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# LASER REPORT

BioFlex®

WINTER 2009 ISSUE

## A Message from the President - *November 01 2008*

As 2008 draws to a close, we take this opportunity to reflect on the achievements of the past year. In contrast to the international economic dislocation which has been establishing critical mass for over a decade, progress at Meditech continues on a highly positive note.

The highlight of the year, from many perspectives, was the 5th International Conference held in Toronto in June. All the speakers provided relevant information that will contribute to the understanding and advancement of the technology. At this time, we express our thanks to the lecturers, the attendees and the organizers, all of whom played an important role in order to make the event successful.

During the course of the year, we continued our product development projects. We listened to you, our customers, and introduced several enhancements to our existing products in order to increase performance levels, reliability and the economics of operation.

Our major achievement during the course of the year was completion of the Dual-Port Professional System. At this time, development of this device has been successfully completed and installations are proceeding extraordinarily well. To date, over 10 dual-port systems have been installed and we anticipate installation of over 40 systems prior to the end of this year. Presently, backorders for the New Year stand at 15 additional systems. Despite some technical challenges with the software, since the product introduction was announced earlier this year, we are pleased that the dual-port system has established such a high level of popularity in a relatively short period of time.

In addition, during this year, we developed a number of improved treatment protocols, particularly in relation to wound healing and the treatment of dermatological conditions. These have resulted in more rapid resolution of lesions and have produced some highly dramatic clinical outcomes.

In 2009, we will focus on developing new systems with greater capabilities for application in specific market niches, while simultaneously improving our existing products with regard to new features and performance levels; moreover, we will continue to intensify our efforts to develop and evaluate new treatment protocols in our clinics, which we will share with all our clients.

We thank both the members of our staff and the therapeutic community for participating in what has proven to be an exciting year and expect the positive momentum to escalate in 2009.

Best Wishes for the Holiday Season and the New Year!

Fred Kahn MD, FRCS(C)


Memebers of staff assemble outside Meditech headquarters in Toronto, Ontario.

Meditech INTERNATIONAL INCORPORATED

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## In the News at Meditech

Over the past year, Meditech has significantly expanded its Engineering Department, including specialists in a number of disciplines. This should enhance engineering capabilities and innovation with regard to both current and future products.

The most recent newcomer to the department is Alex Barankin who will serve as Director of Engineering. Alex brings over two decades of engineering management experience in the electronics, medical and manufacturing industry. During his successful career, Alex has headed several production teams and provided effective leadership for multidisciplinary groups.

Another addition is M. Tirandazian – Ph.D Computer Science. Dr. Tirandazian has a broad background in software engineering and his task will be to re-write all current and new software. These activities should benefit the versatility of all our products and simplify their utilization.

On the clinical side, we take this opportunity to welcome Dr. James Donovan to our staff on a full-time basis. As a qualified healthcare professional Dr. Donovan is a graduate of The Canadian Memorial Chiropractic College *Cum Laude* 2008. He also has a Bachelor's Degree in Science (B.Sc). Dr. Donovan understands the potential of Laser Therapy and should prove to be a great asset to the medical team.

Over the past six months, we have constructed two specialized treatment areas at our main clinic. The first, is a physiotherapy department utilizing a number of modalities to assess muscle function and institute specialized exercise programs. These programs are instituted under the supervision of a Registered Physiotherapist.

As our volume of wound problems requiring treatment continues to expand, a wound area has been dedicated to deal with these lesions. This area features air circulation systems and ultraviolet lighting in order to provide a controlled and relatively aseptic environment.

The Downtown Clinic has relocated to a higher quality building in the city core and continues to offer quality rehabilitation services.

Jeff Matthews represented the company at two conferences sponsored by the World Association of Laser Therapy (WALT) in South Africa and Laser Florence. His lectures presented Meditech's approach to wound healing and the appropriate strategies developed by the company. This revolutionary approach has been highly successful in the treatment of many types of ulcers, wounds and dermatological conditions that proved to be resistant to the conventional medical approach.

