A Literature Review:
An Analysis of the Over-imaging of Low Back Pain

By
JoAnn Mary Birdsall, RN, BScN

CULMINATING PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

MASTER OF NURSING-NURSE PRACTITIONER

In
THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
School of Nursing

THE UNIVERSITY OF BRITISH COLUMBIA

© JOANN MARY BIRDSALL
Table of Contents

Introduction ........................................................................................................................................ 4

Nurse Practitioners ............................................................................................................................ 5

Search Criteria .................................................................................................................................... 5

The Harm of Over-Imaging .................................................................................................................. 6
  Radiation Exposure ............................................................................................................................ 7
  Additional Tests and Surgery ............................................................................................................ 7
  Labeling ............................................................................................................................................ 8
  Normal Degenerative Changes ......................................................................................................... 8
  Costs .................................................................................................................................................. 9

Importance of History Taking and Physical Examination ................................................................. 10
  Red Flags ........................................................................................................................................ 11
  Psychosocial Risk Factors .............................................................................................................. 12

Medical Conditions Associated with LBP .......................................................................................... 13
  Vertebral Infection .......................................................................................................................... 14
  Cauda Equina Syndrome ................................................................................................................. 14
  Cancer ............................................................................................................................................. 14
  Vertebral Compression Fracture ....................................................................................................... 15
  Ankylosing Spondylitis ..................................................................................................................... 15

Non-Specific LBP ................................................................................................................................ 16

Reassessment of Acute LBP ............................................................................................................... 16

Standardized Assessment Tools ....................................................................................................... 17

Current LBP Management ................................................................................................................ 18
  Defensive Medicine ........................................................................................................................ 19
  Patient Expectations ........................................................................................................................ 19
  Time for Education .......................................................................................................................... 20
  Lack of Education ........................................................................................................................... 21
  Sciatica ............................................................................................................................................. 21

Patient Education ............................................................................................................................. 22
  Education regarding appropriate Imaging ....................................................................................... 22
  Choice of Language ........................................................................................................................ 23
  Overall Health & LBP Prevention .................................................................................................... 24
  Delivery of Patient Education ......................................................................................................... 24
    Educational booklet versus physiotherapy .................................................................................. 25
    Educational booklet versus verbal education ............................................................................. 25
    Mass Media Education ................................................................................................................. 26

Education of Practitioners ................................................................................................................. 27

Implications for Practice and Future Research .................................................................................. 27

A Website Resource .......................................................................................................................... 29

Limitations of the Literature Review .................................................................................................. 31
Conclusion
References
Appendix A
A Literature Review: An Analysis of the Over-imaging of Low Back Pain

Back pain is one of the most common conditions for which patients seek out medical advice. Greater than “85% of patients who present to primary care have low back pain that cannot reliably be attributed to a specific disease or spinal abnormality” (Chou et al., 2007, p. 479). Non-specific low back pain (LBP) is usually “benign and self-limiting” (Jarvik & Deyo, 2002, p. 586); however, occasionally serious conditions can be the cause. Thus, the job of healthcare practitioners is to determine if serious conditions are plausible and if imaging is warranted. Over-imaging of LBP has long been identified as a problem across the medical profession (Chou et al., 2011; Flynn, Smith, & Chou, 2011). Due to the high costs associated with LBP, multiple agencies worldwide have funded and researched a solution to the growing problem (Davis et al., 2009). The Quebec Task Force on Spinal Disorders was one of the first studies to investigate the issue in 1987 (Atlas et al., 1996). The purpose of this literature review is to determine how over-imaging of LBP can be avoided and promote evidenced-based Nurse Practitioner (NP) practice. While identifying and providing a definitive diagnosis for patients may seem like the best care management, imaging can cause more harm than good. Researchers have consistently identified abnormal findings in asymptomatic patients, yet imaging is still being ordered to diagnose the cause of non-specific LBP. Imaging of LBP should be driven by history and physical examinations, as skillful exams can identify the vast majority of patients who do not require imaging (Jarvik & Deyo, 2002). Despite multiple clinical guidelines that aim to aid practitioners in the diagnosis, treatment, and management of LBP, imaging of LBP has continued to rise even though evidence substantiates that it is not associated with improved patient outcomes (Flynn et al., 2011). Patient education is important to ensure there is shared decision-making and also a clear understanding of why imaging may not be necessary. This
literature review will examine the evidence of the over-imaging practices of LBP, while providing a platform to create an evidenced-based web resource for novice primary care NPs.

**Nurse Practitioners**

NPs have a key role to play in changing the current imaging practice of non-specific LBP. NPs have an increased scope of practice and have the “legal authority and autonomy” to order diagnostic imaging (Canadian Nurse Practitioner Initiative, 2006, p. 4). An increased scope of practice carries an added responsibility to ensure diagnostic imaging is only ordered when necessary and will benefit the patient. The scope of practice of NPs in British Columbia has recently been expanded to include ordering magnetic resonance imaging (MRI) (College of Registered Nurses of British Columbia, 2016). Therefore, not only do British Columbia NPs need to be aware of the advantages and disadvantages of MRI but also be well versed in which medical conditions are better evaluated by MRI compared to computed tomography (CT) and x-ray. Primary care NPs will undoubtedly encounter numerous patients with acute LBP and need to be aware of the negative harmful effects of unnecessary imaging, be able to confidently explain to patients why imaging may not be necessary, and avoid falling into the practice of over-imaging LBP.

**Search Criteria**

To review the literature, the UBC library academic search was utilized to access CINAHL, MEDLINE, and Cochrane Database of Systematic Reviews. A combination of search terms included the following: back pain, low back pain, acute back pain, diagnostic imaging, over-imaging, unnecessary procedures, magnetic resonance imaging, computed tomography, and x-ray. Two limitations were set to include studies of the English language and restrict results to adult populations. From the three databases over 150 electronic abstracts were reviewed and 43
were chosen to guide this literature review. Non-peer reviewed articles, studies focused solely on chronic back pain or specific medical disorders, studies focused on specific treatment methods, and studies that did not include diagnostic imaging were omitted. Also studies that included pregnant women were excluded. Included in the accepted articles are 6 systematic reviews, 3 evidence reviews, and 21 clinical trials. In addition, the reference lists of these articles were reviewed to determine if any significant relevant studies were not included in the original search; subsequently multiple articles were added to guide this literature review. A Google search was also utilized with the search term low back pain imaging guidelines. Multiple international guidelines were identified and three have been used to guide this literature review. The Canadian guideline was chosen for inclusion since it bases its findings from eight best evidence “seed guideline references” (Towards Optimized Practice, 2011, p. 3). The European guideline was selected for inclusion as it summarizes individual European countries’ LBP guidelines; this literature review was not intended to be an exhaustive international clinical practice guideline review.

