

Is Your Client's Back Pain “Rapidly Reversible”? Improving Low Back Care at Its Foundation

Ronald Donelson, MD, MS

ABSTRACT

Purpose/objectives: To convey a valuable and greatly misunderstood paradigm for evaluating and treating low back pain (LBP) and its extensive scientific evidence.

Primary practice setting(s): Low back pain is a highly prevalent and very expensive health dilemma. But by using a paradigm called Mechanical Diagnosis and Therapy (a.k.a. McKenzie methods), it is now possible to identify a very large LBP subgroup whose pain is rapidly reversible, meaning that it can often be eliminated quickly, with return to full function using a single, patient-specific direction of simple, yet precise, end-range low back exercises and some posture modifications. This interesting subgroup includes patients with both acute and chronic LBP as well as both LBP-only and sciatica with neural deficits.

Findings/conclusions: This special form of clinical assessment can detect which patients are in this large, rapidly reversible subgroup and which ones are not. Of the numerous studies targeting Mechanical Diagnosis and Therapy (MDT), three have focused on patients whose persisting pain had led to recommendations of disc surgery where 50% were then found to still have a rapidly reversible disc problem with high rates of nonsurgical rapid recovery. If patients are never assessed in this way, this reversibility remains undiscovered and these patients commonly undergo potentially unnecessary surgery.

Implications for case management practice: Armed with knowledge of this subgroup, how to identify it, the considerable supportive scientific evidence and strongly beneficial implications of utilizing this MDT paradigm, case managers are positioned to have an immensely positive impact on the care of LBP. Tremendous cost savings and greatly improved clinical outcomes are available by utilizing this form of evidence-based MDT care.

Key words: *centralization, directional preference, low back pain, rapidly reversible, sciatica*

For most healthcare professionals, the management of low back pain (LBP) is a complex topic. Unknown to most, however, are important developments that are providing far greater recovery success for many who suffer with LBP, if provided the opportunity to engage such care. That is precisely where case managers can play such a positive role.

Unknown to most LBP specialists, researchers, payers, and patients, the majority of LBP is *rapidly reversible!* That means most LBP can recover fairly quickly. Determining who has rapidly reversible LBP and who does not is actually fairly easy but it requires a special form of clinical examination that determines the mechanical characteristics, or lack thereof, of a patient's underlying pain-generating problem. This form of examination typically reveals simple yet precise, inexpensive yet effective, path-

ways to rapidly reverse the underlying problem and thereby bring about rapid recovery from the current pain while simultaneously identifying how to effectively prevent recurrences. That is great news for all LBP stakeholders, especially the patients—your clients.

Consider also that there are two types of pain that need relief: the physical LBP and the economic pain of those footing the bill—those who pay exorbitantly high costs for low back care.

Most impressive is the abundance of scientific evidence that substantiates the validity of this *rapidly*

Address correspondence to Ronald Donelson, MD, MS, Self Care First, LLC, 13 Gibson Road, Hanover, NH 03755 (donelson@selfcarefirst.com).

The MDT approach is fundamentally based on the findings of this (MDT) assessment that essentially just listens to the patient: both their pain response history and their report of their pain response during the physical assessment. Simply put, the single direction of testing that decreases the patient's pain becomes the treatment focus, while that which makes the pain worse is temporarily avoided or minimized.

reversible LBP. This evidence begins with reliability in identifying these patients and progresses to validity studies that report superior outcomes for this large subgroup in multiple randomized clinical trials (RCTs) that remain unacknowledged in LBP clinical guidelines.

So let us begin by briefly looking at our challenges in dealing with LBP.

THE LOW BACK PAIN DILEMMA

As you know, there is such wide diversity in how LBP is treated today. This variation has its roots in the manner in which many clinical disciplines that treat LBP conduct their initial assessments and select their treatments (Cherkin, Deyo, Wheeler, & Ciol, 1994). In the 1987 Quebec Task Force (QTF) Report issue of *Spine*, it is stated: "There is so much variability in making a diagnosis that this initial step routinely introduces inaccuracies which are then further confounded with each succeeding step in care," adding that the resulting terminology used for diagnosis "is the fundamental source of error ... Faced with uncertainty, physicians become inventive" (Spitzer, LeBlanc, & Dupuis, 1987, p. 58).

Of course, all disciplines agree that the *first priority* during initial LBP assessment is to ask pertinent history questions regarding more serious, insidious sources of pain (tumor, infection, aneurysm, etc.), often referred to as "red flags" (Bigos et al., 1994; Waddell et al., 1982). *The next priority* is to seek for the only recognized element of the conventional physical examination with any documented reliability and diagnostic power: identifying nerve root compression from a herniated lumbar disc (Deyo, Rainville, & Kent, 1992; Waddell et al., 1982). Remarkably, that is all that is covered in clinical guidelines regarding the clinical assessment of LBP.

Yet together, these two categories comprise no more than 15% of the whole LBP population.

Beyond identifying these two small LBP subgroups, clinicians treating low back pain utilize an assortment of history-taking and examination elements that have either never been tested or, if tested, have actually shown little, if any, reliability or validity. In reality, many of these assessment elements are used to justify some of those "inventive" diagnoses referred to by the QTF that in turn often justify clinicians' use of their favorite treatments, many of which likewise have little scientific support for their efficacy. Understandably, clinicians' explanations and models of pain production, which are often just as inventive, are routinely embraced by impressionable patients.

