

III) Spinal Radiography Back Ground and Utilization Costs

RECOMMENDATION

Spinal radiography is an important legal privilege of practicing chiropractors in North America, is an important component of chiropractors' analysis and management of presenting patients, and should not be limited to the 'red flag' x-ray only model. The PCCRP guideline panel recommends against the exclusive adoption of 'red flag' guidelines as these do not benefit the individual patient, ignore vital difference in chiropractic treatment procedures versus standard medical or physical therapy treatments, and ignore a large body of contrary information suggesting spine radiography has clinical utility. The PCCRP panel recommends the guidelines for spinal radiography in chiropractic practice set forth in Section II.

Supporting Evidence: AP Nasium and Ferguson Views: Clinical Levels I-IV. Other Radiographic Views: Clinical Levels II-IV, Basic Science, Biomechanics, and Validity.

PCCRP Evidence Grade: Clinical Studies = B and Basic Science, Biomechanics, and Validity Studies = a.

Introduction

Because of the early use of spinography in Chiropractic in the United States after 1910, there subsequently occurred laws in various English speaking countries giving Chiropractors radiographic privileges. These privileges are not available in many countries; no small part due to the medical profession's monopoly on such privileges. For examples, some Chiropractors in Europe, China, Korea, and Japan do not have x-ray privileges.

Countries in which Chiropractors have radiographic privileges include the United States, Canada, Great Britain, Ireland, Australia, and New Zealand. Because Chiropractic Colleges in these countries teach x-ray physics, x-ray safety, x-ray positioning, x-ray diagnosis, and x-ray line drawing analysis, these privileges are secured by State, Provincial, and Commonwealth law. However, there is a direct attack on Chiropractic radiographic privileges that does not come from outside our profession, but rather from within.¹⁻²⁴

For at least the past 20 years, a subgroup of the Diplomates of American Board of Chiropractic Roentgenology (DACBRs) and a few chiropractic academics have attempted to reduce x-ray privileges for practicing Chiropractic Clinicians. These suggested reductions in x-ray privileges by the subgroup of DACBRs and academics have come in the form of "expert opinion" chapters in various chiropractic texts,¹⁻⁵ articles published in Index Medicus journals (JMPT, Chiropractic & Osteopathy),⁶⁻¹⁹ CINAHL and Mantis Indexes (Topics in Clinical Chiropractic, Chiropractic Technique, Journal of Chiropractic Medicine, and the Journal of the Canadian Chiropractic Association).²⁰⁻²⁶

Relying on selective literature citations and Clinical Class V (expert opinion) evidence instead of the available data, this subgroup of DACBR and academic "expert opinions" have claimed a series of positions that have been shown to be false.²⁷⁻³³ These include:

- Normal spinal position does not exist,
- Acute muscle spasms cause cervical and lumbar kyphosis or hypo-lordosis,
- Normal spinal anatomic variants cause the spine to appear to be subluxated,
- X-rays should not be taken for biomechanical, screening, and
- Follow-up treatment x-rays are not warranted,
- Radiographic line analysis of spinal displacements is unreliable,

- X-ray positioning of patients is unreliable,
- X-ray analysis lacks predictive validity and biologic plausibility,
- X-ray use to dictate treatment does not yield improved patient outcomes,
- Most patient episodes of spinal pain are self limiting and improve with time.¹⁻²⁶

Recently, this same subgroup of DACBRs and academics have been suggesting that Chiropractic x-ray privileges be confined to “Red Flag” cases only.^{1-5,8,9,21,26} Problematically, managed care organizations (MCO’s) use the DACBR “Red Flag” documents to enforce their mandatory reduction in radiographic utilization rates of practicing chiropractic clinicians.^{34,35} In fact, there is no evidence that these policies actually benefit the patient; but there is evidence that this increases the profits of MCO’s and insurance providers.^{36,37} Thus, it becomes clear that current attempts to limit radiography utilization rates of chiropractic clinicians is motivated more by profits and less by what is best for the patient.