The Harm of Over-Imaging

Imaging can be a useful diagnostic tool; however, the risk of imaging must carefully be weighed against the benefit. Imaging of LBP should only be performed if it will alter the treatment plan and improve patient outcomes (Flynn et al., 2011). There are multiple risks to consider before ordering diagnostic imaging of LBP such as radiation exposure, increased risk of surgery, risk of labeling, and the risk of detecting non-pathological or normal age-related changes (Flynn et al., 2011). In addition, there is also the rising healthcare costs associated with over-imaging of LBP to consider.
Radiation Exposure

Radiation exposure from x-rays and gamma rays is a known human carcinogen. Lumbar spine x-rays expose people to 75 times more radiation than a chest x-ray (Flynn et al., 2011). Lumbar spine x-rays are especially concerning for young females as it is difficult to shield the gonads from radiation. It is estimated that the amount of radiation affecting female gonads is “equivalent to having chest radiography daily for several years” (Chou, Qaseem, Owens, & Shekelle, 2011, p. 183). Therefore, practitioners must pause and consider if the radiation exposure to their patient is worth the risk.

Additional Tests and Surgery

There is also the risk that imaging can lead to additional tests, follow-up, and surgery that may have questionable benefit. Increased procedures and surgeries would not be considered harmful if the clinical outcome was beneficial. The United States has the highest surgical intervention rate for LBP amongst developed countries, however, there is no evidence that patient outcomes are superior (Chou, Deyo, & Jarvik, 2012). It is well documented that “the rate of spine MRI increased sharply at the same time as that of lumbar surgeries” (Chou et al., 2011, p. 181). One study conducted by Webster and Cifuentes (2010), which included a very large sample population of 3264 cases across the United States, examined workers compensation claims and the association of MRI utilization and surgery rates. They concluded that when early MRI is conducted, it is associated with a greater use of medical services and more than an eight-fold increased risk for surgery compared with patients who did not have an early MRI. Also, life-threatening complications can result from surgery and the incidence of further related surgeries later in life is common (Flynn et al., 2011).
Labeling

Healthcare practitioners may not often think of the risk of labeling; however, labeling can have drastic effects on one’s health perceptions. Many patients believe their pain will not subside unless their imaging improves (Flynn et al., 2011). O’Sullivan and Lin (2014) point out “negative beliefs about LBP are predictive of pain intensity, disability levels, and work absenteeism as well as chronicity” (p. 11). Labeling leads to patients adopting a “sick role” which alters behaviors and can ultimately lead to the development of chronic LBP (Chou et al., 2012, p. 576). One clinical trial assessed the effect of knowledge of diagnostic findings on clinical outcome by only divulging MRI results to the unblinded group (Ash et al., 2008). While a control group, one that did not undergo MRI, was not included in the study it does not diminish the rigorous research design. The only significant difference found between the unblinded and blinded group was the blinded group’s general health improved more; therefore, patients “knowledge of imaging findings do not alter outcome and are associated with a lesser sense of well-being” (Ash et al., 2008, p. 1098). Labeling can create increased anxiety, exercise avoidance, or unwarranted protective measures that ultimately could cause more damage to ones overall mental and physical health.

Normal Degenerative Changes

Multiple studies have identified non-pathological or normal age-related changes in asymptomatic patients (Brinjikji et al., 2014; Carragee et al., 2006; Chou, Fu, Carrino, & Deyo, 2009; O’Sullivan & Lin, 2014). The harm occurs when these findings are associated with new LBP. One clinical trial examined the incidence of abnormal findings on MRI in people without back pain (Jensen et al., 1994). They concluded 52% of the 98 subjects had at least one disc bulge and 27% had a protrusion. Therefore, “given the high prevalence of these findings and of
back pain, the discovery by MRI of bulges or protrusions in people with low back pain may frequently be coincidental” (Jensen et al., 1994, p. 69). Another clinical trial sought to determine if new and serious episodes of LBP are associated with new and relevant findings on MRI (Carragee et al., 2006). For five years, Carragee et al. (2006) followed a population who was deemed high-risk for LBP occurrence rates. At baseline over 90% of the sample population had positive MRI findings and were asymptomatic. New MRIs were taken when a new LBP episode occurred and were compared with their asymptomatic image. Carragee et al. (2006) concluded, “findings on MR imaging within 12 weeks of new and serious LBP development are highly unlikely to represent any new structural change” (p. 633). Another clinical trial concluded that the inclusion of an epidemiologic statement in MRI reports affected clinical management (McCullough, Johnson, Martin, & Jarvik, 2012). In isolation, without an epidemiologic statement, practitioners were interpreting possible normal degenerative changes as the cause to the acute LBP episode and were more likely to prescribe narcotics. The authors mention larger-scale prospective studies will need to confirm their results due to the limitations of their study (McCullough et al., 2012). Nevertheless, imaging due to LBP can have misleading diagnoses and can highlight normal age-related or degenerative changes unrelated to the acute painful episode. Interpreting imaging results must be done with caution and in context of the situation, keeping in mind the high rate of abnormal findings with asymptomatic patients.

**Costs**

Increased healthcare costs are another harm that occurs with over-imaging LBP; it can be “complex and costly” to manage LBP (Towards Optimized Practice, 2011, p. 2). In Canada it is estimated LBP costs the healthcare system between $6 and $12 billion annually (Bone and Joint Canada, 2014). In the United States in 2005, it was estimated 85.9 billion dollars was spent on
healthcare costs associated with LBP (Flynn et al., 2011). Unnecessary imaging leads to additional tests, procedures, and possibly surgeries that contribute to the ever-rising costs. Moreover, LBP “also results in high indirect costs from disability, lost time from work, and decreased productivity while at work” (Chou et al., 2012, p. 570). One way to decrease costs associated with LBP is to ensure imaging is ordered only when indicated, as directed by through history and physical examinations.