For example, consider two means of evaluating LBP that are in common use: palpation, which is feeling for spinal and soft-tissue (muscle) abnormalities using one's fingers and hands, and spinal imaging, that is, computed tomography (CT) and magnetic resonance imaging (MRI) scans. Palpation has been shown in numerous LBP studies to have poor interexaminer reliability (Gonnella, Paris, & Kutner, 1982; Potter & Rothstein, 1985; Riddle & Freburger, 2002), that is, two clinicians cannot examine the same patient and agree on their palpation findings. Nevertheless, palpation remains in very common use today, often serving as a justification for specific treatments, especially manual interventions like manipulation.

It is noteworthy, however, that those manual tests intended to provoke the patient's pain, rather than simply detecting differences by feeling with the hands, have shown good reliability. But even when reliability is established, tests must also be validated in some way to justify their use.

As far as lumbar x-rays, CT, and MRI scans, the high prevalence of false-positive findings (Boden, Davis, & Dina, 1990; Boos et al., 1995; Jensen et al., 1994) has not deterred their widespread, and even inappropriate, use in making both diagnostic and treatment decisions. Patients rightfully ask, how could our latest and greatest imaging technology not show us what is wrong inside our backs? It is important to understand that many things seen in images as so-called *abnormalities* are very often seen in the images of those with no back pain at all. So how do we know what is painful and what is not? How do we make reliable decisions regarding care?

EMERGING DEVELOPMENTS IN PATIENT ASSESSMENT

A form of clinical assessment that has been providing new and valuable insights into LBP and its treatment is, in fact, not new at all. It was first brought

BOX 1 MDT Lexicon

Mechanical Diagnosis and Therapy (MDT)—a.k.a. McKenzie methods: an evidence-based, patient-centered, clinical assessment that monitors individuals' patterns of pain response to standardized end-range mechanical testing that direct treatment that teaches patients how to eliminate and then prevent their own pain.

Centralization: a commonly elicited pattern of pain response during MDT assessment; when pain radiating away from the spine retreats back toward or to the midline in response to a single direction of sustained or repeated end-range spinal testing.

Centralizer: an individual whose pain is found to centralize during an MDT assessment.

Noncentralizer: an individual for whom a means of centralizing his or her pain cannot be found during an MDT assessment.

Directional preference: the single direction of spinal bending tests that causes an individual's pain to centralize or abolish during an MDT assessment. Midline-only pain cannot centralize (it is already central) but usually has a directional preference (DP) that eliminates that midline pain.

Extension, flexion, lateral directional preferences: three different directions of spinal testing that may centralize or abolish a patient's pain. Extension = bending backward; Flexion = bending forward; Lateral = side-bending, side-gliding, or lumbar rotation.

Directional exercises: end-range movements performed repeatedly in the direction that matches an individual's DP; used to gain control of, eliminate, and then prevent low back and referred pain.

Posture strategies: modifications in posture, especially sitting, that is compatible with an individual's DP (i.e., slouched sitting is lumbar flexion while walking is relative extension). Many benefit from temporarily sitting erectly to avoid their pain. Such posture modifications are vital to gaining control of, and preventing, low back and radiating pain.

to our attention by McKenzie, a physiotherapist from New Zealand, in his first text published more than 25 years ago and his expanded 2003 edition (McKenzie & May, 2003). In recent years, this paradigm of care, which includes both an assessment and the subsequent treatment, has become better known as "Mechanical Diagnosis and Therapy" (MDT) (see MDT Lexicon, Box 1).

The assessment itself focuses on monitoring patients' pain response (prompt changes in their pain

intensity and location), first as related by patients in their history of their back's response to various positions, movements, and activities, but then also during a systematic mechanical examination where each patient performs a sequence of repeated end-range spinal test movements and positions, bending their back in different directions to the extent their pain permits (Figure 1). During, and as a result of this testing, several different patterns of changes in pain location and intensity are common, some very

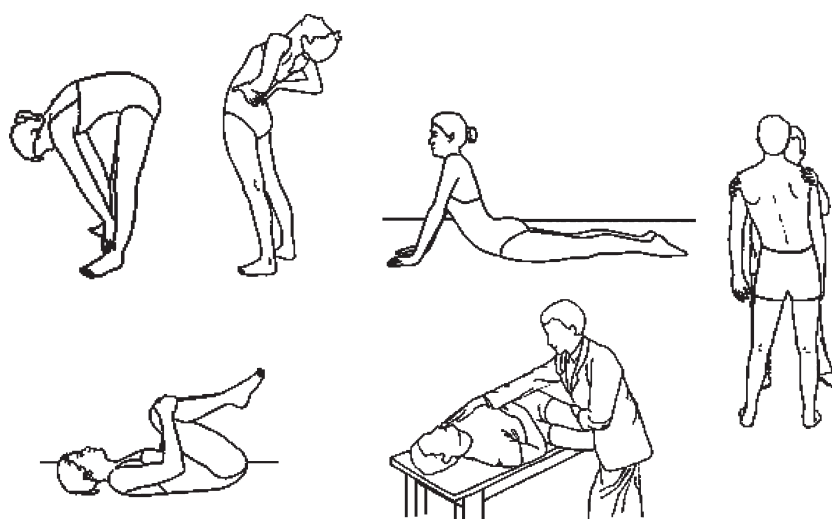


FIGURE 1

Six of the end-range lumbar test movements used in MDT assessment to elicit immediate pain responses and changes in range of motion. Clockwise from upper left: standing flexion, standing extension, prone extension, standing side-gliding, supine flexion-rotation, and supine flexion.

common. As you will see, identifying this information is well worth the patient finding a clinician who has invested in the training required to become proficient in conducting this form of assessment.

