Dr. Peter Cooney
Canada’s Chief Dental Officer
Past and Future Activities of his Office p. 29
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The Spirit of Our Profession

In this issue, I salute the 100 colleagues who reviewed manuscripts for JCDA in 2008. Some reviewed just one paper, while others evaluated considerably more. Whatever the number, they all gladly gave of their time and expertise without receiving any direct compensation for their efforts. Knowing that these reviewers are busy people, I always approach them gingerly when I ask them to volunteer their time. Yet I am always amazed by the selfless generosity they display. Let me give you one example of the outstanding professionalism of our reviewers.

At the end of last year, one of our regular reviewers sent me his usual comprehensive comments and constructive suggestions about a manuscript. He also included an apology, saying that his judgment might not be up to its usual standard as one of his parents had passed away the previous week. He added that because he had committed to reviewing the paper by a certain date, he felt honour-bound to meet the deadline. I cannot tell you how touched I was by this revelation and how privileged I feel to work with such dedicated colleagues.

The contribution of this reviewer toward the advancement of our profession captures the spirit of JCDA perfectly for me. As JCDA enters its 75th year, I am reminded that this spirit has a long and distinguished history. I recently went back and read the English and French editorials from JCDA’s first issue, published in 1935. They spoke of the publication as a project that was years in the making, but which was seen as crucial to the development of a proud knowledge-based profession that could stand shoulder to shoulder with our international confreres and other senior professions in Canada. Pledging to fight for the “highest and noblest principles, thus representing the best traditions of Canadian dentistry,” the sentiment evoked in these initial columns is as true today as it was then.

The current JCDA is also devoted to advancing Canadian dentistry as a knowledge-based profession and projecting the image of dentists as a group of ethical people dedicated to improving the oral health of all Canadians. The discourse in today’s JCDA is clearly different from that found in some of the commercial publications that land on your desk in increasing numbers. The loudest messages in these publications often relate to increasing your profitability and efficiency as a businessperson.

While dental practice is inevitably a commercial enterprise, the discourse of business can never be allowed to dominate our publications. If business becomes its primary focus, dentistry can expect to be regulated in the same manner as other modern industries. Our justifiable claim to a special status in society rests on other attributes, namely science and ethics, which must, in my view, always be reflected in the pages of JCDA.

A spirit of committed volunteerism has carried JCDA through to its 75th birthday and this same spirit will be required if we are to reach a century of service to the profession. JCDA operates in an environment that is rapidly changing, at a variety of levels: the composition of the profession is different, dental associations are evolving, sources of information are plentiful and increasingly varied, information consumption patterns are shifting. Combined with rising production costs, these factors all make the publication of a scientific journal quite a challenge.

Together, I am certain that we can find opportunity in these challenges. In the coming year, I would like to expand the “community of active engagement” of JCDA by attracting new readers, authors, reviewers and advertisers. There is so much energy and goodwill in our sector that can be harnessed for the good of JCDA and our profession.

You can contribute immeasurably to our national dental journal and our profession by volunteering your ideas on the look and content of our publication. You can enter the spirit of the profession through JCDA, our one true national meeting place dedicated to the benefit of all dentists in Canada. I look forward to continuing an active dialogue with you.
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The Inspiration to Volunteer

With the new year upon us and resolutions still top of mind, I would like to share with you one special commitment that I have made for 2009. In February, I will be travelling to Honduras as part of a volunteer health care team that will provide medical and dental care to the local population. Volunteering my services in a developing country is something that I have always wanted to do, and after 25 years of practising dentistry, I now feel confident enough to follow through on this goal.

What inspired me to go on this mission? Last spring, a first-year university student approached me with a proposal. The student had formed a local chapter of Global Medical Brigades (GMB) at her university. GMB describes itself as a secular, international network of university clubs and volunteer organizations that provide communities in developing nations with sustainable health care solutions.

When asked if I might be interested in joining an upcoming GMB mission, I thanked the student and explained that having just started my term as CDA president, I felt I would be too busy in the next 12 months for such an endeavour. Not wanting to rule it out completely, I asked her to keep me informed about the project’s progress.

Later in the year, I received an email with details about the local GMB chapter’s new website and its first planning and recruitment meeting. Over 70 students attended this meeting, and through a fair and considerate process, 30 were selected for this year’s mission while the others were placed on a list for the 2010 brigade.

By mid-fall, the student reported that a team of doctors, dentists and nurses had been formed. Health care professionals from Canada, Colorado and Jamaica were eager to join the team travelling to Honduras. I was impressed as I read more about the team member’s various specialties and level of expertise and especially that a colleague from British Columbia, Dr. Awdesh Chandra, would be a dentist on the brigade.

There was still the outstanding issue of securing medical and dental supplies. Through written correspondence, phone calls and persistence, the group of students successfully acquired some $30,000 in supplies from one of Canada’s largest drug companies. This includes 3 dental kits and 6 medical kits — enough to provide ethical and effective treatment for hundreds of Honduran citizens.