**Importance of History Taking and Physical Examination**

Obtaining a relevant history and physical examination requires a skilled practitioner to carefully examine all aspects of the patient’s chief complaint, to avoid any unnecessary imaging. Since over 85% of patients have non-specific LBP, asking key questions will determine the likelihood of serious underlying conditions and the need for imaging (Chou et al., 2007). Jarvik and Deyo (2002) state that basic questions answered by history and physical examination alone is most often sufficient and diagnostic imaging is seldom required. There is consensus among all clinical practice guidelines that a history and a physical examination are required for patients presenting with acute LBP; however, the extent of the examination is not specified. The Joint Clinical Practice Guideline from the American College of Physicians (ACP) and the American Pain Society (APS) states that a *focused* examination should be conducted in order to triage patients into: “nonspecific low back pain, back pain potentially associated with radiculopathy or spinal stenosis, or back pain potentially associated with another specific spinal cause” (Chou et al., 2007, p. 479). The European Guideline states that a *brief* examination should be conducted first, followed by a more extensive examination only “if history taking indicates possible serious spinal pathology or nerve root syndrome” (van Tulder et al., 2006, p. 2). The European Guideline advocates for diagnostic triage; however, it also points out there is a lack of strong evidence
supporting triage even though it is necessary for further management of the patient. The diagnostic categories are not explicitly stated within the European Guideline; only that acute LBP is managed as non-specific LBP when “serious spinal pathology and nerve root pain” are ruled out (van Tulder et al., 2006, p. 12). The Toward Optimized Practice (TOP) Program Guideline recommends a full assessment with the aim of diagnostic triage; however, the triage categories are not outlined (Towards Optimized Practice, 2011, p. 8). Accompanying triage categories, the history and physical examination is guided by ruling out ‘red flags’ or signs and symptoms that could indicate imaging is warranted.

**Red Flags**

Ultimately the aim of conducting a history and physical examination is to determine if red flags are present and the likelihood of serious conditions attributed to the cause of the LBP. The European Guideline and the TOP Program Guideline outline specific red flags that guide history taking and warrant further investigation. The red flags from both guidelines are comparable, as seen in table 1, however there are minor differences. The TOP Program Guideline specifies a red flag is present when the first episode of LBP occurs in a patient who is older than 50 years old, and is especially concerning is if they are over 65 years old. Whereas, the European guideline outlines a red flag for age of onset when the patient is less than 20 years old or greater than 55 years old. The European guideline also mentions a red flag includes the presence of thoracic pain, immunosuppression, HIV, structural deformity, and if the patient is systemically unwell. The Joint Clinical Practice Guideline from the ACP and the APS does not discuss red flags but focuses on likelihood ratios for a specific condition. For example, the strongest predictor of cancer is a previous history of cancer, which has a +14.7 likelihood ratio (Chou et al., 2011). Further investigation and imaging would be warranted with higher likelihood ratios.
Table 1: Red Flags of LBP

<table>
<thead>
<tr>
<th>Red Flags</th>
<th>TOP Guideline</th>
<th>European Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of Onset</td>
<td>&gt;50 years, especially &gt;65 years</td>
<td>&lt;20 years or &gt;55 years</td>
</tr>
<tr>
<td>Trauma</td>
<td>Significant trauma</td>
<td>Recent history of violent trauma</td>
</tr>
<tr>
<td>Increasing Pain</td>
<td>Severe worsening pain, especially at night or when lying down</td>
<td>Constant progressive pain (no relief with bed rest)</td>
</tr>
<tr>
<td>Drugs</td>
<td>Use of steroids or intravenous drugs</td>
<td>Prolonged use of corticosteroids</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drug abuse, immunosuppression, HIV</td>
</tr>
<tr>
<td>Weight loss, Cancer</td>
<td>Weight loss, history of cancer, fever</td>
<td>Unexplained weight loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Past medical history of malignant tumor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fever</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systemically unwell</td>
</tr>
<tr>
<td>Neurological involvement</td>
<td>Widespread neurological signs</td>
<td>Widespread neurological symptoms (including cauda equina syndrome)</td>
</tr>
<tr>
<td></td>
<td>Cauda equina syndrome including sudden onset of loss of bladder/bowel control, saddle anesthesia</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>Thoracic pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structural deformity</td>
</tr>
</tbody>
</table>

**Psychosocial Risk Factors**

A psychosocial assessment should also be a part of a good history and physical examination when patients present with acute LBP. Psychosocial factors and emotional distress, such as “job dissatisfaction, depression, substance abuse, and desire for disability compensation” are strong predictors of poor outcomes for LBP (American College of Physicians, 2008). Poorer outcomes of acute LBP can lead to chronic LBP. Screening for psychosocial factors in patients presenting with acute LBP, identifies a subgroup of the population who may benefit from target
intervention strategies (Chou et al., 2007). The Joint Clinical Practice Guideline from the ACP and the APS recommend screening for psychosocial factors that include: depression, passive coping strategies, job dissatisfaction, higher disability levels, disputed compensation, and somatization. The TOP Program Guideline advise the importance to screen for “yellow flags,” which are psychosocial risk factors that should lead to appropriate cognitive and behavioral management. The yellow flags include negative attitudes and beliefs about back pain (such as fear-avoidance behavior), ‘sickness behaviors’ (such as extended rest), financial problems, problems with claim and compensation, anger, depression, job dissatisfaction, family problems including over-protective partner or spouse, and stress. The European Guideline and the TOP Program Guideline recommend initial screening for psychosocial factors should be conducted, as well as a more intense review if there is no improvement of pain. The Joint Clinical Practice Guideline from the ACP and the APS and the European Guideline both mention evidence is lacking to support specific interventions and optimal timing of interventions is unknown. However, the TOP Program Guideline provides 13 suggested steps to aid patients who are at risk for developing chronic LBP, disability, and work loss that can be reviewed in Appendix A.

**Medical Conditions Associated with LBP**

The prevalence of LBP resulting in serious conditions is relatively low. Cancer occurs in approximately 0.7% of cases, compression fracture in 4% of cases, spinal infection in 0.01% of cases (Chou et al., 2007), and ankylosing spondylitis in 0.3% of cases (American College of Physicians, 2008). Nonetheless, serious conditions need to be ruled out; otherwise diagnostic imaging may be warranted (Choosing Wisely Canada, 2016). NPs are often the first point of contact for patients within the healthcare system (Canadian Nurse Practitioner Initiative, 2006),
as such; NPs need to be well versed in the possible medical conditions and their associated risk factors for acute low back pain.

**Vertebral Infection**

Vertebral infection is one of the serious medical conditions that must be ruled out with new onset LBP. This is a serious emergent condition that requires prompt identification as “even a short delay in diagnosis can have a negative effect on patient outcomes” (Flynn et al., 2011, p. 840). Risk factors for vertebral infection have not been well studied and sensitivity is poorly correlated (Chou & Huffman, 2009). Risk factors include a history of fever, intravenous drug use, or recent infection (Chou et al., 2007). Additional research is needed to aid practitioners to accurately identify the risk of a vertebral infection and how to avoid unnecessary imaging.

