Effectiveness of chiropractic care to improve sensorimotor function associated with falls risk in older people: a randomized controlled trial. *J Manipulative Physiol Ther*. 2016; 39 (4): 267-278.
- <sup>16</sup> Hawk C, Cambron JA, Pfefer MT. 2009, Pilot study of the effect of a limited and extended course of chiropractic care on balance, chronic pain, and dizziness in older adults. *J Manipulative Physiol Ther*. 2009; 32 (6): 438-47.
- <sup>17</sup> Bigos S, Bowyer O, Braen G. Acute Lower Back Pain in Adults. Clinical Practice Guideline, Quick Reference Guide Number 14. AHCPR Pub. No 95-0643. Rockville: U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research; 1994.
- <sup>18</sup> Monzani L, Espi-Lopez GV, Zurriaga R, Andersen LL. 2016. Manual therapy for tension-type headache related to quality of work life and work presenteeism: Secondary analysis of a randomized controlled trial. *Complementary Therapies in Medicine* 25 (2016) 86-91.
- <sup>19</sup> Berwick D, Nolan T, Whittington J., 2008, The Triple Aim: Care, Health, and Cost, *Health Aff (Millwood)*. 2008 May-Jun;27 (3):759-69. 10.1377/hlthaff.27.3.759.)
- <sup>20</sup> Cleveland III, C.S., & Wiles, Michael (2017). Future Directions for the Chiropractic Profession and Chiropractic Education. In C. Hawk (Ed.), *Careers in Chiropractic Health Care*, (p. 302). California: Praeger.
- <sup>21</sup> Qaseem A, Wilt TJ, McLean RM, Forcica MA, for the Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med*. [Epub ahead of print 14 February 2017]:. doi: 10.7326/M16-2367
- <sup>22</sup> Denise M. Goodman, MD, MS; Alison E. Burke, MA; Edward H. Livingston, MD, *JAMA*. 2013; 309(16):1738. doi:10.1001/jama.2013.3046
- <sup>23</sup> Goertz, Christine M; Long, Cynthia R; Hondras, Maria a; Petri, Richard; Delgado, Roxana; Lawrence, Dana J; Owens, Edward F & Meeker, William C, 2012, Adding chiropractic manipulative therapy to standard medical care for patients with acute low back pain: the results of a

---

pragmatic randomized comparative effectiveness study, *Spine (Phila Pa 1976)*. 2013 Apr 15;38(8):627-34. doi: 10.1097/BRS.0b013e31827733e7.

- <sup>24</sup> Gross A, Langevin P, Burnie SJ, Bedard-Brochu MS, Empey B, Dugas E, et al. Manipulation and mobilisation for neck pain contrasted against an inactive control or another active treatment. *Cochrane Database Syst Rev*. 2015; 9:CD004249.
- <sup>25</sup> Bryans et al., 2014, Evidence-based guidelines for the chiropractic treatment of adults with neck pain. *J Manipulative Physiol Ther*. 2014 Jan; 37(1):42-63. doi: 10.1016/j.jmpt.2013.08.010. Epub 2013 Nov 19.
- <sup>26</sup> Bronfort, G., Evans, R., Anderson, A, Svendsen, K., Bracha, B., Grimm, R., 2012 Spinal Manipulation, Medication, or Home Exercise With Advice for Acute and Subacute Neck Pain: A Randomized Trial, *Ann Intern Med*. 2012; 156(1\_Part\_1):1-10. DOI: 10.7326/0003-4819-156-1-201201030-00002
- <sup>27</sup> Dunning, J.R., et al, 2012, Upper Cervical and Upper Thoracic Thrust Manipulation Versus Nonthrust Mobilization in Patients With Mechanical Neck Pain: A Multicenter Randomized Clinical Trial, 2012, *Journal of Orthopaedic & Sports Physical Therapy*, 2012 Volume:42 Issue:1 Pages:5–18 DOI: 10.2519/jospt.2012.3894
- <sup>28</sup> Dunning, J, Butts, R, Mourad, F, Young, I, Fernandez-de-las Penas, Hagins, M, Stanislawski, Donely, J, Buck, D, Hooks, T, Cleland, Jet al, 2016, Upper cervical and upper thoracic manipulation versus mobilization and exercise in patients with cervicogenic headache: a multi-center randomized clinical trial. *BMC Musculoskeletal Disorders* (2016) 17:64, DOI: 10.1186/s12891-016-0912-3
- <sup>29</sup> Bryans R1, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg R, Shaw L, Watkin R, White E., 2011, Evidence-based guidelines for the chiropractic treatment of adults with headache, *J Manipulative Physiol Ther*. 2011 Jun;34(5):274-89. doi: 10.1016/j.jmpt.2011.04.008.