October 20, 2008: Jeffrey Matthews with Prof. Chukuka S. Enwemeka (left) at the World Association for Laser Therapy (WALT) 2008 congress in South Africa.

The general consensus in the medical community indicates that this treatment approach should be more widely adopted.

## A Review of the Effectiveness of Laser Therapy in the Treatment of Disc Herniations

There is a high probability that you, or someone you know, is currently suffering from "back pain". More than likely it is low back pain, as this affects nearly two thirds of the population at some point during their lifetime (Coste et al., 1994; Hillman, 1996). Low back pain is the fifth most common symptom for which patients visit physicians, with approximately one quarter of adults reporting low back pain lasting at least 1 day in the past 3 months (Deyo et al., 2006). Due to this high prevalence, low back pain has an enormous associated healthcare cost. In the United States, the total direct healthcare costs attributable to low back pain were estimated at $26.3 billion in 1998 (Luo et al., 2004).

The news isn't all bad, as the majority of low back pain cases typically improve rapidly in the first month (Pengel et al. 2003). Up to one third of patients however report persistent back pain of at least moderate intensity one year following an acute episode and 1 in 5 report substantial limitations in activity (Van Korff and Saunders, 1996). These statistics indicate that 5% of the people with back pain account for 75% of healthcare costs (Frymoyer and Cats-Baril, 1991). Low back pain has obvious lifestyle and financial burdens and when it is accompanied by radiation of pain and numbness in the lower extremities, it can be truly debilitating. Lumbar disc herniations account for only 4% of low back pain patients but account for a high percentage of low back pain costs.

A painful disc herniation results when a tear allows the migration of the nucleus pulposus (protrusion), causing nerve root irritation. Lumbar disc herniations typically occur in individuals between the ages of 30-40 years, (Adams and Hutton, 1992) when the nucleus pulposus is still fluid and the annulus is weakened by activity and age. Due to this relatively young demographic, poor treatment outcomes can result in decades of suffering for these patients.

Clinical guidelines have been implemented by the American College of Physicians and the American Pain Society to assist physicians in diagnosis and treatment of low back pain (Chou et al. 2007). These guidelines recommend a series of steps in order to diagnose and treat patients presenting with low back pain, including lumbar disc herniations. The major problem in diagnosis is that back problems are seldom simple and often complex. Even a routine disc herniation occurring in a teenager while sneezing during a moment of relaxation of the musculature, can result in nerve root compression and subsequent scar tissue formation. Treatment can be even more problematic as there are a multitude of treatment options ranging from surgery to bed rest.

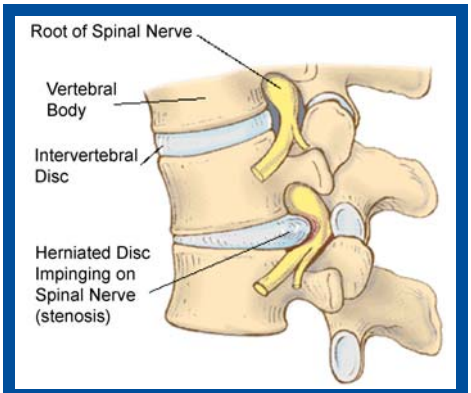
Once again the prognosis isn't necessarily negative as most patients suffering from lumbar disc herniation with radiculopathy improve within the first 4 weeks with noninvasive management (Vroomen et al., 2002; Weber, 1983). The majority of these herniations will go unnoticed and will heal through natural processes (Saal et al., 1990). For those cases that do not heal, there is very little that modern medicine offers to resolve this pathology.