**Cauda Equina Syndrome**

Cauda equina syndrome is a rare condition; however, it is a surgical emergency and requires urgent imaging. Common symptoms include urinary retention, unilateral or bilateral sciatica, sensory and motor deficits, and an abnormal straight-leg raise test (Jarvik & Deyo, 2002). The most common symptom is urinary retention and the probability of cauda equina syndrome occurring in patients without urinary retention is approximately 1 in 10,000 (Chou & Huffman, 2009). Urinary retention and LBP alone are not diagnostic for cauda equina syndrome; however, LBP in the presence of urinary retention is highly suspicious and would indicate diagnostic imaging.

**Cancer**

Cancer also must be ruled out when a patient presents with LBP. If cancer is strongly suspected imaging is warranted, as a prompt diagnosis can prevent the spread of the disease and can lead to immediate treatment. History should include risk factors for cancer such as previous
history of cancer, unexplained weight loss, failure to improve after one month, and age older than 50 years (Chou et al., 2012). Traditionally any positive finding for cancer is an indication for imaging. However, the American College of Physicians recommends using “likelihood ratios to inform imaging decisions” (Chou et al., 2011, p. 186). For example, the likelihood ratio for cancer is significantly higher for those who have a history of cancer versus other symptoms such as unexplained weight loss, lack of improvement after one month, and age older than 50 years (Chou et al., 2011). Therefore, the probability of a spinal tumor is higher for a patient presenting with LBP with a history of cancer and would indicate immediate imaging. However, if systemic disease is suspected, an erythrocyte sedimentation rate is a useful and cost-effective test that can be performed prior to imaging (Jarvik & Deyo, 2002).

**Vertebral Compression Fracture**

Vertebral compression fracture should be included in the differential for LBP and early detection “will prevent the prescription of treatment such as manual therapy, which is contraindicated” (Downie et al., 2013, p. 2). The *diagnostic urgency* is not as great, as fractures “are not generally associated with progressive or irreversible neurologic impairment” (Chou et al., 2012, p. 573). It would be appropriate to initially defer imaging, unless neurologic compromise is present (Chou et al., 2011). Vertebral compression fracture risk factors are older age, history of osteoporosis, Caucasian, trauma, and prolonged steroid use (American College of Physicians, 2008).

**Ankylosing Spondylitis**

Ankylosing spondylitis, although rare, requires prompt diagnosis to prevent progression. Referral to a physiotherapist is recommended as first-line treatment and diagnostic imaging is only required if there is no improvement within four weeks (Flynn et al., 2011). A thorough
history and physical examination should lead clinicians to the diagnosis of ankylosing spondylitis and imaging is not necessarily warranted, as changes in the spine occur very slowly (The Arthritis Society, 2015). Risk factors include younger age, morning stiffness, pain that improves with exercise, alternating buttock pain, and awakening due to back pain during the second part of the night only (Chou et al., 2009).

Non-Specific LBP

Non-specific LBP is pain “that cannot reliably be attributed to a specific disease or spinal abnormality” (Chou et al., 2007, p. 479). This is the type of back pain that is most common and the majority of people will experience it in their lifetime (O’Sullivan & Lin, 2014). Non-specific LBP is within the scope of NPs, as such NPs need to ensure they are well versed in the conservative management treatment methods and the fact that non-specific LBP has the natural tendency to spontaneously resolve. There is a clear strong consensus within the literature and clinical guidelines that diagnostic imaging of any type is not recommended for non-specific LBP. The TOP Program Guideline further adds lumbar spine x-rays, in the absence of red flags, lacks specificity (Towards Optimized Practice, 2011). The European guideline mentions plain radiographs are sometimes used inappropriately for patient reassurance even though this is not supported by clinical evidence (van Tulder et al., 2006). Modic et al. (2005) found patients had a lesser sense of well-being when imaging results were divulged to them compared to a blinded group who were not given their results. If non-specific LBP worsens or does not improve, reassessment is indicated to evaluate if imaging is warranted.

Reassessment of Acute LBP

Acute non-specific LBP generally resolves within one month or substantial improvement should be observed. The Joint Clinical Practice Guideline from the ACP and the APS
recommend clinical reassessment in 1 month if symptoms have not improved (Chou et al., 2007). In addition, it is advised earlier reassessment may be warranted “in patients with severe pain or functional deficits, older patients, or patients with signs of radiculopathy or spinal stenosis” (Chou et al., 2007, p. 483). The European guideline is less specific than the Joint Clinical Practice Guideline from the ACP & APS and states reassessment is reasonable “within a few weeks after the first visit,” or sooner if symptoms are worsening (van Tulder et al., 2006, p. 16). The TOP Program Guideline breaks down reassessment into 3 categories: reassess in 1 week if symptoms are severe and not subsiding, reassess in 3 weeks if moderate pain is not improving, and reassess in 6 weeks if the patient has not substantially recovered (Towards Optimized Practice, 2011). The European guideline and the TOP Program Guideline also reinforce that follow-up includes reevaluation of any psychosocial factors that could be contributing to unresolved symptoms. All guidelines suggest imaging may be warranted if reassessment identifies serious pathology could be indicated.

**Standardized Assessment Tools**

After asking key questions to rule out serious underlying conditions, NPs may opt to use a standardized LBP assessment tool. These tools can aid in the management of LBP as questions evaluate response to treatment, general health status, and back-specific function (American College of Physicians, 2008). The Oswestry Disability Index and the Roland-Morris Disability Questionnaire are commonly recommended tools for assessing LBP (Fairbank & Pynsent, 2000). These quantitative instruments “provide objective measures for judging response to therapy,” however; the American College of Physicians (2008) points out there is no evidence that suggest the use of these tools improves patient outcomes. A more evidenced-based approach to manage LBP would be to follow the recommended clinical practice guidelines.
A more recent validated tool is the STarT Back Screening Tool (SBST), which aids practitioners in primary care to identify predictive indicators for chronic LBP (Kenny et al., 2015). A clinical trial compared the SBST to practitioner’s subjective assessments and concluded that practitioners make “inconsistent risk estimations…when using intuition alone” (Hill, Vohora, Dunn, Main, & Hay, 2010, p. 783). The conclusion of the trial must be interpreted with caution as the low number of patients and clinicians decreases the generalizability of the results. Kenny et al. (2015) concluded from their systematic review that the SBST should be used with caution until further research can establish higher quality methodological studies. The SBST should “therefore supplement and not replace clinical judgment” (Traeger & McAuley, 2013).