Are Red Flag Guidelines Supported by Previous Studies?

There are some reports in the scientific literature that seem consistent with the above ‘Red Flag’ x-ray recommendation promulgated by the subgroup of DACBR’s.³⁸⁻⁴³ However, a review of these documents reveals several interesting issues. For examples:

1. In studies^{38,39} of patients involved in a variety of cervical spine trauma scenarios 2.4-2.8% reveal a ‘significant finding’.³⁸ However, ‘significant finding’ is defined as cervical spine fracture. Whereas 17% of the cases are positive considering spondylo-olisthesis, straightening, spasm, foreign body, compression, fusion, narrowing, or soft tissue swelling.³⁹
2. In a randomized trial comparing the intervention of lumbar radiography to no radiography in patients with at least 6 weeks duration of low back pain, Kendrick et al^{41,42} found no differences in outcomes between the groups. Problematically, the intervention used for treatment did not specifically address any structural spinal displacements. In other words general medication, physical therapy, and other recommendations were utilized. Importantly, patients receiving radiography were more satisfied with the care they received.^{41,42}
3. Patients whom are allocated to a preference group where the decision to receive lumbar radiography is made by them, achieve clinically significant improved outcomes compared to those randomized to a non-radiography or a radiography group.⁴² Thus, undercutting patient choice by ‘Red Flag’ only guidelines for chiropractic radiography limits the patients right to choose and can impair or slow recovery.
4. It is clear from these studies that the main justification to reduce the use of radiography is based on the argument of reducing physician ‘work load’ and reducing health care costs driven primarily by MCO’s and 3rd party payors.⁴⁰⁻⁴³

Contradictory Studies to ‘Red Flag’ Only X-ray Guidelines

There are a multitude of studies that demonstrate strong correlations in radiographic measured spinal alignment parameters in spinal disorders and between a ‘condition group’ and a control group without the condition.⁴⁴⁻⁶⁴ These studies demonstrate the validity and usefulness of spinal radiography in determining alignment abnormalities that predict, correlate to, predispose to, and/or complicate a variety of spinal and health disorders.⁴⁴⁻⁶⁴

While section X provides a comprehensive review of studies supporting the validity and utility of spine radiography under each individual radiographic view, we present a review of twenty one⁴⁴⁻⁶⁴ key studies here for completeness:

Lumbar spine

1. In a review of four hundred and sixty-four age-matched (mean age 18 years 6±2 months) consecutive male army recruits, Steinberg et al⁴⁴ found that half had a history of episodes of low back pain (LBP). Several associations between different radiographic findings and low back pain (LBP) were found among the recruits with LBP including: 1) an increased frequency of right-sided scoliosis, 2) lumbar lordosis, 3) sacral lumbarization, 4) wedge vertebra, 5) bilateral spondylolysis of L5 and/or a sagittal diameter of less than 12 mm.
2. In a prospective cross-sectional study Inaoka et al⁴⁵ compared the lumbar radiographic findings of 438 subjects with chronic LBP or lower extremity pains to 400 age, sex, height, and weight matched controls. Patients with LBP showed a significantly high incidence of intervertebral space narrowing, irregular ossification of end-plate image, spondylo-listhesis, and abnormal reduced lumbar lordotic angle. They⁴² concluded that when a patient presents with more than one of these associated factors, the incidence of LBP increases significantly.
3. In a prospective study of 253 chronic LBP patients matched by age and physical characteristics to 253 normal controls between the ages of 50-85 years, Tsuji et al⁴⁶ found a reduced L1-S1 lordosis in the chronic LBP group. Of primary importance, lumbar lordosis was inversely correlated with pain intensity on a visual analog scale (p= 0.025). In other words, as the lumbar lordosis decreased, the pain intensity of the subject was increased.⁴⁶
4. Tsuji et al⁴⁷ prospectively evaluated 25 patients with chronic patellar femoral pain (CPFP) and matched them to 60 normal control subjects. They excluded subjects with spondylo-listhesis, fractures, and surgery. Using the L1-S1 4-line Cobb angle, lumbar lordosis and sacral inclination were found to be statistically decreased in patients with chronic LBP and CPFP. Tsuji et al concluded that reduced lordosis and sacral tilt caused increased thigh muscle strains, knee flexion, and eventual CPFP and LBP.
5. Jackson and McManus⁴⁸ reported one of the first investigations to measure all segmental angles as well as total curve angle in a prospective sample of 100 normal controls matched to 100 Chronic LBP patients. Total lordosis was significantly less in chronic LBP patients and was not age or sex related. Importantly, Patients with LBP tended to stand with less distal segmental lordosis, but more proximal lordosis, and reduced sacral inclination.
6. Harrison and colleagues⁴⁹ compared the lumbar lordotic alignment of 50 normal controls matched to 50 chronic LBP patients, 50 acute LBP patients and 24 subjects with LBP and lumbar degenerative disorders. with no history of pain, treatment, anomalies or DJD. This sophisticated study found differences in segmental and endpoint measures of lumbar lordosis as well as different geometrical elliptical models between these four groups. Specifically, the chronic LBP subjects had reduced lumbar lordosis, acute pain subjects

