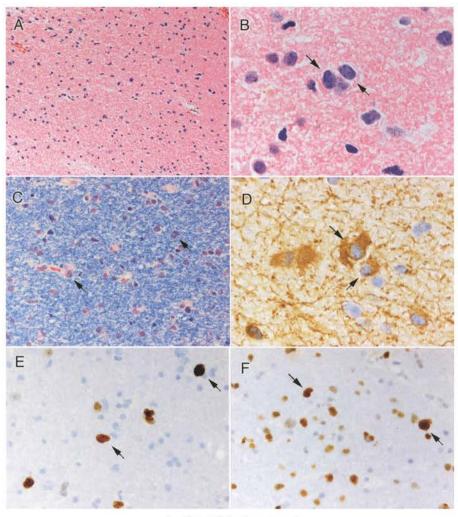


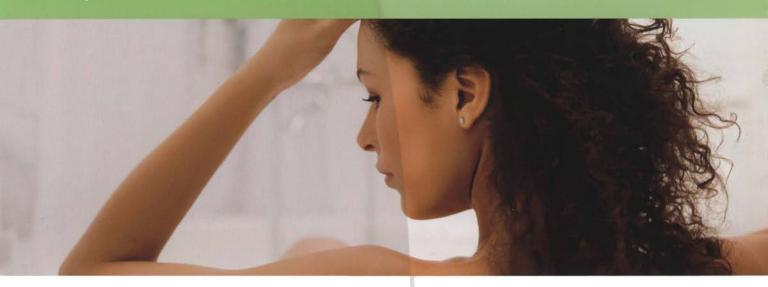
Volume 37 Number 4 July 2010



See Page A-2 for figure legend

## Beyond whole brain

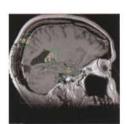
### there's local control



# Leksell Gamma Knife\* Perfexion™ treats multiple brain metastases in a single session, reducing the damage to healthy tissue that may limit future treatment options, and allowing for concomitant chemotherapy for optimum primary tumor control. Find out how Elekta is creating new possibilities for the most challenging cases at elekta.com/proof.



Leksell Gamma Knife' Perfexion



Single-session multiple mets





#### Volume 37 / Number 4 / July 2010

#### **EDITORIALS**

**429** Brain Drain: Using the Deep Venous System to Declare Brain Death

G. Bryan Young, Jeanne Teitelbaum

#### AUTOBIOGRAPHY

**431** The Discovery of Critical Illness Polyneuropathy: A Memoir Charles F. Bolton

#### REVIEW ARTICLE

439 Electroencephalographic Features of Temporal Lobe Epilepsy Mohammed M. Jan, Mark Sadler, Susan R. Rahay

#### ORIGINAL ARTICLES

449 Consensus Statement: The Development of a National Canadian Migraine Strategy

W.J. Becker, S.N. Christie, G. Mackie, P. Cooper, on behalf of the Canadian Headache Society Migraine Strategy Task Force

457 GPI-1046 Increases Presenilin-1 Expression and Restores NMDA Channel Activity

Joseph P. Steiner, Kathryn B. Payne, Christopher Drummond Main, Sabrina D'Alfonso, Kirsten X. Jacobsen, T. Philip Hicks, William A. Staines, Michael O. Poulter

468 Paramnésie De Réduplication D'évènement Après Hémorragie Du Noyau Caudé Droit

C. Pluchon, F. Salmon, J.L. Houeto, A. Listrat, P. Vandermarcq, R. Gil

473 Outcomes of Patients with Parkinson Disease and Pathological Gambling

A. Bharmal, C. Lu, J. Quickfall, D. Crockford, O. Suchowersky

478 A Survey on the Impact of the Menstrual Cycle on Movement Disorders Severity

Anna Castrioto, Sara Hulliger, Yu-Yan Poon, Anthony E. Lang, Elena Moro 482 Classification of Symptomatic Chiari I Malformation to Guide Surgical Strategy

Mohammed F. Shamji, Enrique C.G. Ventureyra, Benedicto Baronia, Munyao Nzau, Michael Vassilyadi