Current LBP Management

A large number of practitioners do not follow the recommended guidelines for acute LBP. A recent best evidence synthesis concluded that 52% of medical practitioners do not highly adhere to clinical guidelines (Amorin-Woods, Beck, Parkin-Smith, Lougheed, & Bremner, 2014). Scott, Moga, and Harstall (2010) found that family physicians are in line with guideline recommendations for heat or ice, physical activity, and avoiding bed rest; however, between 21% and 28% inappropriately order x-rays for acute LBP. Moreover, physicians are guideline discordant when sciatic is present – 62% tend to inappropriately order x-rays (Scott et al., 2010). No data was found on the specific ordering practices of NPs in regards to acute LBP and diagnostic imaging. There is a decreasing trend of first-line anti-inflammatory and acetaminophen prescriptions, while concurrently there is a rise in opioid prescriptions (Mafi, McCarthy, Davis, & Landon, 2010). Prescribing opioids is currently outside the scope of British Columbia NPs (College of Registered Nurses of British Columbia, 2016); however, the clinical practice guidelines recommend avoiding opioids unless first-line, acetaminophen, and second-
line, non-steroidal anti-inflammatories, fail to achieve adequate pain relief (Chou et al., 2007; Towards Optimized Practice, 2011; van Tulder et al., 2006). Therefore, NPs should be able to independently manage non-specific LBP without the need to refer patients to a physician. Lehert and Bree (2010) concluded that 53% of spine CTs and 35% of spine MRIs were inappropriately ordered as per the Appropriateness Criteria by the American College of Radiology. In addition, a significant finding the authors point out is that when positive findings resulted in the group who had images inappropriately ordered, the management plan did not change (Lehert & Bree, 2010). There have been a number of proposed reasons why practitioners do not follow the recommended guidelines and avoid the over-imaging of LBP such as practicing defensive medicine, complying with patient expectations and preferences, and limited time for education.

**Defensive Medicine**

Defensive medicine, also called defensive medical decision-making, refers to the practice of making clinical decisions such as ordering diagnostic imaging to avoid malpractice suits (Chou et al., 2012). Decisions are not based on the best treatment or outcome for patients but to protect the practitioner. Defensive medicine is considered more common in the United States; however, the growth of malpractice awards between 1996 and 2001 was higher in Canada, Australia, and the United Kingdom compared to the United States (Anderson, Hussey, Frogner, & Waters, 2005). Therefore, defensive medicine is relevant to Canadian NPs. Defensive medicine disregards clinical practice guidelines and evidenced-based care, which contributes to the over-imaging of non-specific LBP.

**Patient Expectations**

Patients often have access to endless online resources and present to practitioners with an agenda of tests to be ordered. Often patients are adamant that imaging is required for their acute
LBP to determine a precise diagnosis (Chou et al., 2012; Hoffmann, Del Mar, Strong, & Mai, 2013). Chou et al. (2011) explain that when imaging is not ordered, patients often associate it with low-quality care. Hoffmann et al. (2013) conducted a study that examined patient’s expectations when presenting to their doctor with acute LBP. The patients in their study almost unanimously agreed that x-rays are a standard investigation for LBP and are necessary to determine the cause of the pain and guide treatment. Moreover, most patients in the study “were not aware of the limited diagnostic value of x-rays for acute low back pain” (Hoffmann et al., 2013, p. 5). Another study, conducted by Wilson et al. (2001), reported that patient’s perceived need for diagnostic imaging was significantly associated with the use of radiological studies, regardless of guideline recommendations. In addition, there was a strong association with use of imaging and how intensely patients believed imaging was necessary (Wilson et al., 2001). Campbell et al. (2007) concluded that more than one third of practitioners would order advanced imaging for acute LBP experienced after housework, if a patient was very insistent. Patient expectations and preferences for imaging contribute to over-imaging of LBP. Addressing patient expectations and providing education about the role of imaging will lead to more appropriate care for acute LBP.

**Time for Education**

One of the proposed reasons why healthcare practitioners do not follow clinical guidelines is due to lack of time for patient education (Chou et al., 2012). Ordering imaging is perceived to be quicker and easier than explaining to patients the role of imaging in acute LBP and the harm of over imaging, especially if the patient has expectations of imaging. No clinical trials were found that examined lack of time for education as a contributing cause to the over-imaging of LBP, even when some literature suggests it as a proposed cause (Anonymous, 2009;
Clinical trials are needed to examine if lack of time is a true cause of over-imaging LBP.

**Lack of Education**

Lack of musculoskeletal education has been suggested as a cause to why practitioners do not adhere to clinical guidelines. The World Health Organization recognizes the importance of primary care practitioners to have the appropriate training to effectively and confidently diagnose, manage, and treat musculoskeletal disorders (Akesson, Dreinhofer, & Woolf, 2003). Freedman and Bernstein (2002) concluded that a large majority of recent medical school graduates are inappropriately prepared to manage common musculoskeletal office complaints, including back pain. Woods et al. (2014) also supports that medical professionals are inadequately educated, especially when compared to other allied health professionals such as physiotherapists and chiropractors. No clinical trials were found examining the competency and skill of NPs regarding musculoskeletal care. However, it is reasonable to assume that a two-year Family NP program is lacking in curriculum and training if a four-year medical program is also ill prepared. Lack of musculoskeletal education can lead to the mismanagement of common office complaints, which contributes to over-imaging LBP.

**Sciatica**

Sciatica, while concerning in relation to pain and decreased physical activity tolerance, is the most common symptom of lumbar radiculopathy and has a high probability of resolution (Chou et al., 2007). Webster, Courtney, Huang, Matz, and Christiani (2005) found that the presence of sciatica “dramatically influenced clinical decision-making,” especially within family practice (p. 1134). Over 60% of physicians would order a x-ray or a MRI if sciatica was present, compared to only 22% ordering a x-ray and 2% ordering a MRI if sciatica were absent (Webster
et al., 2005). No data could be found on the influence of the presence of sciatica on the imaging practice behavior of NPs. NPs, especially novice practitioners need to be aware of the strong influence that sciatica can have on clinical decision-making. The Joint Clinical Practice Guideline from the ACP and the APS states that acute LBP is generally favorable with or without sciatica present (Chou et al., 2007). The lack of guideline adherence leads to the fact that practitioners are unaware of the natural history of sciatica to resolve with conservative management (Webster & Cifuentes, 2010). Or perhaps other barriers to guideline adherence, as mentioned above, also contribute to the over-imaging of LBP when sciatica is present.