- <sup>30</sup> Haas M, Spegman A, Peterson D, Aickin M, Vavrek D. 2016, Dose response and efficacy of spinal manipulation for chronic cervicogenic headache: a pilot randomized controlled trial. *Spine J*. 2010 Feb;10(2):117-28. doi: 10.1016/j.spinee.2009.09.002.
- <sup>31</sup> McCrory, D., Penzlen, D., Hasselblad, V., Gray, R. (2001) Behavioral and Physical Treatments for Tension-type and Cervicogenic Headache, *Duke Evidence Report*. 2001.
- <sup>32</sup> Boline PD, Kassak K, Bronfort G, Nelson C, Anderson AV. (1995). Spinal manipulation vs. amitriptyline for the treatment of chronic tension-type headaches: a randomized clinical trial. *J Manipulative Physiol Ther*. 1995 Mar-Apr;18 (3):148-54.
- <sup>33</sup> Schneider M, Haas M, Glick R, Stevans J, Landsittel D., (2015). Comparison of spinal manipulation methods and usual medical care for acute and subacute low back pain: a randomized clinical trial. *Spine (Phila Pa 1976)*. 2015 Feb 15;40(4):209-17. doi: 10.1097/BRS.0000000000000724.
- <sup>34</sup> Keeney BJ1, Fulton-Kehoe D, Turner JA, Wickizer TM, Chan KC, Franklin GM., Early predictors of lumbar spine surgery after occupational back injury: results from a prospective study of workers in Washington State. *Spine (Phila Pa 1976)*. 2013 May 15;38(11):953-64. doi: 10.1097/BRS.0b013e3182814ed5.
- <sup>35</sup> George JW, Skaggs CD, Thompson PA, et al. A randomized controlled trial comparing a multimodal intervention and standard obstetrics care for low back and pelvic pain in pregnancy. *Am J Obstet Gynecol* 2013;208:295.e1-7.
- <sup>36</sup> Whedon JM, Song Y, Davis MA. Trends in the use and cost of chiropractic spinal manipulation under Medicare Part B. *Spine J*. 2013;13(11):1449-1454.
- <sup>37</sup> Haas, M. Sharma, R, Stano, M. (2005) Cost-Effectiveness of Medical and Chiropractic Care for Acute and Chronic Low Back Pain. *Journal of Manipulative and Physiological Therapeutics*, Volume 28, Issue 8, October 2005, Pages 555–563
- <sup>38</sup> Hoving JL, Koes BW, de Vet HC, van der Windt DA, Assendelft WJ, van Mameren H, Devillé WL, Pool JJ, Scholten RJ, Bouter LM. (2002). Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. A randomized, controlled trial. *Annals of Internal Medicine*. 2002 May 21;136(10):713-22.
- <sup>39</sup> Leininger, Brent et al., 2016, Cost-effectiveness of spinal manipulative therapy, supervised exercise, and home exercise for older adults with chronic neck pain, *The Spine Journal* , Volume 16 , Issue 11 , 1292 – 1304
- <sup>40</sup> Hurwitz EL, Li D, Guillen J, Schneider MJ, Stevans JM, Phillips RB, Phelan SP, Lewis EA, Armstrong RC, Vassilaki M. (2016). Variations in Patterns of Utilization and Charges for the Care of Low Back Pain in North Carolina, 2000 to 2009: A Statewide Claims' Data Analysis. *J Manipulative Physiol Ther*. 2016 May;39(4):252-62. doi: 10.1016/j.jmpt.2016.02.006.