Lumbar discectomies are the most common surgical procedure performed for patients experiencing back and leg symptoms (Weinstein et al. 2006). These are elective surgeries that are performed if symptoms are progressive and/or associated with nerve root compression (stenosis) (Amundsen et al., 2000; Atlas et al. 2005). The United States performs a greater number of discectomies than any other developed country (Deyo and Weinstein, 2001). Despite the growing number of surgeries, several studies have compared surgical and nonoperative treatment with limited evidence-based conclusions in favour of either approach (Hoffman et al., 1993; Weber, 1983; Buttermann, 2004). More recently a number of centers across the United States completed a large clinical trial with the goal of determining the best practice for lumbar disc herniations titled the "Spine Patients Outcomes Research Trial" or "SPORT". This study was divided into a randomized controlled trial where patients were either sent for lumbar discectomy or received "conservative" treatment. Despite the expenditure of several million dollars on this multicenter, prospective, randomized, controlled clinical trial, the SPORT investigators admitted, "conclusions about the superiority or equivalence of the treatments under study are not warranted based on the intent-to-treat analysis". The results of this study found that both groups (surgical and conservative) improved substantially over two years without statistically significant difference between the two (Weinstein et al. 2006, Weinstein et al. 2006). The "conservative" treatment was not without risk as 60% of this group received NSAIDs with half of this group prescribed COX-2 inhibitors which are linked to heightened risk of cardiovascular side effects. (Fosbøl et.al. 2008) Laser therapy was not used within the conservative treatment for any patient in the randomized trial.

Surgical discectomy, as mentioned above, should be the last option as the effectiveness of this technique does not appear to be superior to conservative management. An article published in the New England Journal of Medicine found, that unlike other surgical techniques, there is no therapeutic window for the timing of discectomy surgery if conservative techniques provide no symptom relief for painful disc herniations (Deyo, 2007). F. Kahn believes that "you should seldom operate for pain" per se and this axiom holds true for patients suffering from disc herniations. Recent publications are beginning to demonstrate the effectiveness of laser therapy for the treatment of these patients.

Prior to the existence of imaging studies, little was known about the healing mechanism of disc herniations. Imaging studies have confirmed what has been long suspected that disc herniations can decrease in size and even disappear spontaneously, leading to decreased pressure on the nerve root (Teplick, 1985). In adult discs, blood vessels are normally restricted to supplying only the outer layers of the annulus. Low oxygen tension at the center of the disc leads to an anaerobic metabolism, resulting in high concentrations of lactic acid and a low pH. These deficiencies in metabolite transport, limit both the density and metabolic activity of disc cells (Urban et al., 2004). Collagen turnover time in articular cartilage is approximately 100 years (Verzijl et al., 2000) and is theorized to be even lower in the disc (Adams and Roughley, 2006). The result is that intervertebral discs have a limited ability to recover from metabolic or mechanical injuries such as herniations.

There have been a number of mechanisms investigated to indicate how disc herniations heal, although it is now generally accepted that the herniated disc fragments are reabsorbed (Doita et al., 1996, Grondblad et al., 1994). Histological investigations have shown the presence of granulation tissue with abundant vascularization surrounding the fibrocartilaginous fragments (Doita et al., 1996). Within the granulation tissue, the prevailing cell types are macrophages with fibroblasts and endothelial



Herniated Disc

cells (Grondblad et al., 1994). These cell types have been demonstrated to be positively affected by laser therapy. The stimulation of macrophages and fibroblasts could be the primary mechanisms by which laser therapy heals disc herniations (Young et al., 1989). Inflammatory markers such as IL1, IL6 and TNF alpha are also present at the site of disc herniations leading to higher prostaglandin E2 concentrations. Two studies have demonstrated that laser therapy is effective in reducing prostaglandin E2 concentrations (Lim et al., 2007, Bjordal et al., 2005). Bjordal demonstrated that inflammation is greatly reduced 75, 90, and 105 minutes after active laser therapy, compared to levels prior to treatment (Bjordal et al., 2005). The reduction in inflammation appears to be another method by which laser therapy promotes healing in disc herniations.