**488** Predicting Conversion to MS - The Role of a History Suggestive of Demyelination

Sarah A. Morrow, J. Alexander Fraser, David Nicolle, Marcelo Kremenchutzky

492 Selective 4 Vessels Angiography in Brain Death: A Retrospective Study

Martin Savard, Alexis F. Turgeon, Jean-Luc Gariépy, François Trottier, Stephan Langevin

498 Reproducibility of Semi-Automated Measurement of Carotid Stenosis on CTA

Jeremy H. White, Eric S. Bartlett, Aditya Bharatha, Richard I. Aviv, Allan J. Fox, Andrew L. Thompson, Richard Bitar, Sean P. Symons

504 Abrogating HSP Response Augments Cell Death Induced by As203 in Glioma Cell Lines

Xueming Song, Zhiqiang Chen, Chunbo Wu, Shiguang Zhao

#### NEUROIMAGING HIGHLIGHTS

512 Concurrence of High-Grade Brainstem Glioma and Multiple Sclerosis

C. Hinnell, M. Almekhlafi, J.T. Joseph, R. Bell, P. Sharma, S. Furtado

515 Giant Skull and Brain Metastasis from a Neglected Thyroid Papillary Carcinoma

El Mostarchid Brahim, Akhaddar Ali, Boucetta Mohammed

#### **BRIEF COMMUNICATIONS**

517 Lack of Motor Progression in Isolated Sensory Peripheral Neuropathy

Sameer Chhibber, Cory Toth

521 Homozygous Machado Joseph Disease: A Case Report and Review of Literature

Liudmila Lysenko, Raji P. Grewal, Wei Ma, Leema Reddy Peddareddygari



#### Volume 37 / Number 4 / July 2010

524 Pediatric Malignant Peripheral Nerve Sheath Tumour of the Radial Nerve

Mohammed F. Shamji, Bibiana Purgina, Trevor Flood, Jean Michaud, Enrique C.G. Ventureyra

528 Familial RYR 1 Mutation Associated with Mild and Severe Central Core Disease

Ekaterina Erendzhinova, Christopher A. Robinson, Noel J. Lowry, Edmond G. Lemire

532 Clues to Dural Arteriovenous Fistulas in Patients with Progressive Dementia

Amir R. Dehdashti, Charles C. Matouk, Karel TerBrugge, M. Christopher Wallace, Robert A. Willinsky

535 Giant Cystic Intradural Lumbosacral Schwannoma: Is Stabilization Necessary?

Jeffrey S. Wilkinson, Sumeer A. Mann, Christopher A. Robinson, Daryl R. Fourney

#### REFLECTIONS

539 Science as a Human Value

Donald F. Weaver

541 The Big Test

J. Max Findlay

543 Books Received/Books Reviewed

548 Calendar of Events

A-13 Board of Directors/Committee Chairs

IBC CNSF Sponsors

A-9 Information for Authors
A-10 Information for Authors

A-17 Advertisers Index
A-17/A-18 Classified Ads

#### COVER LEGEND

From the Neuroimaging Highlight article "Concurrence of High-Grade Brainstem Glioma and Multiple Sclerosis" pages 512-514
Middle cerebellar peduncle biopsy reveals hypercellularity
(A), no demyelination (C) and frequent atypical nuclei (B-F, arrows) of glial origin
(D) having increased proliferation (E) and expressing p53
(F), establishing the diagnosis of WHO grade III anaplastic astrocytoma. A,B – hematoxylin and eosin stain;
C – Luxol fast blue stain; D – glial fibrillary acidic protein immunostain;
E – Ki67 immunostain; F – immunostain for p53 expression.



# A complete financial diagnosis includes helpful advice and practical solutions.

At Scotiabank, we have experts that can help you grow your business. Our *Scotia Professional®* Plan is a customized financial package that includes everything you need to set up and run a successful practice. You'll get competitive financing rates, flexible payback plans, and a dedicated advisor – all in one convenient package to meet your day to day banking, financing, and investment needs. It makes managing your money easy, so you can focus on serving your patients and growing your practice.