- <sup>41</sup> Weeks WB, Leininger B, Whedon JM, Lurie JD, Tosteson TD, Swenson R, O'Malley AJ, Goertz CM. (2016) The Association Between Use of Chiropractic Care and Costs of Care Among Older Medicare Patients With Chronic Low Back Pain and Multiple Comorbidities., *J Manipulative Physiol Ther*. 2016 Feb;39(2):63-75.e1-2. doi: 10.1016/j.jmpt.2016.01.006. Epub 2016 Feb 19.
- <sup>42</sup> van der Velde G, Yu H, Paulden M, et al. Which interventions are cost-effective for the management of whiplash-associated and neck pain-associated disorders? A systematic review of the health economic literature by the Ontario Protocol for Traffic Injury Management (OPTIMA) Collaboration. *Spine J*. 2016;16(12):1582-1597.
- <sup>43</sup> Davis MA, Yakusheva O, Gottlieb DJ, Bynum JP. Regional supply of chiropractic care and visits to primary care physicians for back and neck pain. *J Am Board Fam Med*. 2015;28(4):481-490.

- 
- <sup>44</sup> Lilledahl RL, Finch MD, Axene DV, Goertz CM., (2010). Cost of care for common back pain conditions initiated with chiropractic doctor vs medical doctor/doctor of osteopathy as first physician: experience of one Tennessee-based general health insurer. *J Manipulative Physiol Ther.* 2010 Nov-Dec;33(9):640-3. doi: 10.1016/j.jmpt.2010.08.018. Epub 2010 Oct 18.
- <sup>45</sup> Choudhry N, Milstein A. Do chiropractic physician services for treatment of low-back and neck pain improve the value of health benefit plans? An evidence-based assessment of incremental impact on population health and total healthcare spending. San Francisco: Mercer Health and Benefits; 2009
- <sup>46</sup> Consumer Reports, (2016, June). Pain Management: Which Treatment Is Right for You? *Consumer Reports*, 2016, June.
- <sup>47</sup> Hertzman-Miller RP, Morgenstern H, Hurwitz EL, Yu F, Adams AH, Harber P, Kominski GF. (2002). Comparing the satisfaction of low back pain patients randomized to receive medical or chiropractic care: results from the UCLA low-back pain study. *Am J Public Health.* 2002 Oct;92(10):1628-33.
- <sup>48</sup> Gallup-Palmer College of Chiropractic Annual Report: Americans' perceptions of chiropractic [Internet]. Washington, DC: Gallup, Inc. 2016 [updated 2016 Oct 18; cited 2017 Feb 22.] Available from: [www.palmer.edu/gallup-report](http://www.palmer.edu/gallup-report)
- <sup>49</sup> World Health Organization. *Global recommendations on physical activity for health.* Geneva: WHO, 2010
- <sup>50</sup> Blair SN. Physical inactivity: the biggest public health problem of the 21st century. *Br. J Sports Med.* 2009;43:1-2.
- <sup>51</sup> Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-17 Edition, Chiropractors, <http://www.bls.gov/oooh/healthcare/chiropractors.htm> (visited July 17, 2016).
- <sup>52</sup> Weeks, W., Leininger, B., Whedon, J., Lurie, J., MD, Tosteson, T., Swenson, R., , MD, O'Malley, A., Goertz, C. (2017) The Association Between Use of Chiropractic Care and Costs of Care Among Older Medicare Patients With Chronic Low Back Pain and Multiple Comorbidities, *Journal of Manipulative and Physiological Therapeutics* Volume 39, Issue 2, February 2016, Pages 63–75.e2
- <sup>53</sup> World Health Organization. *Global recommendations on physical activity for health.* Geneva: WHO, 2010.
- <sup>54</sup> Laframboise, M, (2014), Chiropractors tackling the inactivity epidemic. *J Can Chiropr Assoc* 2014;58(4).