So, when my phone rang again in November and that same university student asked, “Now will you come, Mom?”, I just had to say yes. That’s right, my daughter Laura, co-president of GMB at Mount Allison University, is my inspiration to volunteer. She is part of the current generation of students making a difference in the world; young people with such strong convictions and drive that they are simply unstoppable.

While I am looking forward to providing preventive and urgent dental care to the Honduran villagers, I fully expect to witness first-hand the devastating effect of poverty on dental health. Many colleagues have shared their experiences about international volunteering and have offered advice to help me prepare for the journey. I am sure that like those who have gone before me, I will be deeply affected by the experience.

I admit to having moments of self-doubt, wondering what contribution one dentist can possibly make. After seeing the organizational work performed by the GMB students, and sharing in their enthusiasm and exuberance, I have come to believe that the acts of individuals truly do matter, and that one by one, we can make a difference.

I hope that sharing my own inspiration to volunteer might encourage you to also consider volunteering, in whatever form, and perhaps in still a sense of hope and confidence in the young people who will form the dental profession of the future. I conclude with a promise to report back on the mission and leave you with some words from Mother Teresa that have provided me with added inspiration: “We ourselves feel that what we are doing is just a drop in the ocean. But the ocean would be less because of that missing drop.”
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Dr. Lloyd Skuba, St. Albert, Alberta

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¹ Contest closes on December 31st, 2009. Entry and participation is at all times subject to the complete contest rules. Eligibility requirements, terms and conditions do apply. No purchase is necessary. Residents of Quebec are not eligible. Visit www.cdspi.com/more-info for complete contest rules.
Suggestive Advertisement Raises Ire of Dentist

I want to draw Canadian dentists’ attention to the all-time low in marketing that Discus Dental has sunk to in promoting its “Zoom!” whitening system. The marketing campaign, titled “The Naked Truth,” was displayed prominently at the 2008 American Dental Association convention in San Antonio, Texas, and is now making the rounds in non-scientific dental periodicals. It features a naked woman holding up 2 signs. The first sign reads “Better results with Zoom! lamp” and covers her breasts. The second features statistics about the supposed efficacy of the product’s proprietary lamp and is strategically held by the model to cover her upper legs and bikini area.

Discus Dental’s Canadian branch claimed to be unaware of this marketing campaign when contacted by phone. Regardless of the genesis of this totally unprofessional venture, Canadian dentists should consider the images associated with products and services they may choose to offer. For my practice, the decision to sever any ties with marketing such as this was an easy one.

We need to keep the focus of our profession on health care. I urge other dentists offended by this marketing to contact Discus Dental. In this age of changing roles, we do not need dentists to be thought of as “cosmeticians with first-aid training.” The support (or silence) of the dental community regarding training is strategically held by the model to cover her upper body.

I would like to commend Dr. Lang for his comments on the commercialization of our profession in his letter published in the November 2008 issue of JCDA. I see that he keeps well informed of emerging issues, which is a result of his expertise within the profession.

I would like to let your readers know about a seminar that will be held on May 25 during the upcoming Journées dentaires internationales du Québec. One of the issues to be discussed will be professionalism as perceived by dentists and ways to take corrective action and gain new appreciation of our profession’s primary purpose — oral health based on the patient’s needs.

Dr. Hubert R. LaBelle
Montreal, Quebec

Reference

Dentistry in Canada: Is History Repeating Itself?

As the leaders of the national and provincial dental associations prepared to attend the CDA General Assembly in Ottawa in November, I reflected back on 25 years of attending these meetings and wondered whether or not we were getting anywhere. I decided to perform a short literature search related to the efforts and deliberations of our former colleagues as they worked for the betterment of the profession in their time. Three quotations struck me, spread over 100 years and reflecting a disturbing similarity. They made me wonder if we may be repeating history.

Here are the excerpts in question:
• “I trust that because our present system of licensing is good, it will not prevent us from seeing that a common standard for the whole country is the best. Certain protection to the profession is simply an unavoidable concomitant; but on the other hand it is apparent to any reasonable man that a dentist who is fit to practise under license in one part of Canada, is, morally speaking, fit to practise in any part of Canada.” — 1902, Dr. F.A. Stevenson, CDA president.
• “May we appeal again to every dentist in Canada to support enthusiastically our National Dental Organization, and thus strengthen the only body capable of dealing with problems so vital not only to the interests of the dentist but also to those of the general public.” — 1939, CDA Journal.
• “If we fail to make our services available or place them beyond reach of the public, then our status as a profession and our legal power of self-regulation will quickly disappear.” — 1963, Dr. W.G. McIntosh, CDA past-president.

On the positive side, the fact that these former trailblazers in our profession felt that these topics were of great importance gives credibility to the reality that they are still top-of-mind concerns with the current generation of dentists. The reasons CDA is still of major importance and needed by all dentists in Canada are the same as when the organization was formed. The current leaders are like-minded and aware that it may seem repetitive to evaluate and try to solve the same problems year after year. The principles we should adhere to haven’t changed and the threats to our profession are ongoing. The fact that these threats keep coming up really shouldn’t surprise anyone; it’s
the answers that seem to be hard to come by. Be assured, we’re still looking after all these years because maybe there is no final answer, just similar responses tailored to the current times.