**Patient Education**

Clinical practice guidelines stress the importance of education to provide patients with a better understanding of their diagnosis and prognosis. The guidelines agree that bed rest should be avoided, normal activities should be resumed and people should remain active when experiencing acute LBP (Chou et al., 2007; Towards Optimized Practice, 2011; van Tulder et al., 2006). In addition, all guidelines stress the importance of reassuring patients that they have a benign condition. One systematic review found that most family physicians provided “adequate education and reassurance” to patients about LBP (Scott et al., 2010, p. 395). However, a concerning amount of family physicians – up to one-quarter, did not follow guideline recommendations regarding sick leave from work and advising patients to maintain physical activity (Scott et al., 2010). Evidenced-based education is vital to ensure self-care management is in place and to avoid inappropriate imaging of non-specific LBP.

**Education Regarding Appropriate Imaging**

Healthcare professionals must “convey a consistent evidenced-based message” in order to reduce the over-imaging of LBP (Flynn et al., 2011, p. 839). Education regarding the use and
limitations of imaging with LBP is essential; it should be stressed “imaging findings do not
determine the extent of pain or limitations, and that the focus should be on maximizing function”
(Flynn et al., 2011, p. 843). Patients often believe there are no disadvantages associated with x-
rays, aside from minor radiation; however, most patients also assume practitioners would only
order tests “if they believed them necessary, safe and effective (Hoffmann et al., 2013, p. 5). NPs
need to be knowledgeable about when and which type of imaging is appropriate for specific
medical conditions; this will aid NPs to address specific patient concerns regarding imaging. The
Canadian Association of Radiologists Diagnostic Imaging Referral Guidelines (2012) can aid
NPs to expand their knowledge of appropriate imaging studies for specific medical conditions
and their relative radiation dose. Patients usually desire a definitive diagnosis of the cause of
their pain and will request imaging to be ordered (Chou et al., 2012; Hoffmann et al., 2013).
When healthcare professionals can effectively communicate why imaging is not useful in most
situations, there is a shift to “shared decision making” (Flynn et al., 2011, p. 843). Shared
decision making may reduce the use of medical services and surgeries related to LBP, as patients
are more educated about the facts (Flynn et al., 2011).

Choice of Language

Choice of language is imperative when explaining a diagnosis and discussing a
management plan. Catastrophic thinking often originates from conversations with healthcare
professionals (O’Sullivan & Li, 2014). O’Sullivan and Li (2014) discuss communication
messages to avoid and promote with patients experiencing LBP. For example, by stating “you
have the back of a 70-year-old” or “you have to be careful/take it easy from now on” promotes
harm and negative beliefs (O’Sullivan & Li, 2014, p. 11). Where as a statement such as “back
pain does not mean your back is damaged – it means it is sensitized,” promotes healing and a
positive health image (O’Sullivan & Li, 2014, p. 11). Negative health beliefs are often difficult to change and are associated with the development of chronic LBP (Chou et al., 2012). As discussed earlier, the study by Webster and Cifuentes (2010) found increased surgery intervention for patients who underwent early MRI; however, it is unknown what explanation patients received regarding the MRI results. It is questionable if the findings could be replicated if choice of language of the MRI results was also taken into account. Since LBP is common and chronic, it is important for NPs to not only be aware of the language they are using but also be well versed in preventative education.

**Overall Health and LBP Prevention**

LBP can be avoided by opting for a general increase in ones overall health. LBP is associated with obesity, poor posture, physical inactivity, prolonged sitting or standing, and depression and other psychological conditions (The College of Family Physicians of Canada, 2007). Therefore, promoting a normal body weight, a balanced diet, physical fitness, and avoidance of activities that can injure the back should decrease the risk for LBP. NPs usually find an ease in promoting the overall health of individuals as they rely on their basic nursing education and use a holistic approach, grounded in research, to provide comprehensive care (Canadian Nurse Practitioner Initiative, 2006).

**Delivery of Patient Education**

The best method to deliver education regarding acute LBP is unclear. Multiple studies have analyzed optimum education methods such as advising to increase exercise, providing short educational sessions, referral to allied health such as physiotherapy, and also providing a detailed information booklet (Albaladejo et al., 2010; Sparkes, Chidwick, & Coales, 2010; Little et al., 2001). Patients often feel the need for more and better education about LBP.
(Cherkin et al., 1996); however, the most cost-effective route of education remains uncertain. The guidelines stress the importance of patient education but do not specify the optimal platform to deliver the education. Since a clear, consistent message is needed across all professions to avoid any unnecessary imaging (Flynn et al., 2011), conclusive evidence for the best mode of patient education is needed within the guidelines.

**Educational booklet versus physiotherapy.** One randomized-control trial found only slightly improved outcomes for patients with LBP who received physical therapy or chiropractic manipulation than those patients who received a minimal educational booklet (Cherkin, Deyo, Battie, Street, & Barlow, 1998). Another trial compared the effect of a short education session to education plus a short physiotherapy program for treating LBP in primary care (Albaladejo et al., 2010). They authors concluded that the short 15-minute education group had “small but consistent improvements in disability, pain and quality of life” (Albaladejo et al., 2010, p. 494). The addition of four one-hour physiotherapy sessions that focused on stretching and exercise had clinically irrelevant results. The question remains if the costs of additional education and treatment outweigh the marginal improvement seen with physiotherapy interventions for acute non-specific LBP.

**Educational booklet versus verbal education.** A clinical study compared usual care to an educational booklet or a nurse consultation, which included the booklet and a follow-up telephone call (Cherkin, Deyo, Street, Hunt, & Barlow, 1996). Patients in the nurse education group resulted in positive cognitive changes about how they perceived their LBP. This conclusion is also supported by another study that found that “carefully selected and presented information and advice about back pain, in line with current management guidelines, can have a positive effect on patients’ beliefs and clinical outcomes” (Burton, Waddell, Tillots, &
Summerton, 1999, p. 2490). Both of the trials show changes in patient beliefs about LBP; however, there was no effect of any intervention on symptoms, function, disability, or visits to health care providers. Alternatively, the study by Little et al. (2001) found a “highly significant negative interaction” when a detailed educational booklet and advice were given together, versus when given alone. Either approach alone improved pain and functioning during the first week of LBP. Their study supports that detailed written information may not reinforce verbal advice, which is usually assumed to be the opposite (Little et al., 2001).