- <sup>55</sup> Christensen, M, et al. Practice Analysis of Chiropractic 2010, Greeley: National Board of Chiropractic Examiners, 2010. 12.
- <sup>56</sup> Personal correspondence with William Moreau, DC, Medical Director for Team USA and Olympic Games Chief Medical Officer (CMO) for Rio 2016.
- <sup>57</sup> Krause, Curt A. DC; Kaspin, Lisa PhD; Gorman, Kathleen M. MPH; Miller, Ross M. MD, MPH. Value of Chiropractic Services at an On-Site Health Center. *Journal of Occupational & Environmental Medicine*: August 2012 - Volume 54 - Issue 8 - p 917–921.
- <sup>58</sup> Kindermann SL, Hou Q, Miller RM. Impact of chiropractic services at an on-site health center. *Journal Occup Environ Med.* 2014 Sep;56(9):990-2.
- <sup>59</sup> Henriksen, C., Case Study: Results from an employer-sponsored on-site chiropractic care program, *Chiropractic Occupational Health News Briefs*, Council On Occupational Health, American Chiropractors Association, Summer/Fall (2016).
- <sup>60</sup> Fuld & Company. (2009). The Growth of On-Site Health Clinics: On-site corporate health clinics are expected to serve over 10% of the under 65s by 2015 [White Paper]. Retrieved from <http://www.yourhealthstat.com/files/article/The%20Growth%20of%20On-Site%20Clinics%20%28Feb%202009%29.pdf>.
- <sup>61</sup> <http://tricare.mil/chiropractorlookup/default.aspxand>
- <sup>62</sup> Lisi AJ, Brandt CA. Trends in the use and characteristics of chiropractic services in the Department of Veterans Affairs. *J Manipulative Physiol Ther.* 2016;39(5):381-386.
- <sup>63</sup> Lisi AJ, Brandt CA. Trends in the use and characteristics of chiropractic services in the Department of Veterans Affairs. *J Manipulative Physiol Ther.* 2016;39(5):381-386.
- <sup>64</sup> Green BN, Johnson CD, Daniels CJ, Napuli JG, Gliedt JA, Paris DJ. (2016). Integration of Chiropractic Services in Military and Veteran Health Care Facilities: A Systematic Review of the Literature. , *J Evid Based Complementary Altern Med*, 21(2):115-30. doi: 10.1177/2156587215621461. Epub 2015 Dec 16.
- <sup>65</sup> (<http://www.prosthetics.va.gov/chiro/locations.asp>).
- <sup>66</sup> <http://www.prosthetics.va.gov/chiro/locations.asp>.
- <sup>67</sup> <http://www.prosthetics.va.gov/chiro/locations.asp>
- <sup>68</sup> Church E W, Sieg E P, Zalatimo O, et al. (February 16, 2016) Systematic Review and Meta-analysis of Chiropractic Care and Cervical Artery Dissection: No Evidence for Causation. *Cureus* 8(2): e498. DOI 10.7759/cureus.498
- <sup>69</sup> Whedon JM, Mackenzie TA, Phillips RB, Lurie JD. Risk of traumatic injury associated with chiropractic spinal manipulation in Medicare Part B beneficiaries aged 66 to 99 years. *Spine (Phila Pa 1976)*. 2015;40 (4):264-270.
-

- 
- <sup>70</sup> Whedon JM, Song Y, Mackenzie TA, Phillips RB, Lukovits TG, Lurie JD. Risk of stroke after chiropractic spinal manipulation in Medicare B beneficiaries aged 66 to 99 years with neck pain. *J Manipulative Physiol Ther.* 2015;38(2):93-101.
- <sup>71</sup> Kosloff, Thomas M; Elton, David; Tao, Jiang & Bannister, Wade M, 2015, Chiropractic care and the risk of vertebrobasilar stroke: results of a case-control study in U.S. commercial and Medicare Advantage populations., 2015, *Chiropr Man Therap.* 2015 Jun 16;23:19. doi: 10.1186/s12998-015-0063-x. eCollection 2015.