Dr. Brian Barrett
Executive director
Dental Association of Prince Edward Island

Creating Partnerships to Help Patients with Cleft Palate

I congratulate Dr. O’Keefe on his editorial1 in the November issue of JCDA and would like to comment on what I see as an almost insurmountable problem related to aging patients with cleft palate and those with other similar anomalies. As a prosthodontist long associated with maxillofacial patients, I have found that the re-treatment of these patients is the most challenging of all. Unless the patient is totally edentulous, an experienced team of specialists is required to both plan and execute care in most cases. While these teams certainly do exist, they are almost always associated with university dental schools and their hospitals. There was a time when complex care could be rendered under the cover of a “great teaching case,” where reduced cost or actual pro bono care could be provided. Given the financial restrictions within U.S. dental schools that I am familiar with, these teaching cases have long since disappeared. This leaves the patient with little choice but to search for funding for treatment that often involves complex combinations of fixed and removable prosthetics, running to tens of thousands of dollars.

As I see it, the problem is twofold. First, trying to develop funding sources for these special patients through some national body, a task that I am afraid will be more difficult than we could ever anticipate. Second, and an area in which we have great potential for success, is mobilizing our knowledge and experience so that clinicians in both the United States and Canada can use the latest communication technologies (such as the Internet) to create specialist treatment teams. These virtual teams could offer guidance in treatment planning and the actual execution of care, effectively removing geography as a barrier to quality care.

Dr. James S. Brudvik
Professor emeritus in prosthodontics
University of Washington
Seattle, Washington

Reference

Rapid Orthodontics Debate and the Importance of Professionalism

Two letters in the November issue of JCDA prompted me to respond. The first, titled “Orthodontic Myths,”2 offered bold extrapolations based on one journal article that cited 3 case studies.2 I would like to attempt to debunk the myths about the myths presented in this letter.

The author, who describes himself “as a general dentist who promotes ‘rapid orthodontics’ as a conservative alternative to porcelain veneers,”2 cited conclusions from the journal article2 focusing on root resorption as the only parameter to evaluate the outcome of orthodontic tooth movement. The author did not cite other content from the journal article that says “researchers have clearly shown that although considerable variation typically exists, continuous forces tend to produce more extensive root resorption than intermittent forces.”2 Similarly, “resorption of the root apex after tooth intrusion can be seen easily on two-dimensional radiographs, whereas the root resorption seen on periapical radiographs after lateral root movement is not as clearly visible.”2 Rapid orthodontic treatment referred to in the letter is generally the result of heavy lateral forces that cause quick tooth movement that is neither periodontally stable nor biologically sound.

I have been a dentist for 30 years and was a general dentist for 10 years before I returned to graduate training in both orthodontics and periodontics. I now have the opportunity to perform periodontal procedures on pre- and post-orthodontic patients and I am often surprised by the lack of tolerance of the periodontal tissues (3-dimensionally) to orthodontic forces. Efficient tooth movement is the result of applying light forces to a healthy periodontium, a phenomenon that is well supported in both the orthodontic and periodontal literature. Heavy continuous orthodontic forces potentially cause much more damage than what can be read from a radiograph. Overdevelopment of arch form in rapid orthodontics and the tipping of teeth off the alveolar support can have tremendous periodontal ramifications during, or most likely many years after, the orthodontic treatment.

Wise case selection and treatment planning comes from specialty training and a good knowledge of the dental literature. The ultimate goal is to provide the orthodontic patient with a functional, esthetically pleasing and healthy dentition and to minimize the risk of trading a crowded dentition for one of periodontal and occlusal discord.

The second letter I wish to respond to is about the increased commercialization of the dental profession.3 The author cites the wisdom and professionalism displayed in columns by Dr. Deborah Stymiest4 and Dr. Diane Legault,5 in which both express concerns about the shift from oral health to oral esthetics. I found this letter refreshing and was reassured that a message is being sent, and hopefully heard, to all of us who are fortunate enough to call ourselves dentists. I hope we continue to provide our patients with the care that they need, care
that should be based on the best interests of our patients more than the financial benefit of individual providers.

Dr. Brian Rinehart
Fredericton, New Brunswick

References

Battling Childhood Dental Disease Requires Cooperation

Our CDA president’s message about childhood caries serves as a wake-up call. When viewed in the context of Dr. O’Keefe’s editorial about the crisis in access to care, a variation on the famous line from Apollo 13 comes to mind: “Ottawa, we have a problem.”

In a nation like Canada, adequate dental care should be available to all children and the focus should be on prevention. In her column, Dr. Stymiest echoes the findings of the 2007 Calgary Conference on Early Childhood Dental Disease, namely that the oral health of children is too important to remain the sole responsibility of the dental profession. We cannot do it alone. Too many children suffer from caries before the parent ever thinks of a dental check-up. We need the eyes and ears of people who see these children routinely — nurses, physicians, social workers, daycare operators, teachers and others. They should know how to watch for the risks, signs and symptoms of tooth decay, and how to take steps to combat it. Dr. Stymiest’s examples of collaborative initiatives are perfect — let’s incorporate oral health into immunization and preschool screening programs.