**Mass Media Education.** A mass media campaign providing self-care strategies for LBP was advertised in Australia that had a positive impact on “claims for back pain, rates of days compensated, and medical payments for claims for back pain over the duration of the campaign” (Buchbinder, Jolley, & Wyatt, 2001, p. 322). The self-care strategies advertised, primarily by television, resonated with people three years after the campaign as displayed in a follow-up population survey (Buchbinder & Jolley, 2004). The authors mention “top-up reminders” or other educational interventions may be necessary to maintain the new back belief views overtime (Buchbinder & Jolley, 2004, p. 321). Building on the Australian campaign, Gross et al. (2010) implemented a three-year media campaign, *Don’t Take it Lying Down*, in Alberta, Canada. The focus was on staying active and the campaign did have a “small impact on public beliefs” of LBP (Gross et al., 2010, p. 911). Likely due to predominately radio advertising, due to lack of finances, and a focus of only one key message the Canadian study did not yield any improvements in decreasing health care utilization or work disability compared to the Australian study (Gross et al., 2010, p. 910). Mass media campaigns are expensive; however, a population-based strategy does seem effective as a means to change long-term back beliefs and behavior.
Education of Practitioners

In addition to patient education, practitioner education is also vital to reduce the over-imaging of LBP. Despite unnecessary imaging of LBP identified as a problem for many years and clinical guidelines being available, the imaging of non-specific LBP continues. Lehnert and Bree (2010) retrospectively examined images and medical records and concluded that spine CTs and MRIs were among the highest inappropriately ordered images. Thus, the problem is implementing evidence into practice and changing LBP imaging behavior. A recent systematic review evaluated the effect of the distribution of educational materials and clinical guidelines; however, “most studies observed no significant improvement in appropriate imaging” (French, Green, Buchbinder, & Barnes, 2010, p. 25). Therefore, it “appears the distribution of educational materials alone is not effective for improving imaging behaviour” (French et al., 2010, p. 26). Jenkins et al. (2015) also conducted a systematic review to evaluate interventions designed to reduce the over-imaging of LBP. In primary care, targeted reminders to practitioners were the most effective strategy to reduce the use of inappropriate imaging (Jenkins et al., 2015). Interventions that used practitioner audits and feedback, practitioner education, or guideline dissemination did not significantly reduce imaging rates (Jenkins et al., 2015). The systematic review could have been strengthened if more studies were available to allow for meta-analysis, as the authors point out (Jenkins et al., 2015). Changing clinical practice is difficult and it is unclear just how effective any of the strategies are for practitioner education of LBP management.

Implications for Practice and Future Research

This literature review identifies key areas for improvement to reduce the over-imaging of LBP. The first area for improvement starts with the musculoskeletal medical training of
practitioners. The demand for primary care for the aging Canadian population is increasing. As such the prevalence of musculoskeletal conditions will rise as well. It is vital for all primary care practitioners to be well-versed in common musculoskeletal conditions, as well as, have the confidence to manage and treat such conditions in order to avoid unnecessary imaging. Further research is needed to determine the exact cause of lack of education of musculoskeletal conditions and the best way to implement improved education. In addition, clinical trials focused on NP management of musculoskeletal disorders, especially in British Columbia where the emphasis is in primary care, should be conducted. The second area for improvement identified within this literature review is the optimal platform for delivery of patient education. The amount of clinical trials is vast concerning LBP and patient education; clinical guidelines also stress the importance of patient education. However, it is unclear how key messages should be delivered to patients to promote the highest comprehension regarding LBP management. Further research is needed to inform clinical guidelines of definitive modes for patient education to reduce the over-imaging of LBP. Finally, a third area for further investigation is the barrier to clinical guideline integration. A few barriers were discussed, such as defensive medicine and lack of clinical time; however, it is difficult to determine an exact cause across the medical profession. Clinical trials need to be conducted to determine if NPs are as guideline discordant as medical doctors and contribute to the over-imaging of non-specific LBP.

Recent research has been directed towards optimal timing of physiotherapy for non-specific LBP. Most guidelines recommend delayed physiotherapy due to the majority of LBP spontaneously resolving within two to four weeks. Childs et al. (2015) concluded that patients who receive early physiotherapy and who are in line with clinical guidelines are “associated with significantly lower utilization of advanced imaging, lumbar spinal injections, lumbar surgery,
and use of opioids” (p. 7). What is still to be determined is how to differentiate which patients would benefit from early physiotherapy and those who would recover spontaneously; as referring all patients for physiotherapy would be unwarranted and costly (Childs et al., 2015). Future research should be directed at providing practitioners with concrete tools to identify ‘at risk’ patients who would benefit from early physiotherapy referral.

**A Website Resource**

As a supplement to this literature review, a website for primary care NPs has been created. The website is designed to promote awareness of the issue of over-imaging LBP and encourage appropriate use of diagnostic imaging for acute LBP. As discussed earlier targeted reminders to primary care practitioners were the most effective strategy to reduce the use of imaging, while guideline dissemination, practitioner audits and feedback, and practitioner education did not reduce the over-imaging of LBP (Jenkins et al., 2015). Targeted reminders require multi-level organizational coordination and cooperation and are outside the scope of this project. Therefore the aim of the website is to provide novice primary care NPs, who are in need of additional information, an evidenced-based resource to guide their practice. A website is a quick reference tool that can be accessed in any clinical space with access to the Internet. The fast pace of today’s healthcare demands that instant resources provide evidenced-based care guidelines. One of the areas outlined on the website discusses the importance of language and terms to avoid when explaining imaging results to patients. This can be a valuable resource to novice NPs who may lack the confidence to accurately interpret and explain imaging results to patients. The website also outlines important history questions and physical examination findings, including red and yellow flags. Novice NPs may need a quick reference to guide their history and physical examinations to ensure serious medical conditions are ruled out.
The creation of a website requires consideration of multiple important components to ensure it is visually appealing, user-friendly, as well as informative in regards to content. The content is evidenced-based, cited appropriately, and supported by a link to this literature review. Since the website is aimed toward NPs, the choice of language is appropriate for educated healthcare professionals. Aesthetics are a vital component when designing a website, as users will form an opinion in approximately 50 to 500 milliseconds (Reinecke et al., 2013). Moreover, the trustworthiness of a website is compromised when people find it visually unappealing (Reinecke et al., 2013). Colour, font, and consistency are some of the important components to ensure a website is visually appealing (Aspire Internet Design, 2016). A recurrent blue colour was selected to use throughout the website as blue is considered an intellectual colour and is mentally soothing (Colour Affects, 2008). Alternatively, blue can be perceived as cold and detached; therefore, a white background was selected to enhance the perceived colorfulness and increase simplicity and sophistication (Colour Affects, 2008; Reinecke et al., 2013). The basic font style, size, and contrast of text colour to background were selected for ease of reading. Photographs are displayed consistently throughout the website to also aid with visual appeal. High quality photographs were purchased to ensure clarity and sharpness, as images play a crucial role in a “website’s look and feel” (Aspire Internet Design, 2016). The lay out of the website was designed with gridlines to ensure alignment, symmetry, and viewer compatibility on mobiles and tablets. The website was designed to be user-friendly by creating a toolbar at the top of every page for ease of navigation throughout the site. Also “read more” links and buttons were utilized to avoid an overwhelming amount of text per page. The website was critiqued by NP colleagues and allied healthcare professionals who agreed it was visually appealing and very user-friendly. The critique could have been strengthened by a formal review form, specifically
inquiring about certain aspects of the website. A future consideration for the website is to ensure search engine optimization. The website can be found at http://jobirdsall.wix.com/lowbackpain.