- <sup>72</sup> Cassidy JD, Boyle E, Côté P, He Y, Hogg-Johnson S, Silver FL, Bondy SJ, 2008, Risk of vertebrobasilar stroke and chiropractic care: results of a population-based case-control and case-crossover study., *SPINE (Phila Pa 1976)* 2008 (Feb 15); 33 (4 Suppl): S176–183
- <sup>73</sup> Amir Qaseem, MD, PhD, MHA; Timothy J. Wilt, MD, MPH; Robert M. McLean, MD; Mary Ann Forciea, MD; *Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians*; for the Clinical Guidelines Committee of the American College of Physicians, Published: *Ann Intern Med.* 2017. DOI: 10.7326/M16-2367
- <sup>74</sup> Calabressi, M. (2015, June). Why America Can't Kick Its Painkiller Problem. *Time Magazine*, Volume 185 (22).
- <sup>75</sup> Gupta, S. (2012, November 14) "Let's end the prescription drug death epidemic." Retrieved from <http://www.cnn.com/2012/11/14/health/gupta-accidental-overdose/>
- <sup>76</sup> MetroDoctors, *Journal of the Twin Cities Medical Society*, July/Aug 2016, 11-13.
- <sup>77</sup> Institute of Medicine, *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research.* Washington, DC; National Academies Press; 2011.
- <sup>78</sup> The Joint Commission ([www.jointcommission.org](http://www.jointcommission.org)) revised its Pain Management Standard PC.01.02.07, *Joint Commission Perspectives*®, November 2014, Volume 34, Issue 11
- <sup>79</sup> Laxmaiah Manchikanti, MD, Standiford Helm II, MD, Bert Fellows, MA, Jeffrey W. Janata, PhD, Vidyasagar Pampati, MSc, Jay S. Grider, DO, PhD, and Mark V. Boswell, MD, PhD, American Society of Interventional Pain Physicians; <https://www.asipp.org/document/ASiPPFactSheet101111.pdf>; accessed 2-20-17. (<http://www.painphysicianjournal.com/2012/july/2012;15;ES9-ES38.pdf>)
- <sup>80</sup> A complimentary publication of The Joint Commission November 12, 2014, Accreditation: Revisions to pain management standard (Standard PC.01.02.07) effective January 1, 2015)
- <sup>81</sup> Carabello, L., Clum, G., Meeker, W. Foundation for Chiropractic Progress (2016.) *Chiropractic: A safer strategy than Opioids.* Georgetown, CA.
- <sup>82</sup> CDC. Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2016. <http://wonder.cdc.gov>
- <sup>83</sup> Frenk, SM, Porter KS, Paulozzi LJ. Prescription opioid analgesic use among adults: United States, 1999—2012. NCHS data brief, no. 189. Hyattsville, MD: National Center for Health Statistics. 2015
- <sup>84</sup> CDC. <http://www.cdc.gov/drugoverdose/data/overdose/html>; accessed April 13, 2016.
- <sup>85</sup> CCE Accreditation Standards; Principles, Processes & Requirements for Accreditation, Council of Chiropractic Education January 2013
- <sup>86</sup> "Licensure Snapshot." Federation of Chiropractic Licensing Boards. FCLB, 2014, accessed 8-1-14. <http://www.fclb.org/AboutFCLB/FutureDCs.aspx>
- <sup>87</sup> United States Government: Medicare General Information, Eligibility and Entitlement Manual, Centers for Medicare and Medicare Service, Revision 80, 10/26/12, pages 31-34.
- <sup>88</sup> <http://www.dol.gov/owcp/dfec/regs/compliance/Basic-Information-on-New-Claims.htm>
- <sup>89</sup> The Current Status of the Chiropractic Profession, Report to the World Health Organization from the World Federation of Chiropractic, December 2012, World Federation of Chiropractic. January 2013, access August 1, 2014, [www.wfc.org/website/images/wfc/WHO\\_Submission-Final Jan 2013.pdf](http://www.wfc.org/website/images/wfc/WHO_Submission-Final_Jan_2013.pdf).

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