Learn more at any Scotiabank branch or visit www.scotiabank.com/professional

Scotia Professional Plan

You're richer than you think:





#### Volume 37 / Number 4 / July 2010

Editor-in-Chief/Rédacteur en chef G. Bryan Young LONDON, ON

#### Associate Editors/Rédacteurs associés

J. Max Findlay EDMONTON, AB Michael Shevell MONTREAL, QC Timothy J. Benstead HALIFAX, NS Mike Poulter LONDON, ON Serge Gauthier VERDUN, QC Robert Hammond LONDON, ON

#### Past Editors/Anciens rédacteurs en chef

Douglas W. Zochodne CALGARY, AB James A. Sharpe TORONTO, ON Robert G. Lee CALGARY, AB Robert T. Ross WINNIPEG, MB (Emeritus Editor, Founding Editor)

#### Editorial Board/Conseil d'éditorial

Jorge Burneo London, on
Richard Desbiens Quebec City, Qc
David Fortin Sherbrooke, Qc
Mark Hamilton Calgary, Ab
Hans-Peter Hartung Dusseldorf, Germany
Michael Hill Calgary, Ab
Alan C. Jackson Winnipeg, Mb
Daniel Keene Ottawa, on
Terence Myles Calgary, Ab
James Perry Toronto, on
Oksana Suchowersky Calgary, Ab
Brian Toyota Vancouver, BC
Brian Weinshenker Rochester, Mn, Usa
Samuel Wiebe Calgary, Ab
Elaine Wirrell Rochester, Mn, Usa

#### SECTION EDITORS/CONSEIL DE RÉDACTION

Neuroimaging Highlight/Neuroimagerie Richard Farb TORONTO, ON David Pelz LONDON, ON

Neuropathological Conference/Conférence sur la neuropathologie Robert Hammond LONDON, ON

Book Review/Critiques de livres Reflections/Reflets

Andrew Kirk SASKATOON, SK

#### Critically Appraised Topic Summaries (CATS)

Jorge Burneo LONDON, ON Mary Jenkins LONDON, ON

#### Editorial Review Board/Conseil de Revue d'éditorial

Donald Brunet KINGSTON, ON Lionel Carmant MONTREAL, QC Colin Chalk MONTREAL, QC K. Ming Chan EDMONTON, AB Robert Chen TORONTO, ON Mary Connolly VANCOUVER, BC Joseph Dooley HALIFAX, NS Paolo Federico CALGARY, AB Daryl Fourney SASKATOON, SK Hannah Glass SAN FRANCISCO, CA, USA Alan Goodridge ST. JOHN'S, NL Ian Grant HALIFAX, NS Alan Guberman OTTAWA, ON John Hurlbert CALGARY, AB Manouchehr Javidan VANCOUVER, BC Patrick McDonald WINNIPEG, MB Martin McKeown VANCOUVER, BC Joseph Megyesi LONDON, ON Vivek Mehta EDMONTON, AB Steven Miller VANCOUVER, BC Neelan Pillay CALGARY, AB Christopher Power EDMONTON, AB Alex Rajput SASKATOON, SK Jean Raymond MONTREAL, QC Gary Redekop VANCOUVER, BC Mark Sadler HALIFAX, NS Harvey Sarnat CALGARY, AB John Stewart VANCOUVER, BC Jeanne Teitelbaum MONTREAL, OC Eve Tsai OTTAWA, ON Shannon Venance LONDON, ON Matt Wheatley EDMONTON, AB Jerome Yager EDMONTON, AB

# Journal Staff - Calgary, AB Dan Morin, Chief Executive Officer Maggie McCallion, Designer/ Production Coordinator Cindy Leschyshyn, Editorial Coordinator

#### Advertising representative/Représentant de publicité:

Brett Windle

Corporate Development Coordinator Tel (403) 229-9575 Fax (403) 229-1661 E-mail: brett-windle@cnsfederation.org

#### Printer/Imprimeur:

Unicom Graphics, 4501 Manitoba Road SE Calgary, Alberta T2G 4B9 The official journal of: / La Revue officielle de:

The Canadian Neurological Society La Société Canadienne de Neurologie

The Canadian Neurosurgical Society La Société Canadienne de Neurochirurgie

The Canadian Society of Clinical Neurophysiologists La Société Canadienne de Neurophysiologie Clinique

The Canadian Association of Child Neurology L'Association Canadienne de Neurologie Pédiatrique

The permanent secretariat for the four societies and the Canadian Neurological Sciences Federation is at: Le secrétariat des quatre associations et du Fédération des sciences neurologiques du Canada est situe en permanence à:

> 7015 Macleod Trail SW, Suite 709 Calgary, Alberta, Canada T2H 2K6

The Canadian Journal of Neurological Sciences is published bimonthly. The annual subscription rate for Individuals are: C\$120 (Canada), C\$140 (Foreign including USA). Subscription rates for Institutions are: C\$150 (Canada), C\$170 (Foreign including USA). See www.cjns.org for details. Single copies C\$30 each plus postage and handling. Communications should be sent to: Canadian Journal of Neurological Sciences, 709 - 7015 Macleod Trail SW, Calgary, AB Canada T2H 2K6. Telephone (403) 229-9575; Fax (403) 229-1661. E-mail: journal@cjns.org; Web: www.cjns.org COPYRIGHT® 2010 by THE CANADIAN JOURNAL OF NEUROLOGICAL SCIENCES INC. All rights reserved. No part of this journal may be reproduced in any form without the prior permission of The Canadian Journal of Neurological Sciences Postage paid at Calgary, Alberta. This journal is indexed by AbHyg, AgBio, BIOBASE, BiolAb, BIOSIS Prev, CABS, ChemAb, CSA, CurAb, CurCont, EBSCO, Elsevier, EMBASE, ExcerpMed, HelmAb, Inpharma, JW-N, LTB, MEDLINE, MetaPress, MycolAb, NRN, NSCI, PE&ON, PN&I, ProtozoAb, PsycInfo, Reac, RefZh, RM&VM, RurDevAb. SCI. SCOPUS, Swets, TDB, TOCprem

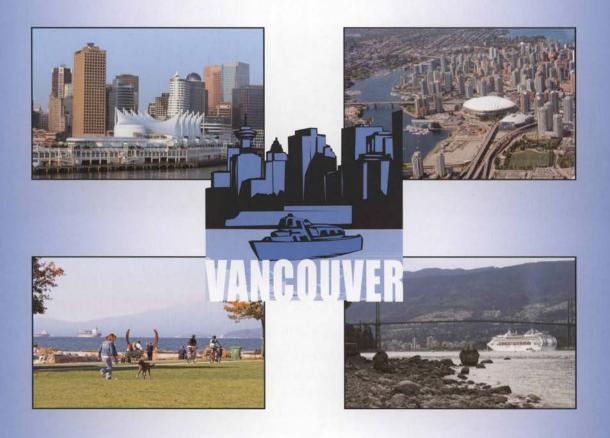
Le Journal Canadien des Sciences Neurologiques est publié 6 fois par an. L'abonnement annuel est de 120 \$C (non-membres au Canada); 140 \$C (Etats Unis et ailleurs); l'abonnement annuel for pour les institutions est de 150 SC (non-membres au Canada); 170 SC (Etats Unis et ailleurs); Voir www.cjns.org pour détails. Copie simple: 30 \$C plus affranchissement et manutention. Toutes les communications doivent être adressés à Journal Canadien des Sciences Neurologiques, 709 - 7015 Macleod Trail SW, Calgary, AB Canada T2H 2K6. Téléphone (403) 229-9575; Fax (403) 229-1661. E-mail journal@cjns.org; Web:www.cjns.org. DROITS D'AUTEUR© 2010: THE CANADIAN JOURNAL OF NEUROLOGICAL SCIENCES INC. Tous droits réservés Aucune partie de ce Journal ne peut être reproduite, sous quelque forme que ce soit, sans la l'authorisation du Journal Canadien des Sciences Neurologiques. Port payé à Calgary, Alberta. Le Journal est cité et indexé dans AbHyg, AgBio, BIOBASE, BiolAb, BIOSIS Prev. CABS, ChemAb, CSA, CurAb, CurCont, EBSCO, Elsevier, EMBASE, ExcerpMed, HelmAb, Inpharma, JW-N, LTB, MEDLINE, MetaPress, MycolAb, NRN, NSCI, PE&ON, PN&I, ProtozoAb, PsycInfo, Reac, RefZh, RM&VM, RurDevAb, SCI, SCOPUS, Swets, TDB, TOCprem.