**Limitations of the Literature Review**

This literature review is limited in the assessment of the quality of evidence. Only peer reviewed articles and high quality journals were used to guide the analysis of evidence. The clinical trial strengths or limitations were highlighted when relevant; however, no grading criteria were used to assess the standard of evidence. The quality of evidence used to guide clinical practice guidelines has been debated (Casey, 2013), and the guidelines strongly influenced this literature review. The quality of evidence of clinical guidelines has improved since 2007 but prior to then the majority of clinical trials for LBP was based on poor quality of evidence (Casey, 2013). While outside the scope of this literature review, a recurring theme in the research is the effect of prescription analgesia methods and its effect on imaging practices. An interesting area of study would be to evaluate LBP imaging behavior in relation to prescription analgesia and other treatment methods.

**Conclusion**

LBP is extremely common and is among the highest medical complaints addressed by clinicians. Excluding rare serious conditions, LBP is most often non-specific and does not require imaging. A risk factor assessment included in a thorough history and physical examination can almost always identify patients who require imaging. Over-imaging of LBP is a serious problem that leads to radiation exposure, additional tests, follow-up, and surgeries with questionable benefit, and labeling. Imaging abnormalities are extremely common but are poorly correlated with symptoms. Clinical guidelines are available, published by various professional organizations, to assist clinicians in the management and treatment of LBP. The guidelines aim
to reduce the unnecessary imaging of LBP that is proven not to improve patient outcomes. Implementation of guidelines into clinical practice is not an easy task. Further theory-based intervention research is needed to evaluate how to change LBP imaging behavior and address other barriers to change. Over-imaging of LBP is far too common; clinicians need to reserve imaging for serious medical conditions associated with LBP and follow the recommended clinical guidelines. Adherence with clinical guidelines for LBP has the potential to result in significant savings associated with direct and indirect costs.
References


Appendix A

The TOP Program Guideline (2011) provides 13 suggested steps to better early behavioural management of low back pain problems

1. Provide a positive expectation that the individual will return to work and normal activity. Organize for a regular expression of interest from the employer. If the problem persists beyond 2-4 weeks, provide a reality-based warning of what is going to be the likely outcome (eg, loss of job, having to start from square one, the need to begin reactivation from a point of reduced fitness, etc).

2. Be directive in scheduling regular reviews of progress. When conducting these reviews shift the focus from the symptom (pain) to function (level of activity). Instead of asking “How much do you hurt?”, ask “What have you been doing?”. Maintain an interest in improvements, no matter how small. If another health professional is involved in treatment or management, specify a date for a progress report at the time of referral. Delays will be disabling.

3. Keep the individual active and at work if at all possible, even for a small part of the day. This will help to maintain work habits and work relationships. Consider reasonable requests for selected duties and modifications to the workplace. After 4-6 weeks, if there has been little improvement, review vocational options, job satisfaction, any barriers to return to work, including psychosocial distress. Once barriers to return to work have been identified, these need to be targeted and managed appropriately. Job dissatisfaction and distress cannot be treated with a physical modality.
4. Acknowledge difficulties with activities of daily living, but avoid making the assumption that these indicate all activity or any work must be avoided.

5. Help to maintain positive cooperation between the individual, an employer, the compensation system, and health professionals. Encourage collaboration wherever possible. Inadvertent support for a collusion between ‘them’ and ‘us’ can be damaging to progress.

6. Make a concerted effort to communicate that having more time off work will reduce the likelihood of a successful return to work. In fact, longer periods off work result in reduced probability of ever returning to work. At the 6-week

7. Be alert for the presence of individual beliefs that he or she should stay off work until treatment has provided a ‘total cure’. Watch out for expectations of simple ‘techno-fixes’.

8. Promote self-management and self-responsibility. Encourage the development of self-efficacy to return to work. Be aware that developing self-efficacy will depend on incentives and feedback from treatment providers and others. If recovery only requires development of a skill such as adopting a new posture, then it is not likely to be affected by incentives and feedback. However, if recovery requires the need to overcome an aversive stimulus such as fear of movement (kinesiophobia) then it will be readily affected by incentives and feedback.

9. Be prepared to ask for a second opinion, provided it does not result in a long and disabling delay. Use this option especially if it may help clarify that further diagnostic work up is unnecessary. Be prepared to say “I don’t know” rather than provide elaborate explanations
based on speculation.

10. Avoid confusing the report of symptoms with the presence of emotional distress. Distressed people seek more help, and have been shown to be more likely to receive ongoing medical intervention. Exclusive focus on symptom control is not likely to be successful if emotional distress is not dealt with.

11. Avoid suggesting (even inadvertently) that the person from a regular job may be able to work at home, or in their own business because it will be under their own control. This message, in effect, is to allow pain to become the reinforcer for activity—producing a deactivation syndrome with all the negative consequences. Self employment nearly always involves more hard work.

12. Encourage people to recognise, from the earliest point, that pain can be controlled and managed so that a normal, active or working life can be maintained. Provide encouragement for all ‘well’ behaviours—including alternative ways of performing tasks, and focusing on transferable skills.

13. If barriers to return to work are identified and the problem is too complex to manage, referral to a multidisciplinary team as described in the New Zealand Acute Low Back Pain Guide is recommended.