There are a number of clinical publications on the effectiveness of laser therapy in treating low back pain and lumbar disc herniations. The majority of these articles are published on chronic (non-specific) low back pain either alone (Toya et al., 1994; Soriano et al., 1998; Basford et al., 1999) or with exercise (Gur et al., 2003, Djavid et al., 2007). These positive publications seem to be absent when looking at reviews from either the American Pain Society/American College of Physicians (Chou and Huffman, 2007) or the Cochrane Collaboration (Yousefi-Nooraie et al., 2008). In the review of laser therapy for low back pain performed by American Pain Society/American College of Physicians 4 trials were reviewed (566 patients) where laser therapy was effective and one trial (140 patients) where laser therapy appeared to be no more beneficial than a sham laser device. The conclusion from this was:

"Noninvasive therapies (low-level laser therapy) have not been shown to be effective for either chronic or subacute or acute low back pain" (Chou and Huffman, 2007). A letter to the authors regarding their bias against laser therapy and pro pharmaceuticals (Bjordal et al. 2008), only prompted the authors to downgrade the evidence supporting acetaminophen and cite the Cochrane study (Yousefi-Nooraie et al., 2008) to support their stance on laser therapy. The Cochrane study found that "three high quality studies (168 people) separately showed statistically significant pain relief with laser therapy in the short-term (less than 3 months) and intermediate term (less than 6 months) when compared with sham laser therapy" (Yousefi-Nooraie et al., 2008). Two small trials (151 people), also included in the Cochrane review, independently found that the relapse rate in the LILT group was significantly lower than in the control group at the six-month follow-up. The conclusion from these publications is that "based on these trials, with a varying population base, laser therapy dosages and comparison groups, there is insufficient data to either support or refute the effectiveness of laser therapy for low back pain." The resounding statements from both of these meta-analyses were "more studies are required" and "larger trials on specific indications are warranted". Lacking in the conclusion was any suggestion of "how many patients and studies" are required to provide sufficient evidence. A recent study examining the effectiveness of laser therapy in treating lumbar disc herniations measured using clinical evaluation and magnetic resonance imaging (MRI) found that "low power laser therapy is effective in the treatment of patients with acute lumbar disc herniations" (Unlu et al., 2007).

Invariably, studies present questions. Some of the more common parameters for consideration are duration and extent of treatment, joules per centimeter square of irradiation, power settings, etc. One must conclude that all of these publications and meta-analyses, although well intentioned, may in many instances be misguided.

At the Meditech Centres, almost 40% of the patients who present for treatment relate to back problems, i.e. pain. The majority of these patients are referred by healthcare providers who have been treated at our clinics or patients who are grateful for the permanent relief they generally obtain. The majority of these patients often present with a prolonged history of varying therapies and symptomatologies incorporating a loss of the ability to perform meaningful physical activities. Some arrive in wheelchairs or utilizing walkers and canes. Over 15% have been bedridden for years. Generally, after five treatments, these patients cease to utilize analgesics and anti-inflammatories. By treatment fifteen, they are ambulatory and have resumed a more normal lifestyle. Drug dependencies, the mechanical supports and bed rest have disappeared along with the pain and the physical restrictions.

The financial justification for the use of laser therapy as the first line of defense in disc herniations is overwhelming. Data collected from the SPORT trial found that the average surgical procedure cost $15,139, which rises to $27,341 when other costs such as diagnostic tests and missed work are factored in (Tosteson et al., 2008). The cost of conservative treatment in that same study averaged $13,108. Compared with the most extreme example of a herniated disc patient at Meditech who received 40 treatments the total cost was $3,200. When diagnostic tests and healthcare visits are factored into this equation the total cost of laser therapy is closer to $5,700. This is a savings of over $20,000 versus surgery and $7,500 over the standard conservative treatment. It should be noted that the average number of treatments to resolve disc herniations are 14.

As we treat an increasing number of back pain patients, we are initiating diagnostic imaging studies prior to and following cessation of treatment. These follow-up studies are generally instituted 6 months to 1 year after a course of laser therapy has been administered. In several cases where imaging studies were obtained subsequent to laser therapy for reasons not related to the initial problem, it was noted that not only had the patients remained asymptomatic, but on radiological examination, the disc herniations were no longer demonstrable. This has indicated that we should institute a programme of both short and long-term follow-up studies to demonstrate the radiological changes effected by the application of laser therapy. The study will consist of 50 plus patients diagnosed with disc herniations characterized on the basis of both subjective and objective data.