It is from each patient's history and their clinical findings from performing these *repeated end-range* spinal test movements that a patient-specific single direction of spinal bending movement emerges that reflects that their pain and their underlying disorder is *rapidly reversible*. Specifically, a single direction of test movements is commonly found, which promptly decreases the extent of their referred or radiating pain. That is, as the result of performing end-range tests in a single direction, pain that has spread or moved away from the lumbar region decreases and becomes less peripheral and more proximal or central in its location, often even fully abolishing.

This progressive decrease in the distal spread of the pain radiation is called "centralization" (Figure 2). Again, this beneficial pain response typically occurs with only a single direction of testing in each patient, most often with lumbar extension (backward bending). This single direction is referred to as the patient's "directional preference" (DP) (Donelson, Grant, Kamps, & Medcalf, 1991).

Importantly and wonderfully, this prompt improvement usually persists after that single direction of testing has concluded, as though the pain generator had somehow been altered in some beneficial and lasting way by those movements. Particularly impressive are the great number of patients with pain radiating all the way down to their calf or foot, even accompanied by neural deficits related to intervertebral disc herniations and nerve root compression, who can also rapidly centralize and sometimes even eliminate their radiating pain during their assessment. This was first documented in 34 presurgical patients with sciatica with neural deficits who proved to have

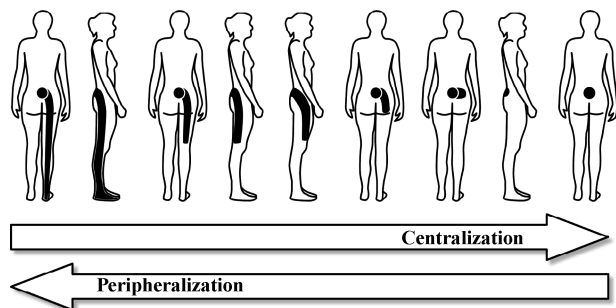


FIGURE 2

The term "*centralization*" refers to the retreat of radiating pain back toward the lumbar midline (see top arrow), usually the result of performing a single direction of repeated end-range lumbar movements. "*Peripheralization*" refers to the spread of pain further from the lumbar midline (see bottom arrow).

rapidly reversible disc pathology (Kopp, Alexander, Turocy, Levrini, & Lichtman, 1986).

When centralization and a DP are elicited during assessment, treatment then is quite logical. Patients are taught to perform simple but precise directional end-range movements as pain-centralizing or pain-relieving, self-treatment "exercises." By doing so several times a day, while also temporarily avoiding movements or positions that bend and position the low back in the opposite direction, recovery is often quite rapid. The benefit of making temporary posture modifications becomes quickly clear to both the clinician and the patient during the assessment when test movements performed in the direction opposite to the patient's DP consistently aggravate the pain we are seeking to eliminate.

Therefore, the MDT approach is fundamentally based on the findings of this assessment that essentially just listens to the patient: both their pain response history and their report of their pain response during the physical assessment. Simply put, the single direction of testing that decreases the patient's pain becomes the treatment focus, whereas that which makes the pain worse is temporarily avoided or minimized. Every clinician trained in MDT implements this type of patient-centric care from day 1 of their patient care until discharge, with the discharge goal of complete pain elimination, restoration of full activities, and a working knowledge of how to prevent future episodes.

Patient-Centric Treatment as Well

An extremely attractive feature of the MDT form of care is that these rapid improvements are routinely produced by the patients themselves. They are not due to the passive care of the examining or treating clinician. First, the clinician guides and interprets the assessment using test movements performed principally by the patient. But patients—whose pain reverses quickly (centralizes or abolishes)—learn how, and just as importantly why, to perform those beneficial, patient-specific directional exercises and postural changes.

This quickly and very effectively empowers patients to realize for the first time that they have just found a way to control and even eliminate their own back problem, rather than being at its mercy. The ultimate goal of this form of care is to bring patients to the point of self-sufficiency and independence of the healthcare system, first because they have rapidly recovered, but long-term as well, because they have also learned how to prevent or at least minimize any recurrences.

This highly desirable goal of both rapid and long-term patient independence is unique in today's

So the pertinent question every case manager should be asking whenever disc surgery is being considered is: has the patient had the benefit of undergoing a good MDT evaluation for centralization and DP?

clinical environment that is so replete with passive treatments that either directly or indirectly promote patient dependency on clinicians' modalities, mobilization, manipulation, injections, surgery, and "too often" reoperations. The most important part of each patient's successful treatment is their education, mostly through their personal experience eliminating their own pain by performing their own direction-specific exercises and/or posture strategies at home or at work. Most patients quickly learn what turns off their pain and what has been allowing it to return and persist.