had hyperlordosis, and the degenerative disorders group had reduced lumbar lordosis and ellipses could not fit these subjects' spinal geometry.

7. Korovesis et al⁵⁰ prospectively evaluated the lumbar lordosis in 100 normal controls age, sex, weight, and occupation matched to 100 Chronic LBP subjects between the ages of 20-70 years. In addition, to radiographic alignment, all subjects completed the short form 36 questionnaire. It was found that chronic LBP statistically correlated to general health, physical function, emotional function, social function and pain. Importantly, all these variables were statistically correlated to a reduced overall lumbar lordosis, a reduced L4-S1 lordosis, and a reduced L4-S1 disc height index. They concluded, "*There seems to exist a link between sagittal lumbar spine radiology and subjective assessment data (SF-36) in a homogenous hardworking male population with LBP*".⁵⁰
8. In a 1-year prospective study, Reigo et al⁵¹ followed 207 women and 176 men between the ages of 20-59 years of age in order to see if physical characteristics could predict new episodes of low back pain and sick leave. New sick leave, long-term sick leave, and lower back pain were correlated to a flattened lumbar lordosis, tenderness in the trapezius muscle, decreased cervical ROM.
9. In a study of 110 cases of acute low back pain, Reinert⁵² identified the frequency of occurrence of intervertebral disc-space wedging, the level where it most frequently occurred and the associated alterations in the attitude of the pelvis and adjacent vertebral segments. Correlation of the location of pain with the distorted structural positions was significant. Thus spinal subluxations were correlated to acute uncomplicated low back pain.

Lateral Full Spine

10. Glassman et al⁵³ assessed 752 patients with adult spinal deformity using the lateral full spine x-ray and the SRS patient questionnaire, MOS short form-12 questionnaire, and the Oswestry Disability Index. On x-ray, 352 patients were found to have anterior sagittal translation of the C7-S1 plumb line with a range from 1mm-271mm. All measures of health status showed significantly poorer scores as the C7 plumb line deviation increased. Patients with relative kyphosis in the lumbar region had significantly more disability than patients with normal or lordotic lumbar sagittal Cobb measures.