ISSN 0317 - 1671



#### Thank you delegates for joining us at this years Congress in Zuebec city!

We look forward to seeing you at our 2011 Congress in Vancouver, British Columbia!



Surrounded by water on three sides and nestled alongside the Coast Mountain Range, Vancouver is the largest city in the province of British Columbia with over half a million residents and one of the mildest climates in Canada. Home to spectacular natural scenery and a bustling metropolitan core, Vancouver was Host City to the Olympic and Paralympic Winter Games in 2010. Whether just relaxing in a park or bike riding around the seawall, there is always something to do in Vancouver.

Canadian Neurological Sciences Federation Annual Congress July 14 - 17, 2011



# Fibromyalgia pain is real. And so is treatment with LYRICA.



## LYRICA is the first treatment indicated in Canada for the management of pain associated with fibromyalgia in adults

- LYRICA is proven to manage the pain associated with fibromyalgia
- LYRICA has been demonstrated to significantly improve pain-related sleep difficulties<sup>2</sup>
  - LYRICA reduced overall MOS-Sleep Scale scores significantly more from baseline versus placebo [LYRICA 300 mg/day -19.1 (ρ=0.0174), LYRICA 450 mg/day -20.41 (ρ=0.0026), and LYRICA 600 mg/day -19.49 (ρ=0.0101) vs -14.29 for placebo]<sup>2\*</sup>

The efficacy of LYRICA in the management of pain associated with fibromyalgia for up to 6 months was demonstrated in a placebo-controlled trial in patients who had initially responded to LYRICA during a 6-week open-label phase.

There have been post-marketing reports of angioedema in patients, some without reported previous history/episodes, including life-threatening angioedema with respiratory compromise. Caution should be exercised in patients with previous history/episodes of angioedema and in patients who are taking other drugs associated with angioedema.

In clinical trials and in post-marketing experience, there have been reports of patients, with or without previous history, experiencing renal failure alone or in combination with other medications. Caution is advised when prescribing to the elderly or those with any degree of renal impairment.

The most commonly observed dose-related adverse events in LYRICA-treated patients were: dizziness (22.7-46.5%), somnolence (12.9-20.7%), weight gain (7.6-13.7%), peripheral edema (5.3-10.8%). The most commonly reported (≥5% and twice the rate of that seen in placebo) treatment-related adverse events were: dizziness (37.5%), somnolence (18.6%), weight gain (10.6%), dry mouth (7.9%), blurred vision (6.7%), and peripheral edema (6.1%). Adverse events were usually mild to moderate in intensity. Discontinuation rates due to adverse events for LYRICA and placebo, respectively, were 20% and 11%. There was a

dose-dependent increase in rate of discontinuation due to adverse events.

LYRICA is contraindicated in patients who are hypersensitive to pregabalin or to any ingredient in the formulation or component of the container.

Dosage reduction is required in patients with renal impairment (creatinine clearance <60 mL/min) and in some elderly patients as LYRICA is primarily eliminated by renal excretion.

See Prescribing Information for complete Warnings and Precautions, Adverse Reactions, Dosage and Administration and patient selection criteria.