This review of the current literature clearly indicates some of the shortcomings of meta-analyses and the performance of studies without standardized methodology. At our Meditech Clinics in Toronto, we assess and treat in excess of 100 isolated disc herniations, ranging from acute to chronic in nature per annum. Some of these patients have endured several years of a variety of therapies, including physiotherapy, chiropractic, craniosacral, massage, acupuncture and over 25% have even been subjected to one or more surgical procedures.

**CONCLUSIONS**

- Medical convention has demonstrated that the relief of symptomatic disc herniations continues to be problematic. Both conservative and surgical solutions in the majority of cases appear to be equally ineffective.
- At the Meditech Clinics where we treat an extensive number of disc herniations with LILT, significant improvement /cure rates in excess of 90% are achieved. The average cost of treatment is approximately $1,500.00 per patient.
- The controlled clinical studies that we are initiating are designed to provide objective evidence that post laser therapy disc herniations can no longer be visualized on MRI.
- The application of appropriate therapy requires a comprehensive understanding of the anatomy, pathology and biomechanics of the spinal column.
- Based on our experience, we feel that laser therapy presents the most logical and effective therapeutic approach in managing this pervasive medical conditions.

## A Critical Review of the Pharmaceutical Culture with Particular Reference to the Treatment of Gout

Today, medications are available for the treatment of most illnesses. Patients are generally made aware of the potential complications and side effects of these drugs. The problems that frequently occur are complicated by the unknown factors, particularly with long-term multi-drug therapies.

No one can dispute the necessity of insulin for the control of diabetes or thyroxin for the treatment of hypothyroidism. At the same time, many conditions can be treated or even prevented, utilizing certain long-term measures or less dangerous therapeutic approaches. Aside from a balanced diet, the utilization of vitamins and supplements and the minimum of at least one-half hour of vigorous daily exercise, there are therapies available for the treatment of medical problems that can control or cure the pathological process involved, without risk.

This article focuses on a patient who was on a pharmaceutical regimen for the treatment of gout for a period extending over three years. The results were a number of undesirable consequences. The management of this patient clearly illustrates the need for re-evaluation of current medical practice. The drugs utilized were a combination of Allopurinol and Colchicine.

At Meditech over the past several years, we have demonstrated that Low Intensity Laser Therapy can completely resolve the symptoms and physical findings associated with gout. This usually occurs after two to four treatments over consecutive days. Patients may be inconvenienced with regard to travel and time, however this approach obviates all the dangers and complications involved with drug therapies.

**DIAGNOSIS**

Gout has such a distinct clinical signature that it can generally be diagnosed by history and physical examination alone. Elevated serum urate (7 mg/dL) supports the diagnosis, but is not specific. It should be noted that 30% of patients have a normal serum urate level at the time of their first attack. The diagnosis of gout can be confirmed by histopathological analysis of the aspirated joint fluid, which will clearly demonstrate intracellular monosodium urate crystals. In addition, hypertension and renal insufficiency are often present.

**TREATMENT**

The initial treatment administered is generally directed to relieve the pain. This comprises the use of analgesics, NSAIDs, ice, etc. Drug therapy programs may include Allopurinol (xanthine oxidase inhibitor), Colchicine (microtubule polymerization inhibitor), corticosteroids, hormones or Probeniset (uricosuric). The intended effect is to lower uric acid levels and reduce inflammation in the joints.

Allopurinol is often prescribed to prevent recurrence, reduce the incidence of renal calculi and manage uric acid levels. Administration for an extended period of time may be required before the full effect of the drug is noted. Patients may also be advised to continue taking this medication even if they are asymptomatic. During the first few months, Allopurinol may cause an increase in the frequency of attacks of gout, secondary to the inflammatory response. Colchicine is therefore often co-prescribed to minimize inflammation.