One result of the Calgary conference was a plan outlining the next steps to reduce caries in children, which included developing a nationwide children’s oral health promotion initiative. To maximize its efficiency and scope, the project should come under the auspices of an existing national organization dedicated to children’s health. The idea requires seed money and cooperative leadership from key stakeholders, such as those identified at the Calgary conference. We need to work upstream to facilitate change at the universities and in the training programs used in the many disciplines that work with children.

As a leader in our profession, CDA must continue to make childhood dental disease a priority. A lot of work still needs to be done. Dentistry is just one part of the village it takes to raise a child — with a healthy smile.

Dr. Allan Narvey
Dr. Luke Shwait
Calgary, Alberta

References
A Salute to Our Reviewers

The peer review process is the cornerstone of JCDA. It ensures that the material presented in the publication meets certain criteria of quality, accuracy and relevance to practice. In my opinion, the reviewers listed below are the unsung heroes of JCDA. They are all very busy professionals, yet they cheerfully provide me with high-quality advice with regard to the manuscripts they evaluate. They give their valuable time and expertise without monetary compensation. I extend to them, on behalf of the Canadian dental profession, a profoundly felt thank you.

Dr. Paul Allison
Dr. Aurelio A. Alonso
Dr. Ajit Auluck
Dr. Manal Awad
Dr. Henry Barry
Dr. Izhak Barzilay
Dr. Bettina Basrani
Dr. Christophe Bedos
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Dr. Sharon Campbell
Dr. Michael J. Casas
Dr. David Clark
Dr. Gary A. Clark
Dr. Cameron M.L. Clokie
Dr. Jeffrey M. Coil
Dr. Darren Cox
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Dr. Ian Watson
Dr. Margaret Webb
Dr. P. Michele Williams
Dr. Robert E. Wood
Dr. Donald C. Yu

If I have failed to recognize publicly the efforts of anyone who has reviewed manuscripts in the past year, I apologize. I am always on the lookout for more help with reviewing manuscripts. If you would like to contribute to the profession by reviewing English or French submissions, please don’t hesitate to contact me.

Dr. John O’Keefe, Editor-in-Chief
CDA Participates in New Tobacco Cessation Initiative

CDA was invited to participate in the inaugural annual general meeting of the Canadian Action Network for the Advancement, Dissemination and Adoption of Practice-Informed Tobacco Treatment (CAN-ADAPTT), held in Toronto in November 2008.

CAN-ADAPTT is a practice-based research network that facilitates research and knowledge exchange between front-line practitioners and health care providers and researchers working in the area of smoking cessation. Funded by Health Canada, the group is encouraging a bottom-up approach that will ultimately produce smoking cessation guidelines that are clinically relevant and readily usable by practitioners, who are in the best position to help people quit smoking.

The network has identified a need to develop a system that will deliver the latest information, research findings and tangible resources to health care providers who offer smoking cessation services in their practices. To ensure that the tobacco cessation guidelines are effective, the group is exploring the use of a “wikiguide” model (based on the Wikipedia open content model) that will quickly evolve and adapt as new knowledge is incorporated.

With its participation at the inaugural meeting, CDA is now a member of the CAN-ADAPTT Advisory Committee. CDA has a strong record in supporting tobacco control initiatives, most notably with its involvement with the Canadian Coalition for Action on Tobacco (CCAT) — a coalition of national and provincial health agencies that work together to reduce the consequences of tobacco use in Canada and around the world. CDA is a full-voting member of CCAT and was chair of the coalition’s Advocacy Committee in 2008.

CAN-ADAPTT is currently looking to recruit practitioners into its research network, including dentists and oral health researchers. Those interested in learning more about the group and its projects can visit www.can-adaptt.net.

Forum on Patient Safety

The Canadian Patient Safety Institute (CPSI) is presenting a forum on patient safety and quality improvement in Toronto from April 28 to 30.

This forum is a learning opportunity for health care providers, educators and researchers. It will focus on medication safety, infection prevention and control, and patient safety. The forum will feature speakers who are recognized for their expertise in implementing and managing strategies in patient safety and quality improvement.

Established in 2003, CPSI is an independent not-for-profit corporation that operates collaboratively with health professionals and organizations, regulatory bodies and governments to build and advance a safer health care system for Canadians. CDA is currently a voting member of CPSI.

Hamilton to Continue Water Fluoridation Program

In November 2008, the city council of Hamilton, Ontario, voted 9 to 7 in favour of continuing to fluoridate its municipal water supply, based on the recommendations of its public health department. The narrow decision in Hamilton, a city of approximately 600,000 residents, was significant as the neighbouring Niagara region recently terminated its fluoridation program. A similar result in Hamilton might have generated a momentum leading other large municipalities to follow suit.