Most LBP clinical guidelines recommend that we reassure our acute LBP patients of their likely recovery. What could be more reassuring than to show them that they actually have complete control over their problem, indeed, that they can eliminate their pain and even prevent its return?

Because written descriptions of this form of assessment (McKenzie & May, 2003) are readily available, as are continuing educational opportunities for clinicians interested in learning more about MDT (McKenzie), this article will examine the growing body of scientific literature that will better enable and justify the case manager to recommend this form of care to your clients. The clinical efficacy of MDT is well documented, although most clinicians remain unfamiliar with the literature, and has often been overlooked by most LBP clinical guidelines. Many involved in writing LBP clinical guidelines have such confidence in their view and understanding of LBP that they have difficulty entertaining evidence that might put their paradigm in peril.

HOW OFTEN DOES PAIN CENTRALIZE WITH A DIRECTIONAL PREFERENCE?

It is this intriguing *rapidly reversible LBP*, that is, pain centralization and patients' DP, which has attracted the most research attention. Multiple studies report that centralization and DP are found in 70%–87% of patients with recent onset LBP but it is also elicited in 50% or more of patients with

chronic LBP. That is remarkable. But *rapidly reversible LBP* is not only commonly found in those with LBP-only, that is nonspecific LBP or even with so-called degenerative disc disease, but also in those with sciatica and neural deficits.

It is intriguing, even mind-boggling, to think that such a wide spectrum and such high numbers of LBP victims could have so much in common and that each member of this large, but conventionally diverse group can be empowered to take control of, and rapidly reverse, their own painful condition. Many will appropriately ask—if this is true, why do more doctors, therapists, and chiropractors not know and use these methods? Answering that question is complex and more than this article can cover. I attempt to answer this question elsewhere (Donelson, 2007). But let us now explore the studies that demonstrate the degree to which patient outcomes are improved for this large centralizing/DP subgroup.

THE SUBSTANTIAL AND GROWING MDT EVIDENCE-BASE

The Reliability of Discovering Rapidly Reversible LBP

Interexaminer reliability is the most fundamental form of clinical research when researching clinical populations and subgroups. If there is poor agreement in identifying or classifying the kind of problem a patient has, there will then be poor agreement on whether a given patient is the right type to either receive a particular treatment or enter a research study. Recall the Quebec Task Force Report's quote about so much variability during the diagnosis that this initial step routinely introduces inaccuracies that are further confounded with each succeeding step in care. (Spitzer et al., 1987). That high variability is the direct result of poor interexaminer reliability in how most LBP patients are evaluated and then classified.

By contrast, when it comes to studying the reliability of clinicians agreeing on the presence or absence of centralization and DP, and therefore *rapidly reversible LBP*, there are at least eight studies reporting high reliability for clinicians trained in MDT. This enables far higher quality research than simply continuing to limit ourselves to the study of the large heterogeneous subgroup so often called "nonspecific LBP." Similarly, why would anyone study and try to treat nonspecific chest pain when it is possible to distinguish cardiac pain from respiratory chest pain? We treat cardiac pain with cardiac-specific interventions. The futility of thinking of 85% of LBP as nonspecific is becoming more and more apparent, and

RCTs of nonspecific LBP will become an obsolete phase of LBP's clinical research history.

Patient Outcomes Are Improved by Identifying Centralization and DP

Current LBP clinical guidelines advocate the use of a one-size-fits-all, nonspecific brand of care that merely encourages patients to remain active while providing reassurance of likely recovery. Meanwhile, unacknowledged so far in these guidelines are eight observational cohort studies (Delitto, Cibulka, Erhard, Bowling, & Tenhula, 1993; Donelson, Silva, & Murphy, 1990; Karas, McIntosh, Hall, Wilson, & Melles, 1997; Long, 1995; Long, Donelson, & Fung, 2004; Sufka et al., 1998; Werneke & Hart, 2001; Werneke, Hart, & Cook, 1999), four randomized controlled trials (Brennan et al., 2006; Browder, Childs, Cleland, & Fritz, 2007; Long et al., 2004; Schenk, Jazefczyk, & Kopf, 2003), and three systematic reviews (Aina, May, & Clare, 2004; Clare, Adams, & Maher, 2004; Cook, Hegedus, & Ramey, 2005). They collectively report that carrying out these assessment-determined directional treatment strategies produces good or excellent outcomes in the great majority of centralizers, again whether they are acute or chronic and whether they have LBP-only or sciatica with neural deficits.

The three systematic reviews of centralization are all favorable (Aina et al., 2004; Clare et al., 2004; Cook et al., 2005). One concludes that "Without question, the evidence suggesting inclusion of the centralization phenomenon in a spinal evaluation and as a classification criterion is quite compelling" (Cook et al., 2005).

Given centralization's high prevalence in such a broad spectrum of patients, coupled with patients' excellent outcomes with proper treatment, it is understandable why this specialized form of assessment is not only the cornerstone of MDT methodology but is becoming an essential component of many clinicians' initial LBP evaluation.