Lateral Thoracic

11. Kolessar⁵⁴ evaluated 69 patients with Scheuermann's or postural kyphosis matched to 43 asymptomatic controls. On the lateral thoracic x-ray, the Cobb angle from T5-T12, was 54° in the Scheuermann's kyphosis group, 48° in the Postural kyphosis group, and 32° in the controls. They⁵³ state, "*Most authors would agree that the upper limit of normal for a Cobb measurement (ends) should not exceed 45°.*" and "*We recommend additional lateral radiographs to visualize the proximal thoracic spine in patients with a measurement from **T5-T12 > 33°***" The Cobb angle of 33 from T5-T12 had a specificity was 56% for discrimination between subjects.⁵⁴
12. Lind et al⁵⁵ investigated the correlation between hyperkyphosis and uterine prolapse in 48 cases of uterine prolapse to/past the introitus compared to 48 controls matched by age,

weight, menopausal status, and hormonal status. On lateral thoracic x-rays, kyphosis was measured with the Fergusson Method and measured 13° in the prolapse groups and 8.1° in controls. The group differences were statistically different ($p < 0.001$) and for each 1° increase in kyphosis, the risk of uterine prolapse increased by 1.35 times.

Lateral Cervical

13. In a 1-year prospective study of 110 patients with neurogenic thoracic outlet syndrome (NTOS) as a consequence of whiplash injury, Kai et al⁵⁶ found a prevalence of cervical kyphosis of 44%-46% in the patients with NTOS vs. only 11-24% in subjects without NTOS. Kai et al⁵⁶ concluded that reversal of the cervical lordosis is abnormal and associated with future disability after whiplash.
14. In an investigation of 100 patients with sub acute whiplash associated disorders (WAD), Giuliano et al⁵⁷ found a prevalence of 98% for loss of the cervical lordosis compared to 100 matched normal controls. The cervical lordosis was measured via MR imaging.
15. In 372 patients with tension headaches matched to 225 controls for age and sex, Nagasawa et al⁵⁸ found a statically reduced cervical lordosis on x-ray. Cervical Curve Measured Via Ishihara's Index. With increasing age, the patients with headaches had a cervical curve that was straight with increased frequency.
16. In 277 subjects with and without cervico-genic pains presenting to a chiropractic clinic, McAviney et al⁵⁹ found that patients with a lordosis of 20° or less were more likely to suffer from cervicogenic symptoms ($p < 0.001$). The association between cervical pain and lordosis $\leq 0^\circ$ was highly significant ($p < 0.0001$). The odds that a patient with cervical pain had a lordosis $\leq 0^\circ$ was 18 times greater than for a patient with a non-cervical complaint. Patients with cervical pain had less lordosis and this was consistent over all age ranges. Receiver operating characteristic curves were analyzed and lordosis less than 20° had good sensitivity and specificity for identifying those with and without cervical pain.
17. In a modeling study, Harrison et al⁶⁰ evaluated the predictive validity of their circular model to discriminate between normal subjects and those with chronic and acute cervical spine pain disorders. Both radiographic measurements and circular modeling variables were found to have good sensitivity and specificity for group cutoff values. Chronic pain subjects had a lordotic value of 20° or less, acute pain subjects had a lordotic value of less than 30° , and normal subjects had a lordosis greater than 30° .
18. Jochumsen⁶¹ classified the lateral cervical x-rays of 500 patients into 6 different geometric categories. 100 of these cases were asymptomatic and 400 cases presented with cervico-genic symptoms. He found that "*patients with a straightened curve are more disposed for cervical symptoms than patients with a mean lordosis or hyperlordosis*".⁶⁰

AP Nasium

19. Ng⁶² compared the upper cervical misalignments of 10 patients with headaches to 13 asymptomatic controls. The C1 laterality (UA) on the nasium demonstrated significant differences being 3.1° in patients and 2.0° in controls.⁶¹

AP Cervical

20. In a retrospective examination of 335 AP cervical radiographs of patients screened for lateral head translations ≥ 5 mm, Oakley and Harrison⁶³ identified 176 (53%) patients with this AP cervical subluxation. Of these, 146 patients (67 male; 79 female) had head/neck complaints. Thirty-eight percent of neck pain patients (56/146) had left head shifts while 62% (90/146) had right head shifts. Those with left head shifts suffered from pain longer but had smaller absolute mid-neck angles. Significant correlations existed between patient age and pain duration, pain duration and head translation distance, absolute head translation distance and age and absolute mid neck-angle and neck disability index (NDI) score.⁶³

AP Femur/Pelvis

21. In a study by Friberg⁶⁴, where 288 chronic low back pain subjects were matched to 366 asymptomatic controls, the incidence of leg length inequality (LLI) was significantly higher in the pain subjects compared to asymptomatic controls. The magnitude of the LLI difference was more than double (10.6 mm vs. 5.1 mm) in the pain group compared to the controls.