In a letter to the editor written for the Hamilton Spectator, Ontario Dental Association president Dr. Larry Levin declared, “Our sincere thanks to the City of Hamilton for continuing with water fluoridation. Your leadership on this issue is to be highly commended. The benefits of water fluoridation in community water supplies are many, and the evidence of its safety is overwhelming. When national and international experts present convincing proof, it is important to pay attention, and we congratulate you for doing so.”

Dr. Stephen Birch, a professor in the department of clinical epidemiology and biostatistics at McMaster University in Hamilton, followed the city’s fluoridation debate closely. During public consultations on the issue, he found that many ungrounded claims were put forward by anti-fluoridation groups, notably that fluoride is toxic and that there is a possible link between fluoride and autism. After performing a literature search and consulting with international leaders in autism research, toxicology and oral health, Dr. Birch found no evidence in the scientific literature that would support such dubious arguments.

“Perhaps the case in favour of fluoridation needs to be made in more direct terms to the public and municipal representatives by providing estimates of the expected change in prevalence and severity of caries in the community, and the impact this would have on child health and well-being,” notes Dr. Birch. "The broader community of fluoridation supporters can help by emphasizing the impact of caries on children and their families in graphic terms, as members of the public are unlikely to be convinced by scientific findings alone.”

The Hamilton city council requested that its public health department examine the costs of alternative programs for caries prevention, such as recruiting additional providers or establishing mail-out programs to deliver toothbrushes and toothpaste. However, the department’s report found that these methods would be more costly than renewing and upgrading the infrastructure of the city’s existing water fluoridation program.

Nearby, the Halton region plans to hold a vote on the future of its water fluoridation program in early 2009.

Dentists interested in donating dental and medical resources and textbooks (published within the past 10 years) can contact Books With Wings (http://torontomeds.com/bookswithwings). These books will be sent to Afghanistan to restock medical and dental libraries in need.
Multidisciplinary Needs of Adult Patients with Cleft Lip or Palate

A study published in the Cleft Palate–Craniofacial Journal documented the benefits of specialist multidisciplinary cleft clinics that provide continuing care for adult patients with cleft lip or palate.

The researchers examined 145 patients of a multidisciplinary cleft clinic in Great Britain, ranging in age from 15 to 70 years. The study showed that even younger adult patients continue to have a wide range of problems relating to their cleft. Many patients required multiple interventions such as dental rehabilitation, psychological assessments and support as well as speech assessment and therapy.

The authors’ felt that the planning of such complex surgical and nonsurgical care was greatly enhanced through the coordination of the various specialties that a multidisciplinary clinic can provide.

Reference

Commentary by James D. Anderson, BSc, DDS, MScD

Multidisciplinary regional centres devoted exclusively to the treatment of adults with cleft lip or palate have been operational in the United Kingdom since 2000 (similar centres are not commonly found in other countries). The article by Chuo and colleagues, which focuses on the experience of one of these centres, is equally important for what it does not report as for what it does. While the article is based on the patients of this particular centre, it does not (and cannot) explore the needs of pediatric patients who did not continue care in the adult centre, or of the affected adults in the population who were never in the pediatric system.

While these people might not be patients because they have no perceived problem, they also might not know about the service or feel that nothing can be done. Among patients who attend the adult service in this study, a disproportionately large number of them have cleft lip, while patients with isolated cleft palate are underrepresented. This finding, and other similar self-assessments, suggests that in addition to dental occlusion, facial esthetics and speech issues motivate patients to seek treatment. Patients in the study had an average of 3 problems each, most commonly related to their facial appearance or speech.

Taken together, these data suggest that while dental practitioners are well positioned to manage the malocclusion, exploration of the facial and speech issues may reveal problems that lead to more referrals for necessary multidisciplinary treatment. Indeed, the authors point out that only a trivial number of patient referrals to the centre originated from dental practitioners. Hopefully, articles such as this one will sensitize the dental community to the value of a multidisciplinary service and the multidimensional nature of the problems facing patients with cleft lip or palate.
International Guidelines for Dentists Against Torture

An article in the December 2008 edition of the Journal of the American Dental Association provides an in-depth examination of the development of an international declaration on the involvement of dental professionals in torture.

Members of the International Dental Ethics and Law Society (IDEALS), working in collaboration with the FDI World Dental Federation, urged the international dental community to follow the lead of the World Medical Association in developing an equivalent declaration on the involvement of dentists in hostile interrogation and torture.

The IDEALS membership adopted a draft declaration during its 7th International Congress on Dental Law and Ethics, held in Toronto in May 2007. FDI subsequently passed the Policy Statement on the Guidelines for Dentists against Torture at the FDI Annual World Dental Congress held in Dubai, U.A.E., in October 2007. The complete guidelines are reprinted below with permission of the FDI World Dental Federation.

Reference

FDI Policy Statement
Guidelines for Dentists against Torture
Adopted by the FDI General Assembly: 26th October 2007, Dubai

The FDI World Dental Federation supports and endorses the World Medical Association guidelines, from which this statement has been adapted.