The potential side effects related to the administration of Allopurinol can be mild to serious (Singer et al, 1986). Skin rashes are common and may be evidence of an allergic reaction. Allopurinol may also cause drowsiness and irritation of the gastro-intestinal tract. A series of additional side effects have been reported, including hypersensitivity reactions manifested as hepatitis with symptoms of eosinophilia, dermal lesions, aplastic anemia and vasculitis. Some studies report that hypersensitivity leading to morbidity may be inordinately high in cases with prior liver or renal functional impairment. Gastrointestinal bleeding has also been reported. Discontinuation of Allopurinol is usually recommended to avoid progression of these complications.

Allopurinol is considered to be the drug of choice in treating and preventing gouty arthritis and instances of uric acid accumulation (Kumar, 1996). Whereas this drug is generally deemed to be safe, hypersensitivity exists, primarily in patients with chronic renal insufficiency (Singer et al, 1986). In these cases, a significant increase in mortality rates has been observed. The mechanisms leading to complications are still under investigation, however there is evidence suggesting that complications may be due to bacterial infection or viral reactivation, including cytomegalovirus or human herpes virus-6 (Koike et al, 2008). A chronic history of renal insufficiency often characterizes a state of immunodeficiency, manifested particularly by impaired T-cell mediated responses with lower than normal levels of CD4+ and CD8+ lymphocytes.

Colchicine is often prescribed in conjunction with Allopurinol as a potent anti-inflammatory drug. This approach usually limits attacks of gout (Morris, 2003) which tend to increase for the first few months of Allopurinol administration. Biologically, Colchicine is a mitotic inhibitor, which affects tissues with high rates of cellular division and is lethal to cellular replication in general. Clinically, some therapeutic value can be derived from this drug as a chemotherapy agent and indeed, it may have a role to play in this area. In high doses, it can cause gastrointestinal and renal problems and may even cause paralysis. Colchicine also acts as an immunosuppressant and therefore relieves the pain and discomfort associated with attacks of acute gout. The drug is generally administered to individuals who may be at risk of developing gout and in patients with pre-existing chronic inflammatory conditions such as rheumatoid arthritis. Potential risk factors associated with Colchicine vary from mild to extreme, however may elevate morbidity and mortality rates significantly.

The following case histories outlined below, demonstrate the potential hazardous complications of a drug therapy programme:

1. A Gutiérrez-Macías et al. reported the case of an 80-year-old male with a history of chronic renal insufficiency, who was given 300 mg Allopurinol per day to control uric acid levels. At initiation of the drug programme the patient was asymptomatic. After six weeks of treatment, he developed loss of muscle strength, anorexia, fever, diarrhoea, jaundice, abdominal pain and dermal lesions, in addition to severe eosinophilia. Essentially, his immune system ceased to function. Immune suppressants (Prednisone) were insufficient to reverse the effects and due to deterioration of liver function, hepatic encephalopathy ensued and the patient expired (Gutierrez-Macias et al, 2005).

2. M. Arakawa et al. describes a 43-year-old man with a history of chronic renal insufficiency who was given an open-ended prescription of Allopurinol (100 mg qd). After the first month of therapy, he began to experience symptoms (malaise, elevated body temperature) and was admitted to hospital. Two weeks later, he had a high fever with skin rashes (erythema multiforme) and a drug reaction was suspected. The administration of Allopurinol ceased immediately but his status continued to deteriorate, resulting in renal failure and virtual destruction of the integumentary system. Extensive blood testing revealed the presence of Cytomegalovirus. Despite blood transfusions and other resuscitory efforts the patient died (Arakawa et al, 2005).

It is important to stress that although these cases were are not common, the rate of deterioration was rapid. Individuals with chronic renal or liver insufficiency appear to be most vulnerable to Allopurinol hypersensitivity reactions although the mechanisms responsible for these adverse events remain unclear.