Discussion

In opposition to the current PCCRP Guideline's views, proponents of the 'red flag' only x-ray position, claim that: "*There is no convincing evidence that use of radiography for spinal biomechanical assessment (other than for assessing scoliosis) is of any therapeutic value*"²⁶ and no RCTs have been performed demonstrating the superiority of conservative (non-surgical) techniques utilizing x-ray for treatment decision making.^{25,26} In rebuttal, both of these opposition statements are false. The twenty one studies presented above⁴⁴⁻⁶⁴ clearly establishes the validity of radiographic analysis of spinal misalignment.

Second, there are preliminary RCTs using the AP Nasium and AP Ferguson/pelvic views that demonstrate improved patient outcomes by addressing and correcting the structural component of spinal subluxation/displacement.^{65,66}

Third, sole reliance on the evidence from RCTs, while ignoring the other categories of evidence described in Section I, is professionally and scientifically absurd. Smith and Pell⁶⁷ presented a timely systematic review of RCTs on the use of parachutes to prevent death and major trauma in order to chastise those in the scientific community who ignore evidence Levels II-IV when no RCTs exist. They found no RCTs demonstrating that use of a parachute can prevent serious injury or death. Smith and Pell⁶⁷ concluded that "*Individuals who insist that all interventions need to be validated by a randomized controlled trial need to come down to earth with a bump,*" and volunteer for the control group in a double blind, randomized, placebo controlled, crossover trial of the effect of parachute use. In other words, Smith and Pell⁶⁷ were arguing for the use of common sense and consideration of all types of evidence in implementation of 'evidence based medicine'; the PCCRP panel concurs.

Natural History of Low Back and Neck Pain

A final contention against the ‘routine use of radiography’ by some chiropractic academics is the undertone that low back pain (LBP) and neck pain (especially acute pain episodes) are self limiting conditions that improve on their own over time. For example, Cooperstein et al²⁵ stated, “...*pain levels tend to decline due to the passage of time.*” Several ‘evidence based guidelines’ maintain this position as well, especially for acute pain episodes.⁶⁸ (See section VI for a detailed review of previous spine radiology guidelines).

LBP Natural History: One of the original articles to which the self limiting nature of LBP can be traced comes from Dixon⁶⁹, where a “90% recovery” of acute LBP was found and was based on a record review in one general practice. However, the inference that a patient has completely recovered based on record review is clearly not supportable. In fact, there is **no** evidence supporting the claim that 80–90% of LBP patients become pain free within 1 month and strong evidence that refutes such claim.⁷⁰⁻⁷⁹

Some investigations have identified that a minimum of 75% of patients with acute uncomplicated LBP will continue to have problems. At 3 and 12 months follow up, only 39/188 (21%) and 42/170 (25%) respectively will be recovered.⁷¹ In a 5 year follow up of 254 people (81% of the original sample) with non-specific low back and neck pain, Enthoven et al,⁷² reported that 52% of the sample reported ratable neck and low back pain and disability. Further, 63% of the 254 patients reported recurrence and/or constant pain.