References: 1.1YRICA Product Monograph. Pfizer Canada Inc., October 2009. 2. Mease PJ et al. A randomized, doubleblind, placebo-controlled, phase III trial of pregabalin in the treatment of patients with fibromyalgia. J Rheumatol

\* A multicenter, double-blind, 13-week, randomized trial. 748 patients who met the ACR criteria for fibromyalgia and who had an average mean pain score of z=4 on an 11-point numeric rating scale (INRS) during the baseline assessment were randomized to LYRICA 300 mg/day (n=185), 450 mg/day (n=183), 600 mg/day (n=190), or placebo (n=190). Patients were allowed to take acetaminophen up to 4 g/day as needed for pain relief. The number of completers was: LYRICA 300 mg/day (n=123), 450 mg/day (n=121), 600 mg/day (n=111), or placebo (n=130). The primary endpoint was the reduction in endpoint mean pain scores (mean of the last 7 daily pain scores while on study medication). Pain-related sleep difficulties were assessed using the Medical Outcomes Study-Steep Scale (MOS-SS), a scale that runs from 0-100. Mean baseline MOS-SS score for overall sleep problem index was 65.0.



Pfizer Inc., used under license
 LYRICA® C.P. Pharmaceuticals International
 C.V. owner/Pfizer Canada Inc.: Licensee







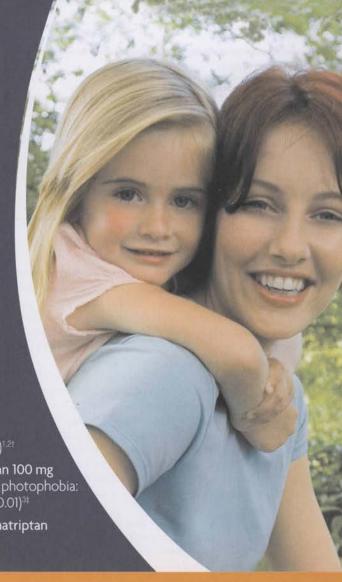
See prescribing summary on page A-11, A-12

# Choose NE migraine therapy that has demonstrated rapid, reliable relief.

 Demonstrated headache response as quickly as 30 minutes postdose vs. placebo (RELPAX 40 mg: 9%; placebo: 4%, p<0.05)<sup>1.2†</sup>

 Provided greater relief of associated symptoms vs. sumatriptan 100 mg at 2 hours (absence of nausea: 74% vs. 67%, p<0.01; absence of photophobia: 71% vs. 63%, p<0.01; absence of phonophobia: 74% vs. 67%, p<0.01)<sup>31</sup>

 Demonstrated superior functional response at 2 hours vs. sumatriptan 100 mg (68% vs. 61%, p<0.01; 63% vs. 46%, p<0.005)<sup>3,4‡§</sup>



RELPAX is indicated for the acute treatment of migraine with or without aura in adults. RELPAX tablets are not intended for the prophylactic therapy of migraine or for use in the management of hemiplegic, ophthalmoplegic or basilar migraine. Safety and effectiveness of RELPAX tablets have not been established for cluster headache, which is present in an older, predominantly male population. Among 5984 patients who treated a single migraine headache with RELPAX 20 mg, 40 mg or 80 mg tablets in short-term, placebo-controlled trials, the most common and dose-related adverse events reported with treatment with RELPAX were asthenia (7.2%), nausea (7.8%), dizziness (5.7%) and somnolence (5.2%). RELPAX 80 mg is not an available dose. The maximum daily dose is 40 mg.

RELPAX is contraindicated in patients with history, symptoms, or signs of ischemic cardiac, cerebrovascular or peripheral vascular syndromes, valvular heart disease or cardiac arrhythmias (especially tachycardias). In addition, patients with other significant underlying cardiovascular diseases (e.g., atherosclerotic disease, congenital heart disease) or uncontrolled or severe hypertension should not receive RELPAX. Ischemic cardiac syndromes include, but are not restricted to, angina pectoris of any type (e.g., stable angina of effort and vasospastic forms of angina such as Prinzmetal's variant), all forms of myocardial infarction, and silent myocardial ischemia. Cerebrovascular syndromes include, but are not limited to, strokes of any type as well as transient ischemic attacks (TIAs). Peripheral vascular disease includes, but is not limited to, ischemic bowel disease, or Raynaud's syndrome. Because RELPAX may increase blood pressure it is contraindicated in patients with uncontrolled or severe hypertension. RELPAX is contraindicated within 72 hours of treatment with potent CYP3A4 inhibitors (i.e., ketoconazole, itraconazole, nefazodone, troleandomycin, clarithromycin, ritonavir, and nelfinavir). RELPAX is contraindicated within 72 hours with drugs that have demonstrated potent CYP3A4 inhibition and have this potent effect described in the CONTRAINDICATIONS, or WARNINGS AND PRECAUTIONS sections of their labelling. RELPAX is contraindicated within 24 hours of treatment with another 5-HT, agonist, an ergotamine-containing or ergot-type medication such as dihydroergotamine (DHE) or methysergide. RELPAX is contraindicated in patients with hemiplegic, ophthalmoplegic or basilar migraine, patients with severe hepatic impairment, and those with known hypersensitivity to eletriptan or to any of its inactive ingredients.