Unnecessary Disc Surgery Versus Recoveries at the 11th Hour

From every LBP stakeholder's perspective, the decision whether or not to perform some form of disc surgery, whether discectomy, fusion, or arthroplasty, carries substantial health and economic consequences. The rates of performing fusions and arthroplasties have grown far faster than can be justified from the equivocal published data regarding the benefits of these procedures (Weinstein, Lurie, Olson, Bronner, & Fisher, 2006). To further complicate this

decision, the economic incentives for surgeons to perform these procedures are substantial.

Meanwhile, patients vary in their views and preferences regarding surgical care versus nonsurgical care. Some wish to avoid surgery and its risks if at all possible, being willing to put up with their symptoms hoping they will improve over time, while others are more attracted to the quicker recovery that surgery seems to offer. To provide more objective and balanced information about their options, so-called "shared decision-making" programs attempt to present the pros and cons of both surgical and nonsurgical treatments in a standardized, balanced format, most often using video. Unfortunately, the authors of such presentations remain silent about the existence of, and the ability to reliably identify rapidly reversible disc pain. It has yet to be mentioned in any of these presentations as an assessment option before undergoing surgery.

But just how many of these presurgical patients might still have an *undiscovered* rapidly reversible disc disorder? If this were my wife's, family member's, my, or my patient's back, I would want to know whether the problem might still be reversible, since the evidence is very strong that, if the pain can be centralized, recovery is very likely, often rapid, and surgery would obviously be unnecessary. Can such rapid recoveries still occur in these advanced disc pathologies? Let us look at more data.

The very first study on centralization reported that the radiating pain of 87% of consecutive *acute* LBP patients centralized during their MDT assessment along with more than 80% of those with pain for more than 3 months (Donelson et al., 1990). All but one (98%) of the acute centralizers fully recovered by the time of discharge from outpatient physical therapy. This was an uncontrolled and retrospective study, but this rate of recovery was far higher and far quicker than the best LBP natural history data or regression-to-the-mean would ever predict. What was also noteworthy was that the four patients in this study who required disc surgery were all noncentralizers in their baseline MDT evaluation. Three had extruded discs on imaging and at surgery and the fourth had a positive discogram and did very well with a single-level interbody fusion.

It is reasonable to infer that noncentralizers likely have an irreversible disc problem that might do well only with surgery. Indeed, all four of these patients had good surgical outcomes. And importantly, of all those centralizing patients who also had such excellent outcomes, how many would otherwise have had persistent pain that would have led them to the point of also undergoing surgery? To answer this, more data are required.

Four subsequent studies shed direct light on this question by studying patients who had reached the point in their care where disc surgery was being contemplated (Donelson, Aprill, Medcalf, & Grant, 1997; Kopp et al., 1986; Laslett, Öberg, Aprill, & McDonald, 2005; Rasmussen, Nielsen, Hansen, Jensen, & Schioetz-Christensen, 2005). Kopp et al., studied 67 patients with sciatica, neurological loss, and a blockage of lumbar extension movement that were not improving with outpatient care (Kopp et al., 1986). These patients had been admitted to the hospital for consideration of disc surgery by their surgeons who had heard McKenzie's theory that extension exercises might reduce and restore posteriorly displaced disc nuclear content to a more anterior, that is, more normal, position, in effect moving it forward, away from the pain-generating nerve root.

Accordingly, each patient was instructed to perform simple repeated prone lumbar extension movements to the extent they could, as a test (Figure 3), to see how their pain would respond. About one half ($N = 34$, 52%) reported that their pain either improved or at least did not worsen during or as a result of that testing and those patients were instructed to perform sets of these prone extension exercises several times a day during the next few days of their hospitalization.

Within 2–5 days, all 34 patients reported complete reversal of their painful condition. They regained their full extension range of movement and completely resolved their symptoms. Surgery was obviously no longer even a consideration. Of the rest, whose pain was aggravated by the initial extension testing, all but one underwent surgical removal of their herniated disc. Moreover, if all these patients had never been provided the opportunity for this type of testing, most would likely have undergone surgery, never knowing it was unnecessary.

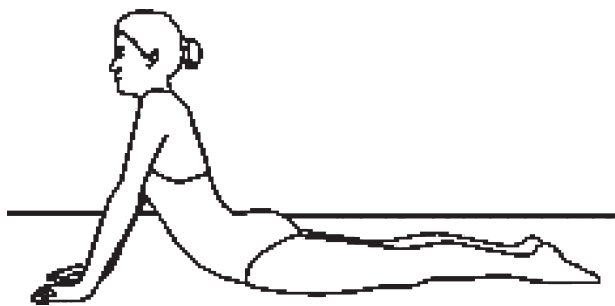


FIGURE 3

The prone "press-up" is performed with repetitions with the lower back entirely relaxed and sagging maximally with gravity assistance throughout the movement. This explores end-range lumbar extension and is often performed during testing in sets of 10 while monitoring the effect on patients' pain location and intensity.

There is one more important consideration. Other studies have shown that 10%–30% of LBP patients have a *lateral* DP rather than extension, that is, their pain centralizes with test movements in a lateral direction (Donelson et al., 1991; Kilpikoski et al., 2002). Like all centralizers with a DP, these patients also have a good prognosis for recovery without surgery if treated appropriately. That then raises this important question: how many others in the Kopp et al., study could also have avoided surgery if these surgeons had known to test in directions other than just extension or to even evaluate the several variations of extension testing that are sometimes required to centralize pain?