**CASE REPORT - MEDITECH CLINIC**

A 66-year-old Caucasian male presented for treatment of a pre-gangrenous right lower extremity on September 10, 2008. He had been on daily insulin for several years; he was also taking Allopurinol and Colchicine daily over the past 3 years for the prevention of gout. While on these medications, he had not had any acute attacks of gout. Over this period of time however, the patient developed renal failure in addition to progressive peripheral arterial occlusive disease involving all extremities in varying degrees. This was accompanied by generalized deterioration both physically and psychologically. At the time of his initial examination, there were several ulcers on the right foot and amputation of the right lower extremity had been suggested. The hands and the left foot were only moderately affected.

Following one treatment with Low Intensity Laser Therapy, symptoms diminished and physical findings improved dramatically. Needless to say, all medications except insulin were stopped. His physical status continues to improve with regular treatment (Bioflex Professional system) at a clinic located close to his home two hours away.

**DISCUSSION**

• It is important to categorize this situation with regard to healthcare in general and to initiate changes to alter the management of these types of clinical conditions.

• Medical supervision in this instance was clearly inadequate and the pharmacist who kept filling repeat prescriptions on demand should come under scrutiny.

• Whereas the clinicians at Meditech have not conducted tests with regard to the toxicities of the drugs in question, it has become increasingly clear that all pharmaceuticals have side effects which may be undesirable.

**CONCLUSIONS**

- The therapeutic approach to gout requires re-evaluation.
- The primary treatment of gout should be directed to the relief of pain.
- This may include analgesics initially, however the long-term strategy should include preventative measures which treat the pathology, rather than modulating symptoms.
- A combination of pharmaceuticals may be effective on a short-term basis; the risks associated with this approach, however should be carefully considered.
- Hyperuricemia levels may be controlled with medications initially; the course of treatment should be monitored frequently and medications should not be considered a satisfactory long-term solution.
- Preventative measures including diet, control of diabetes, hypertension and obesity should be stressed.
- Low Intensity Laser Therapy in the treatment of gout is safe, effective and devoid of any complications (Soriano et al, 2006; Kahn, 2008) and should therefore be the treatment of choice.
- Sustained good health implies use of the minimum number of pharmaceuticals essential to the maintenance of the individuals optimal status.

## Pharmaceutical Revelations

***EXCERPT FROM*** *"10 Deadliest Drugs: They're approved by the FDA – but are your meds safe." (MSN Health and Fitness)*

Four of the top 10 deadliest drugs are strong opioid painkillers like oxycodone, according to a 2007 study by Furberg and colleagues, which looked at adverse events reported to the FDA.

Furberg's study did not distinguish between medical use and abuse of opioid painkillers, and other research has found that the overwhelming majority of deaths occur in drug addicts, not patients. In addition, most deaths related to opioid painkillers involve taking a combination of four of five other drugs, which makes them seem more deadly than they are. (See also The Truth About Painkillers). Nonetheless, only take these medications exactly as prescribed.

The fifth deadliest drug is another painkiller, this one over-the-counter: acetaminophen (Tylenol). It can cause irreversible and sometimes fatal liver damage in doses that are not much higher than the effective dose. Many prescription painkillers (anything with "cet" in the name, for example) also contain acetaminophen. Extreme care must be taken not to exceed prescribed dosage.

Rounding out the top 10 are two antipsychotic medications, clozapine and risperidone (Risperdal); interferon-beta, a drug that helps regulate the immune system; and two immune-affecting drugs, Infliximab and Etanercept. The antipsychotics should only be taken if there are no other alternatives, as this class of medication can increase mortality risk overall. The immune drugs have highly variable effects, so need to be used cautiously.

**OUR COMMENTS**

The FDA was established in 1906 in order to carefully screen many products for safety reasons. The model established at that time was "above all, do no harm."

Today, the organization regulates more than $1 trillion worth of goods each year, including $275 billion in drugs. For many decades, the approval process for new drugs was rigorously regulated; it required several years of rejection, further laboratory and clinical evaluation before the process was deemed complete and the new product was able to reach the shelf.