- † In a multicentre, double-blind, placebo-controlled, parallel-group clinical trial, 1334 outpatients with a diagnosis of migraine were randomized to receive RELPAX 20 mg, 40 mg, or 80 mg, or placebo for the treatment of up to 3 migraine attacks. The efficacy, consistency, tolerability and safety of RELPAX were evaluated.
- ‡ In a randomized, double-blind, double-dummy, parallel-group study conducted in 2113 patients with a diagnosis of migraine. Subjects were randomized to receive RELPAX 40 mg, sumatriptan 100 mg or placebo for the treatment of a single migraine attack.
- § In a randomized, double-blind, double-dummy, placebo-controlled study conducted in 1008 patients with a history of migraine. Subjects were randomized to receive RELPAX 40 mg or 80 mg, sumatriptan 50 mg or 100 mg, or placebo to treat up to 3 migraine attacks.

For complete prescribing information, please refer to the Product Monograph. The Product Monograph is available upon request



Pfizer Inc. used under license RELPAX® Pfizer Products Inc., owner/Pfizer Canada Inc., licensee © 2010 Pfizer Canada Inc., Kirkland, Quebec H9J 2M5





## **Integrating Strong HR Management Practices Into Your Professional Practice**

No matter what the economic environment, finding and keeping the right staff is an important issue for professional practioners and small business owners. Whatever the size of your enterprise, developing sound human resources management practices and policies is not only good practice, it will also help you develop a reputation as "an employer of choice", a real advantage in attracting the best and the brightest.

Whether your practice is a start-up, or is well established, taking the time to think about the kind of culture you want to create, and then taking deliberate steps to create a positive working environment will pay big dividends. For example, will you prefer a top-down, management-driven approach to running the business, or will you cultivate a more open consultative approach? Will flexible hours be part of your workplace, or do your operations require a more regulated schedule? Each option has both strengths and weaknesses which you will want to assess.

Human resources management practices cover many areas, from creating detailed job descriptions, recruitment and retention strategies, workplace safety measures, to programs which ensure a culture of respect and fairness for all your staff. You'll need to consider record keeping, confidentiality, dismissal, and compliance policies, to name but a few.

Many professionals may not have the time or expertise to create documented policies and detailed employee handbooks. Your professional association may be a useful source of information, or alternately an on-line search may help you identify relevant resources.

Some key tips to building a strong foundation for an excellent work environment and workplace team include:

- Build an HR team that may include your accountant, lawyer, an HR consultant.
- Make sure your compensation package is competitive and attractive.
- Reward your employees with financial or non-financial incentives based on sales, performance, or customer feedback.
- Profit sharing plans can be a great way to reward employees and give them a stake in the longer-term success of the business.
- Make your employees ambassadors and consider finder's fees as part of your recruitment policy.
- Be flexible with work hours, telecommuting, unpaid leaves, etc.
- Help your employees upgrade with training and staff development programs.

- Focus on creating a positive environment which gains a reputation as a great place to work.
- Have a clear vision statement that outlines what you want your business to be in the future. It will give you shape and direction for your long-term business goals.

Top performing staff can be a business' greatest asset. By implementing sound HR management practices, professionals can attract and keep a team of the best and brightest, who will become a strong foundation supporting a bright future for your enterprise.

To learn more, speak to a Scotiabank Small Business advisor today, or visit getgrowingforbusiness.com.

This advertorial is provided by Scotiabank & the Scotia Professional Plan

Scotia Professional Plan