So the pertinent question every case manager should be asking whenever disc surgery is being considered is—has the patient had the benefit of undergoing a good MDT evaluation for centralization and DP?

Two other studies reported similar MDT assessment findings in patients with chronic LBP who had unremarkable MRIs and were therefore referred for discography to evaluate the presence or absence of painful internal disc pathology (Donelson et al., 1997; Laslett et al., 2005). A positive discogram commonly provides the essential justification for recommending a spine fusion or disc replacement. Both study protocols had patients undergo an MDT examination immediately prior to their discogram with the pain of 49% and 32% respectively centralizing in these two studies. These substantial percentages for those contemplating surgery are extremely relevant and important given less-than-stellar fusion and arthroplasty outcomes, including the unacceptable rates of reoperations.

Unfortunately, most spine surgeons are unfamiliar with MDT assessment and centralization and have historically had little interest in those eight cohort and four RCTs that all report that centralizers do very well when treated with matching directional exercises and posture strategies.

One other study reported the impact on disc surgery rates after introducing MDT (McKenzie care) to patients with sciatica lasting more than 1 month (Rasmussen et al., 2005). In 1997, every general practitioner in one specific county in Denmark began referring all patients with sciatica to one of two new spine clinics where MDT played a prominent role. Over the next 4 years, the number of first-time disc surgeries in that county decreased by two thirds, whereas disc surgery rates across the rest of Denmark remained unchanged. Through personal communication, one of the doctors in the clinic indicated that those results were largely related to the large numbers who responded so well to MDT care.

These studies all report that a substantial percentage of disc surgery candidates in each case manager's community are likely to be undetected centralizers who still have an excellent prognosis if detected and treated properly. Thus, a strong case can be made that an MDT assessment becomes an essential, even mandated, part of the surgeon's mantra of "exhausting all conservative care" before entertaining surgical intervention.

Given the high cost of low back care, one can easily justify this same line of thinking to seek, even insist on, an MDT evaluation before performing any expensive and possibly unnecessary test or treatment, that is, CTs, MRIs, injections, or other potentially unnecessary, expensive intervention in this large LBP subgroup.

RANDOMIZED CLINICAL TRIALS

The studies reviewed thus far are routinely overlooked by LBP clinical guideline panels using the justification that they are not RCTs. Consequently, there has been little or no interest in centralization as a clinical finding. Subgroup-specific care, though stated by some to be a top research priority (Borkan, Koes, Reis, & Cherkin, 1998; Bouter, Pennick, & Bombardier, 2003), contradicts the strongly held conventional view that 85% of LBP is nonspecific that recovers best with nonspecific care consisting of activity and reassurance of recovery. The tension between subgroup identification and the satisfaction with labeling most LBP as "nonspecific" is growing. Because of exclusion from clinical guidelines, these studies and their important message remain unknown to a high percentage of LBP stakeholders.

But now four published RCTs all report that identifying centralizers and treating them with matching directional exercises and posture modifications greatly improves outcomes (Brennan et al., 2006; Browder et al., 2007; Long et al., 2004; Schenk et al., 2003).

One of these RCTs is worth a second look because of the wide range of LBP patients that entered the study: acute, subacute, chronic, LBP-only, and those with sciatica, even with neural deficits (Long et al., 2004). Across this wide spectrum of patients, 74% were found to have a DP during their initial testing. Of those, 81 were randomized to treatment with matching directional exercises. In just 2 weeks, 100% of patients with acute LBP reported that their pain was either resolved (90%) or improved (10%), 91% of patients with chronic LBP said that their pain had either resolved (30%) or improved (61%), 100% with LBP-only were either resolved (51%) or improved (49%), and 83% of those with sciatica and a neural deficit were either resolved (33%) or im-

proved (50%). Such remarkable percentages for just a 2-week intervention parallels the clinical experience of most trained MDT clinicians.

CASE MANAGEMENT'S OPPORTUNITY FOR IMPACT

To positively influence patient care, case managers need evidence-based, defensible information. Armed with such information, your profession can make a great contribution in positively influencing low back care at its foundation, as case managers impact individuals in their communities who are otherwise so vulnerable to undergoing high-risk, expensive, and often ineffective imaging and treatments.

In closing, permit me to make some suggestions:

1. Arm yourselves with more knowledge of, and even experience with, MDT clinical methods (McKenzie care), the extensive evidence supporting its use, and why it is not included in most LBP clinical guidelines as yet.
 - a. Read *Rapidly Reversible Low Back Pain* (Donelson, 2007) where these and many other relevant topics are covered in some length: the story of *rapidly reversible LBP*, its causes, solutions, and the compelling scientific evidence supporting the use of MDT.
 - b. Attend a 4-day Part A lumbar course presented by The McKenzie Institute. This course schedule and locations can be found at www.mckenziemdt.org.
 - c. Identify the best trained MDT clinician(s) in your community and begin to establish a relationship. To locate them, go to The McKenzie Institute's Web site (www.mckenziemdt.org) and locate the listing of MDT Credentialed and Diplomaed (DipMDT) clinicians in your area. If no one is listed in your area, then call various clinics in your community to inquire which physical therapists or chiropractors have completed some or all of the McKenzie Institute courses (there are five) and are working toward taking the MDT credentialing examination. While you are at it, encourage them all to pursue further MDT education on behalf of your clients. Visit a Credentialed or Diplomaed clinician's clinic to observe one or two MDT lumbar evaluations. There is a high likelihood that you will be able to observe pain centralization and rapidly reversible low back or neck pain first-hand. It is often quite impressive when it happens. If it does not occur while you are there, you will still benefit from observing how patients with LBP are assessed, classified, and then either treated or referred back for alternative care.