1. It is the privilege of the dentist to practise dentistry in the service of humanity, to preserve and restore oral health without distinction as to persons, and to ease the dental suffering of his or her patients. The utmost respect for human life is to be maintained even under threat. Without discrimination, all sick and injured shall be treated on the basis of their clinical needs and dental resources available. No use is to be made of any medical or dental knowledge contrary to the laws of humanity.

2. Whilst respecting generally acknowledged patients’ rights, dentists must have complete clinical independence in deciding upon the care of persons for whom they are dentally responsible. The dentists’ primary role is to alleviate the dental distress of their fellow human beings and no motive, whether personal, collective or political, shall prevail against this higher purpose.

3. The dentist shall not countenance, condone or participate in the practice of torture or other forms of cruel, inhuman or degrading procedures, whatever the offence of which the victim of such procedures is suspected, accused or guilty, and whatever the victim’s beliefs or motives, and in all situations, including armed conflict and civil strife.

4. Dentists shall not use nor allow to be used, as far as they can, medical or dental knowledge or skills, or health information specific to individuals, to facilitate or otherwise aid any interrogation, legal or illegal, of those individuals.

5. The dentist shall not provide any premises, instruments, substances or knowledge to facilitate the practice of torture or other forms of cruel, inhuman or degrading treatment or to diminish the ability of the victim to resist such treatment.

6. Dentists shall not be present during any procedure during which torture or any other forms of cruel, inhuman or degrading treatment is used or threatened and shall denounce any such request to attend.

7. When providing dental assistance to detainees or prisoners who are, or could later be, under interrogation, dentists must ensure the confidentiality of all personal medical and dental information of these individuals.

8. A dentist shall keep proper dental records and shall not alter these records or otherwise suppress information relevant to the patient’s dental condition and treatment, if such alteration is to facilitate the practice of torture or other forms of cruel, inhuman or degrading procedures or to conceal such acts from public scrutiny and retribution.
9. Where authorities are participating in torture or other forms of cruel, inhuman or degrading treatment, a dentist must denounce and is to resist these authorities to the fullest extent that prudence will permit. A breach of the Geneva Conventions shall in any suspected case be reported by the dentist to the relevant authorities; the report should safeguard the confidentiality of the victim to help protect the victim from further such harm.

10. The FDI World Dental Federation will support, and should encourage the international community, the national dental associations and fellow dentists to support, dentists and their families in the face of threats or reprisals resulting from a refusal to condone the use of torture or other forms of cruel, inhuman or degrading treatment.

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New Resource for Nurses Delivering Oral Health Care

The Registered Nurses’ Association of Ontario (RNAO) has produced a best practice guideline document designed to support nurses who provide oral hygiene care to adults with special needs.

*Oral Health: Nursing Assessment and Interventions* is a comprehensive document that offers a series of practical recommendations based on the best available evidence. It is intended for nurses who work in a range of practice settings, including long-term care facilities and community health centres. The guidelines broadly define clients with special needs as encompassing the medically compromised, intellectually challenged, physically challenged, or frail elderly who may be dependent on caregivers for help with daily living.

The document examines the risk factors associated with poor oral hygiene, the current attitudes and beliefs of nurses providing oral hygiene care and the optimal oral hygiene interventions for oral health in vulnerable populations.

The recommendations are divided into 3 main categories: practice, education, and organization and policy. For each of the 21 guidelines, there is an accompanying discussion of the level of evidence along with comments and testimonials from clients who interact with the nurses.

One feature that makes the document so practical are its resources and tools. There are examples of care plans, oral health assessment tools, a list of medications that may affect oral health and toothbrushing techniques. For this last category, visual aids demonstrate proper techniques for the provision of oral care.

RNAO Recommendations from *Oral Health: Nursing Assessment and Interventions*.

**Category 1: Practice**
- Nurses should use a standardized valid and reliable oral assessment tool to perform their initial and ongoing oral assessment.
- Nurses should provide, supervise, remind or cue oral care for clients at least twice daily, on a routine basis. This includes clients who have diminished health status or have a decreased level of consciousness.

**Category 2: Education**
- Nurses who provide oral hygiene care to their clients, either directly or indirectly, must participate in and complete appropriate oral hygiene education and training.

**Category 3: Organization and Policy**
- Healthcare organizations should develop oral health care policies and programs that recognize that the components of oral health assessment, oral hygiene care and treatment are integral to quality client care.

The complete RNAO guideline document, along with a summary of the recommendations, can be found at: www.rnao.org/Page.asp?PageID=122&ContentID=1567.
OBITUARIES

Balmer, Dr. John E.: Dr. Balmer of Vancouver, B.C., passed away on October 10, 2008. He graduated from the University of Toronto in 1956.

Delaney, Dr. Kevin P.: A 1974 graduate of Dalhousie University, Dr. Delaney of Bay Roberts, Newfoundland, passed away on December 2, 2008.

Galante, Dr. Victor A.: A 1965 graduate of the University of Toronto, Dr. Galante of Hamilton, Ontario, passed away on November 24, 2008.

Hinkelman, Dr. Kenneth W.: Dr. Hinkelman of Edmonton, Alberta, passed away on August 7, 2008. A 1965 graduate of the University of Pittsburgh, Dr. Hinkelman received Honourary Membership in the Alberta Dental Association and College in 2007.