In one of the longest follow up surveys to date, Kaaria et al⁷⁹ reported on the initial, 5, 10, and 28 year low back pain prevalence and incidence in a population of Finish metal workers. Initially, 54% of the cohort reported low back pain (LBP) and 25% reported radiation into the lower extremity (LEP). In the group with LBP, 75%, 73%, and 88% reported pain at 5, 10, and 28 year follow-up respectively. In the group with LEP, 66%, 65%, and 69% reported pain at 5, 10, and 28 year follow-up respectively. Kaaria et al reported odds ratios of 6.0 (LBP) and 8.5 (LEP) for the likelihood of those with LBP and LEP initially reporting the same pains at long-term follow-up. Thus, LBP and LEP are not self-limiting conditions that remit on their own over time; the initial presence of pain is a strong risk factor for future pain.⁷⁹

NP Natural History: Like the natural history of low back pain, the same general trend, that neck pain does not improve on its’ own, can be found for population based incidence and prevalence studies on neck pain.⁸⁰⁻⁸⁵ For example, in three separate clinical control trials on chronic neck pain populations, Harrison et al⁸⁰⁻⁸² found that over an 8-9 month time interval, the numerical rating pain intensity score remained approximately the same at follow-up of control subjects receiving no treatment.

PCCRP Discussion

The available scientific literature detailing the natural history of spinal pain⁷⁰⁻⁸⁵ contradicts the generalized Class V evidence by some Chiropractic academics.^{25,68} This information has great relevance to the topic of Chiropractic radiography. In fact, the current accepted model for acute and chronic spinal pain is that pain is not self-limiting; a large percentage of individuals will continue to have long lasting pain and/or periodic painful episodes.⁷⁰⁻⁸⁵

There are identifiable physical exam findings and diagnostics that contribute to the poor natural history of spinal pain.⁷⁰⁻⁷⁵ Historical and current chiropractic philosophical and scientific

tenants' proclaim that spinal subluxation (See Section V for definitions) is a contributing cause to spinal pain episodes. The 21 studies presented above indicate that these chiropractic tenants have validity in specific populations of acute^{49,51,52,58,59} and chronic pain conditions.^{44-51,53-64}

Furthermore, chiropractic tenants proclaim that chiropractic is more than a musculoskeletal pain relief field. The majority of chiropractic clinicians do not want to be limited to 'musculoskeletal pain relief' and believe that spinal subluxations can cause and are correlated to a variety of health disorders;⁸⁶ there is preliminary scientific evidence for this (See Section X). Therefore, the attempts to selectively limit chiropractic radiography to specific pain types and duration^{26,87} do not fit current chiropractic beliefs, practices (See Section IV), and is contradicted by good scientific evidence.^{44-64,70-85} (See section X for additional scientific support).

Chiropractic Needs Different Radiology Guidelines Due to Unique Analysis & Treatment

It has been suggested that guidelines for chiropractic clinicians' utilization of x-ray should be different from those of a medical practitioner who does not use spinal adjustments and rehabilitation procedures as treatments to correct spinal subluxations.^{88,89}

There is an expectation by the consumer to have a thorough spinal evaluation when seeing a DC for a health problem. This expectation includes an x-ray evaluation for alignment of the spine and the state of health of the spine.⁹⁰ While cost-effectiveness analysis may favor limited x-ray utilization in a volume 3rd party payer scenario where maximization of profits is the driving force, in the individual case, specific circumstances can lead to a different conclusion. In other words, in Chiropractic clinical practice, the needs of the one outweigh the needs of the many or the 3rd party payer. In chiropractic clinical practice, the duty and responsibility of the clinician is to identify the spinal problem of the individual and develop solution strategies when and where possible.

In studies specifically considering the role of chiropractic treatment interventions, spinal radiographic views indicate that between 66%-91% of patients can have significant abnormalities affecting treatment:⁹¹⁻⁹³ 33% can have relative contraindications and 14% can have absolute contraindications to certain types of chiropractic adjustment procedures.⁹¹ Along this line, a review of 413 patient cases by Pryor and McCoy⁹² found a prevalence of 91% for anomalies and pathologies that might alter the chiropractic management of presenting patients. Similarly, in a review of 847 full spine patient radiographs, Beck et al⁹³ identified anomalies and pathologies in 68% of patients; at least 6% of these were considered absolute contraindications to certain types of chiropractic treatments.