2. If you are impressed with what you read and see, begin to facilitate direct referrals of a few of your clients with LBP as early in their care as possible to one of these trained MDT clinicians and observe them. The high quality and standardization of these clinicians' education, as well as their commitment to helping patients toward self-care, will be self-evident.
3. Try to establish and facilitate relationships between the MDT clinicians and more of the physicians and surgeons in your community. The most successful, comprehensive back care I see, and have personally been a part of, is when a physician or surgeon and an MDT clinician collaborate in their assessment findings at the baseline for decision making regarding the most appropriate treatment.

In conclusion, one of the greatest economic losses, and some of the most unfortunate, even tragic, clinical outcomes, occurs when patients who are centralizers with a DP remain undiscovered because they are never provided the opportunity to undergo a proper MDT assessment. Such omissions occur daily in far too many offices and clinics in every community across our country. Many patients consequently go on to *unnecessary* chronicity, specialist referrals, imaging, injections, surgery, and sometimes even multiple surgeries. A simple, inexpensive MDT assessment enables so many patients to discover how they can recover rapidly and remove themselves from further need of the healthcare system. Well-informed case managers are positioned to facilitate this form of assessment enabling their LBP clients to discover who has, and who does not have, rapidly reversible LBP.

REFERENCES

- Aina, S., May, S., & Clare, H. (2004). The centralization phenomenon of spinal symptoms—a systematic review. *Manual Therapy*, 9, 134–143.
- Bigos, S., Bowyer, O., Braen, G., Brown, K., Deyo, R., Haldeman, S., et al. (1994). *Acute low back problems in adults: Clinical practice guidelines, quick reference guide no. 14*. Rockville, MD: U.S. Department of Health and Human Services, Agency for Health Care Policy and Research.
- Boden, S., Davis, D., & Dina, T. (1990). Abnormal magnetic-resonance scans of the lumbar spine in asymptomatic subjects: A prospective investigation. *Journal of Bone and Joint Surgery*, 72, 403–408.
- Boos, N., Rieder, R., Schade, B., Spratt, K., Semmer, N., & Aebi, M. (1995). The diagnostic accuracy of magnetic resonance imaging, work perception, and psychosocial factors in identifying symptomatic disc herniations. *Spine*, 20, 2613–2625.
- Borkan, J., Koes, B., Reis, S., & Cherkin, D. (1998). A report from the second international forum for primary care research on low back pain: Reexamining priorities. *Spine*, 23, 1992–1996.
- Bouter, L., Pennick, V., & Bombardier, C. (2003). Cochrane back review group. *Spine*, 28, 1215–1218.
- Brennan, G., Fritz, J., Hunter, S., Thackeray, A., Delitto, A., & Erhard, R. (2006). Identifying subgroups of patients with acute/subacute “nonspecific” low back pain. Results of a randomized clinical trial. *Spine*, 31, 623–631.
- Browder, D., Childs, J., Cleland, J., & Fritz, J. (2007). Effectiveness of an extension-oriented treatment approach in a subgroup of patients with low back pain: A randomized clinical trial. *Physical Therapy*, 87, 1–11.
- Cherkin, D., Deyo, R., Wheeler, K., & Ciol, M. (1994). Physician variation in diagnostic testing for low back pain: Who you see is what you get. *Arthritis and Rheumatism*, 37, 15–22.
- Clare, H., Adams, R., & Maher, C. (2004). A systematic review of efficacy of McKenzie therapy for spinal pain. *Australian Journal of Physiotherapy*, 50, 209–216.
- Cook, C., Hegedus, E., & Ramey, K. (2005). Physical therapy exercise intervention based on classification using the patent response method: A systematic review of the literature. *Journal of Manipulative and Physiological Therapeutics*, 13, 152–162.
- Delitto, A., Cibulka, M., Erhard, R., Bowling, R., & Tenhula, J. (1993). Evidence for an extension-mobilization category in acute low back syndrome: A prescriptive validation pilot study. *Physical Therapy*, 73, 216–228.
- Deyo, R., Rainville, J., & Kent, D. (1992). What can the history and physical examination tell us about low back pain? *Journal of American Medical Association*, 268, 760–766.
- Donelson, R. (2007). *Rapidly reversible low back pain: An evidence-based pathway to widespread recoveries and savings*. Hanover, NH: SelfCare First, LLC.
- Donelson, R., Aprill, C., Medcalf, R., & Grant, W. (1997). A prospective study of centralization of lumbar and referred pain: A predictor of symptomatic discs and annular competence. *Spine*, 22, 1115–1122.
- Donelson, R., Grant, W., Kamps, C., & Medcalf, R. (1991). Pain response to end-range spinal motion in the frontal plane: A multi-centered, prospective trial. International Society for the Study of the Lumbar Spine. Heidelberg, Germany.
- Donelson, R., Grant, W., Kamps, C., & Medcalf, R. (1991). Pain response to repeated end-range sagittal spinal motion: A prospective, randomized, multi-centered trial. *Spine*, 16, 206–212.
- Donelson, R., Silva, G., & Murphy, K. (1990). The centralization phenomenon: Its usefulness in evaluating and treating referred pain. *Spine*, 15, 211–213.
- Gonnella, C., Paris, S., & Kutner, M. (1982). Reliability in evaluating passive intervertebral motion. *Physical Therapy*, 62, 437.
- Jensen, M., Brant-Zawadzki, M. N., Obuchowski, N., Modic, M. T., Malkasian, D., & Ross, J. S. (1994). Magnetic resonance imaging of the lumbar spine in