Miller, Dr. James A.: Dr. Miller of St. John’s, Newfoundland, passed away on September 10, 2008. He graduated from Dalhousie University in 1960.

Reddam, Dr. Peter J.: Dr. Reddam of Windsor, Ontario, passed away on September 29, 2008. He graduated from the University of Western Ontario in 1987.

Rosin, Dr. Raivo: A 1972 graduate of the University of Toronto, Dr. Rosin of Pickering, Ontario, passed away in May 2008.

Tozman, Dr. Eugene: Dr. Tozman of North York, Ontario, passed away on July 2, 2008. He graduated from the University of Toronto in 1951.

Policy on Advertising

It is important for readers to remember that the Canadian Dental Association (CDA) does not endorse any product or service advertised in the publication or in its delivery bag. Furthermore, CDA is in no position to make legitimizing judgments about the contents of any advertised course. The primary criterion used in determining acceptability is whether the providers have been given the ADA CERP or AGD PACE stamp of approval.

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Sugar substitutes and their role in caries prevention

Non-cariogenic sugar substitutes are widely used in medications, foods and confectionery, including gums, candy and drinks. Such substitutes include sorbitol, xylitol, saccharin, aspartame, sucralose and acesulfame K.

The use of these sugar substitutes may have contributed in a limited way to the decline in the prevalence of dental caries in industrialized countries. In recent years the potential of using specific non-cariogenic sugar substitutes in drinks and chewing gum in order to promote remineralization of initial caries lesions has been investigated. The anticariogenic effect of the sugar substitutes themselves has yet to be supported by evidenced-based data. However, enhancement of salivary flow when using chewing gums may have a caries-preventive effect.

The FDI World Dental Federation supports the following generally accepted opinion on sugar substitutes:

- many sugar substitutes are non-cariogenic
- when sugars are replaced with non-cariogenic sugar substitutes in foods and drinks the risk of dental caries is reduced
- non-cariogenic sugar substitutes, when used in products such as confectionary, chewing gum and drinks, reduce the risk of dental caries
- the regular use of chewing gum containing non-cariogenic sweeteners such as xylitol, has a role to play in preventing dental caries because of its non-cariogenic nature and its salivary stimulatory effect.

Bibliography

Recommendations for Clinical Trials of Restorative Materials

Background
Criteria for the clinical evaluation of restorative materials (the 'Ryge', or 'United States Public Health Service (USPHS)' criteria) were published in the early 1970s. However, since then, numerous modifications have been made to these criteria in a non-coordinated way, and in addition restorative materials have improved considerably. Consequently, a new clinical evaluation protocol system is recommended.

Statement
- The high cost of clinical trials of restorative materials necessitates designs which are standardized, quantitative, sensitive, reliable and valid.
- Clinical trials are required both in an academic environment in order to assess new materials and techniques ('efficacy studies') and in a practice-based environment in order to assess their performance under 'field' conditions ('effectiveness studies').
- Appropriate ethical approval must be obtained prior to conducting a clinical trial.
- Biological, functional and aesthetic criteria should be evaluated for the appropriate period of time.
- Statistical analysis should include provision for restorations unable to be evaluated, e.g., by using survival (life table) analysis.
- The FDI World Dental Federation recommends that researchers on dental restorative materials should use relevant study designs and evaluation criteria published in the following reference.

Bibliography

Adopted by the FDI General Assembly
26th September 2008, Stockholm, Sweden
Sports Mouthguards

Background

Participants of all ages, genders and skill levels are at risk of sustaining oral injuries in sports at both recreational and competitive levels.\textsuperscript{1,3} Traumatic oral injuries also occur in non-contact activities and exercises.\textsuperscript{1,3} Studies have consistently shown that custom-made mouthguards with adequate labial and occlusal thickness offer significant protection against intraoral injuries by providing a resilient, protective surface to distribute and dissipate impact forces. There is, however, insufficient evidence to confirm that mouthguards prevent concussion injuries.

In a meta-analysis,\textsuperscript{2} the overall injury risk during athletic activity was found to be 1.6-1.9 times greater for mouthguard non-wearers compared to mouthguard wearers. A study\textsuperscript{4} of collegiate basketball teams found that athletes who wore custom-made mouthguards sustained significantly fewer oral injuries than those who did not.

Evidence suggests\textsuperscript{1} that custom-made mouthguards provide the best level of protection and wearer comfort, that mouth-formed (‘boil-and-bite’) mouthguards are less adequate, and that stock mouthguards provide the lowest level of protection and wearer comfort.