Cost of Chiropractic Radiography

Over the past 25 years, there have been several publications comparing costs of Chiropractic care versus Medical care,⁹⁴⁻¹⁰⁸ but none have provided data on radiography. Most of these studies are comparisons for workers' compensation injuries,^{94-100,102,107} while only a few are for general practice conditions.^{101,104,108} We will only briefly report on 4 recent publications.¹⁰⁶⁻¹⁰⁹

In 1999, for radiographic interpretation of the lumbar spine and complete radiographic examination in an example adult female patient, Hess and Mootz¹⁰⁶ compared Chiropractors to Orthopedists, Physical Medicine, Osteopaths, Neurologists, Rheumatologists, and Radiologists. The work reported by DCs for obtaining, evaluating, and analyzing low back radiographs was higher than other specialties, but cost of services were not provided.

In a review of the literature in 2001, for occupational low back pain, Baldwin et al¹⁰⁷ stated that, “the current literature suggests that chiropractors and physicians provide equally effective care for OLBP but that that chiropractic patients are more satisfied with their care.” While radiographic costs were not directly mentioned, they stated that “Evidence on the relative costs of medical care and chiropractic care is conflicting.”¹⁰⁷

In 2005, Haas et al¹⁰⁸ reported on approximately 2,800 self-referring patients, who sought the services of DCs and MDs in Washington and Oregon. They did not separate “Office Costs” into its components, and thus, no inferences about radiographic costs can be made.

In 2006, Bussieres et al¹⁰⁹ wrote an article critical of radiation Hormesis, which was rebutted by Oakley et al.¹¹⁰ Bussieres et al¹⁰⁹ claimed that there is “high health care costs associated with unnecessary diagnostic radiography” and cited six studies from MD practices and hospitals in the UK and Canada.¹¹¹⁻¹¹⁶ This is a common error that critics of the use of radiography in chiropractic make, i.e., they cite medical studies for radiography utilization and then apply these studies to chiropractic practice. Radiography is of little use when your treatment is pharmacology (medication), advice, or generalized exercises. However, when the treatment is physical forces that are applied in manual therapy and chiropractic adjustments, radiography is a necessity for ruling out contraindicating pathologies to applying forces to the spine, accounting for anomalies that might alter physical forces applied, and for determining where spinal displacements are located in order to determine corrective physical forces.

In summary, while no direct evidence was located for costs of radiography in chiropractic practice, it seems obvious that chiropractors have relatively low costs of evaluation procedures and longer treatment care programs than MDs. MDs are higher in costs in examinations and evaluations and lower on the costs of treatment, unless surgery is provided, in contrast to DCs. We suggest that radiography costs in chiropractic care are minimal.

Summary

A few chiropractic radiologists and chiropractic academics are attempting to restrict and/or limit the use of chiropractic radiography in clinical practice to ‘red flag’ situations only. This attempt to limit the ability of chiropractic clinicians to use radiography in their treatment decisions of patient care is primarily driven by a cost-reducing model of health care and supported by use of a limited number of investigations using entirely different analysis and treatment regimens (standard pharmacology or physical therapy interventions) than those utilized by practicing chiropractors. Furthermore, these few chiropractic radiologists and academics utilize one sided literature presentations and Class V evidence (expert opinion) to claim spinal radiography has no place in spinal subluxation evaluation by chiropractic clinicians.

The current PCCRP expert panel of chiropractic clinicians deems initial spine radiography to be clinically warranted to evaluate the spine for subluxation (defined in Section V), contraindications to treatment, treatment modifications, and treatment applications in general. The PCCRP Guidelines presented in this document fulfill the void in this arena and are the needed supporting evidence to show that attempts at reducing Chiropractic legal privileges in the radiographic arena are unfounded (see Section XIII).

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