- people without back pain. *New England Journal of Medicine*, 331, 69–73.
- Karas, R., McIntosh, G., Hall, H., Wilson, L., & Melles, T. (1997). The relationship between non-organic signs and centralization of symptoms in the prediction of return to work for patients with low back pain. *Physical Therapy*, 77, 354–360.
- Kilpikoski, S., Airaksinen, O., Kankaanpää, M., Leminen, P., Videman, T., & Alen, F. (2002). Interexaminer reliability in low back pain assessment using the McKenzie method. *Spine*, 27, E207–E214.
- Kopp, J., Alexander, A., Turocy, R., Levrini, M., & Lichtman, D. (1986). The use of lumbar extension in the evaluation and treatment of patients with acute herniated nucleus pulposus, a preliminary report. *Clinical Orthopedics*, 202, 211–218.
- Laslett, M., Öberg, B., Aprill, C., & McDonald, B. (2005). Centralization as a predictor of provocation discography results in chronic low back pain, and the influence of disability and distress on diagnostic power. *The Spine Journal*, 5, 370–380.
- Long, A. (1995). The centralization phenomenon: Its usefulness as a predictor of outcome in conservative treatment of chronic low back pain. *Spine*, 20, 2513–2521.
- Long, A., Donelson, R., & Fung, T. (2004). Does it matter which exercise? A randomized controlled trial of exercise for low back pain. *Spine*, 29, 2593–2602.
- McKenzie, R., & May, S. (2003). *Mechanical diagnosis and therapy*. Waikanae, New Zealand: Spinal Publications New Zealand Ltd.
- Potter, N., & Rothstein, J. (1985). Intertester reliability for selected clinical tests of the sacroiliac joint. *Physical Therapy*, 65, 1671–1675.
- Rasmussen, C., Nielsen, G., Hansen, V., Jensen, O., & Schioetz-Christensen, B. (2005). Rates of lumbar disc surgery before and after implementation of multidisciplinary nonsurgical spine clinics. *Spine*, 30, 2469–2473.
- Riddle, D., & Freburger, J. (2002). Evaluation of the presence of sacroiliac joint region dysfunction using a combination of tests: A multicenter intertester reliability study. *Physical Therapy*, 82, 772–781.
- Schenk, R., Jazefczyk, C., & Kopf, A. (2003). A randomized trial comparing interventions in patients with lumbar posterior derangement. *Journal of Manipulative and Physiological Therapeutics*, 11, 95–102.
- Spitzer, W., LeBlanc, F., & Dupuis, M. (1987). Scientific approach to the assessment and management of activity-related spinal disorders (The Quebec Task Force). *Spine*, 12, S8.
- Sufka, A., Hauger, B., Trenary, M., Hagan, A., Lozon, R., & Martens, B. (1998). Centralization of low back pain and perceived functional outcome. *Journal of Orthopedics and Sports Physical Therapy*, 27, 205–212.
- Waddell, G., Main, C., Morris, E., Venner, R., Rae, P., & Sharmy, S. (1982). Normality and reliability in the clinical assessment of backache. *British Medical Journal*, 284, 1519–1523.
- Weinstein, J., Lurie, J., Olson, P., Bronner, K., & Fisher, E. (2006). United States' trends and regional variations in lumbar spine surgery: 1992–2003. *Spine*, 31, 2707–2714.
- Werneke, M., & Hart, D. L. (2001). Centralization phenomenon as a prognostic factor for chronic low back pain and disability. *Spine*, 26, 758–765.
- Werneke, M., Hart, D. L., & Cook, D. (1999). A descriptive study of the centralization phenomenon. A prospective analysis. *Spine*, 24, 676–683.

Ronald Donelson, MD, MS, DipMDT, is a board-certified orthopedic surgeon who specialized in nonoperative spine care for 20 years in both private practice and at The Institute for Spine Care at the State University of New York in Syracuse. His numerous research publications and frequent presentations around the world focus on the assessment, classification, and nonoperative treatment of neck and low back pain. His recently published book, *Rapidly Reversible Low Back Pain*, can be accessed at www.amazon.com or www.optp.com. He is an Advisory Editor with the journal *Spine*, member of the International Society for the Study of the Lumbar Spine, the North American Spine Society, active with the International Forum for Primary Care Research in Low Back Pain, and is the current vice president of the American Back Society.