As recently as 20 years ago, only 4% of drugs submitted to the FDA were approved on their initial application. In the early 90's, new legislation was enacted which attempted to streamline the drug approval process. The overhauls were instituted in response to years of pressure on the FDA to decrease its approval time and permit novel drug therapies to be brought into the marketplace for patients suffering from life-threatening illnesses. These measures led to an increase in overall approval rates.

Consequently by 1998, 66% percent of drugs were being approved on the basis of the fast-track process. Although, it is entirely plausible that superior research has led to more viable drugs being developed, the statistics indicate otherwise. Currently, it is estimated that 10% of the entire U.S. population has utilized drugs which have subsequently been withdrawn by the FDA for being unsafe.

In order of degree of danger, the following drugs should be utilized with great care:

| Rank | Drug | Type | Deaths *(1998- 2005)* |
|---|---|---|---|
| 1. | Oxycodone | Prescription opioid painkiller* | 5548 |
| 2. | Fentanyl | Prescription opioid painkiller* | 3545 |
| 3. | Clozapine | Antipsychotic | 3277 |
| 4. | Morphine | Prescription opioid painkiller* | 1616 |
| 5. | Acetaminophen | Over-the-counter painkiller | 1393 |
| 6. | Methadone | Prescription opioid painkiller*/addiction medication | 1258 |
| 7. | Infliximab | Immune-system modulating drug | 1228 |
| 8. | Interferon beta | Immune-system modulating drug | 1178 |
| 9. | Rispiridone | Antipsychotic | 1093 |
| 10. | Etanercept | Immune-system modulating drug | 1034 |

*Source: Moore TJ, Cohen MR, Furberg CD, Serious Adverse Drug Events Reported to the Food and Drug Administration, 1998-2005, Archives of Internal Medicine, Sept. 10., 2007; 167 (16): 1752-1759*

**CONCLUSIONS**

- Caution should always be exercised in prescribing any medication.
- All pharmaceuticals much like the drugs listed above can result in adverse severe effects.
- Medications shall only be prescribed if safer therapies are unavailable.

## Meditech 2009 Low Intensity Laser Therapy Education and Training Schedule

Meditech International Inc. is a world leader in the education and training of healthcare professionals, emphasizing the importance of the proper application of Low Intensity Laser Therapy. On an almost weekly basis, Meditech hosts LILT certification training seminars either at its expanded research and education centre in Toronto, Canada or in a number of major urban centres in North America.

**2009 Certification Training Dates (Toronto Education & Training Centre)**

The certification training sessions consist of a two and a half day course, designed to educate trainees regarding the science and application of Low Intensity Laser Therapy. Formal lectures will be complemented with hands-on training, covering the treatment of soft tissue and sports injuries, arthritic conditions, wound healing and the entire spectrum of musculoskeletal conditions. The dates established are listed below.

**Toronto Certification Training Dates - 2009**

| | | | | | | |
|---|---|---|---|---|---|---|
| **January 09-11** | **March 20-22** | **May 01-03** | **July 24-26** | **September 18-20** | **October 23-25** | **December 11-13** |
| **February 20-22** | **April 17-19** | **June 26-28** | **August 21-23** | **October 02-04** | **November 20-22** | |

**Remote Certification Training Dates - 2009**

| | | |
|---|---|---|
| **Houston, Texas – February 07-08** | **Edmonton, Alberta – May 23-24** | **Seattle, Washington – July 18-19** |
| **Vancouver, BC – March 28-29** | **San Antonio, Texas – June 20-21** | **Calgary, Alberta – September 26-27** |

***Contact Catherine Nanckoo at 1-888-557-4004 or info@bioflexlaser.com for more information and to RESERVE YOUR SPOT for any of these sessions.***

**Meditech International Inc.**, 415 Horner Avenue, Unit 1, Toronto, Ontario, M8W 4W3 • Phone: (416) 251-1055
Fax: (416) 251-2446 • Toll Free: (888) 557-4004 • www.bioflexlaser.com • info@bioflexlaser.com