Statement

The FDI World Dental Federation recommends:

\begin{itemize}
\item that national dental associations promote to the public and to oral health care professionals the benefits of sports mouthguards, including the prevention of orofacial injuries
\item that appropriate oral health care professionals determine if their patients participate in any sports, or any activities which carry a risk of oral injury
\item that people of all ages use a mouthguard while participating in any such sports or activities
\item that patients are educated about the benefits of mouthguards in preventing orofacial injuries, including appropriate guidance on mouthguard types, their protective properties, costs and maintenance requirements.
\end{itemize}

References


Adopted by the FDI General Assembly
26th September 2008, Stockholm, Sweden
Getting Home & Auto Insurance That’s Right for You

By Susan Roberts, BA, FLMI, ACS, AIAA

When you are shopping for home or auto insurance, you may be faced with many choices. So how do you determine what coverage is best for you? The Personal Insurance Company, the Canadian home and auto group insurer which underwrites CDSPI Home & Auto Insurance, explains the factors that are considered when calculating home and auto premiums, and offers the following suggestions to help you compare insurance quotes accurately.

Home Insurance

The type of dwelling and location are the first things an insurer considers to determine eligibility for home insurance and the premium for it. Your premium will depend on whether you live in a single family dwelling, 2-story house or bungalow, the city or country, suburbs or downtown, or historical area. The route and distance from your local fire department and proximity to a fire hydrant are also typically taken into account. For homeowners, the value of your property and outbuildings or detached private structures will affect your home insurance premium. The higher the rebuilding cost, the higher your premium. If you own a condo or rent, the value of all your belongings (clothes, furniture, electronic equipment, computer, etc.) will influence your premium. Before you obtain a quote, take an inventory of these things so you don’t forget anything and then calculate the replacement cost to determine how much coverage you require.

Whether you rent or own, if you choose to purchase additional coverage beyond the limits provided in the policy, you may do so by adding endorsements to insure valuables such as furs, jewellery and collectibles. An additional premium is charged for these things. The home insurance policy for renters and owners includes liability coverage, which applies to involuntary damages that you cause to other people or their belongings, such as a water leak that originates from your apartment and affects adjacent tenants. Many policyholders choose $1 million in third party liability protection. However, you can request a higher amount for only a small additional premium.

Auto Insurance

In Canada, you’re required by law to have basic insurance for operating your automobile. It is an offence not to have this basic coverage. You’ll also have to pay for damages yourself if you are uninsured, and a conviction for failure to have insurance can affect your premium.

Most auto insurance policies are similar and include mandatory coverage such as third party liability protection (for damage you cause to individuals or their property), accident benefits (to cover medical expenses and loss of income following an accident) and direct compensation property damage coverage (to protect your vehicle in case of an accident that is not entirely your fault). You can also purchase optional coverage, such as increased third party liability protection, collision, comprehensive, replacement cost and transportation replacement coverage.

As with home insurance, it’s best to compare apples with apples when obtaining quotes, so give the same information to each insurance company you approach. This information includes age, date licensed and driving record for all drivers, including tickets in the last 3 years and accidents and claims for the last 6 years. Other information required is postal code, year, make, model, body type, engine size and age of the vehicle, presence of anti-theft devices, vehicle use (personal or business), length of business commute (if applicable) and annual kilometres travelled. (Some people believe that red cars
are more expensive to insure. However, the colour of the automobile makes no difference. The same vehicle in a different colour (e.g. black, silver, taupe or red) will have the same rate.

If your car is less than 10 years old, you may want to include both collision and comprehensive protection to cover the much higher costs of repairing or replacing a newer vehicle. For a car that is more than 10 years old, you may consider removing collision or comprehensive coverage, if your vehicle is not worth much more than the premiums charged for these 2 types of coverage. Your decision will depend on how comfortable you are with paying for these damages yourself. You may also choose to increase the deductible from $500 to $1,000 or more to help reduce your premium. Be sure you can pay the higher deductible in case of an accident.

The auto insurance quotes you receive should include all the coverage you require. As part of your research when obtaining quotes, you can add or remove optional coverage or change deductible amounts to see how they affect the premiums. If the coverage being offered is the same, you can pick the lowest premium.

Additionally, you may wish to take into consideration whether the insurance companies provide exceptional, value-added services such as 24/7 claims assistance for home and auto emergencies, and identity theft assistance at no extra charge with home insurance. Then, if the unexpected happens, you’ll have the peace of mind of knowing that your situation will be handled efficiently and reliably.

THE AUTHOR

Ms. Roberts, a licensed life and health insurance agent and a licensed general insurance broker, is the service supervisor of the insurance services department at CDSPI Advisory Services Inc. In Quebec, Ms. Roberts is licensed as a financial security advisor, an advisor in group-insurance plans and a damage insurance broker.

1. Collision and comprehensive protection will be required by the lessor or creditor if your vehicle is leased or purchased with financing. Collision coverage protects you against damage caused to your vehicle if it tips over or collides with another object. Comprehensive coverage protects you against loss or damage to your vehicle that isn’t included in collision coverage, such as theft, earthquake, vandalism, flood, falling objects and fire.

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CDSPI Home & Auto Insurance provides preferred group rates for dental professionals, their spouses and dependents, and others in organized dentistry. You could enjoy significant savings — with low rates not offered to the public. Get a home or auto insurance quote and you will be automatically entered in a draw for a chance to win $20,000. Call 1-877-293-9455, ext. 5002, for a quote or go to www.cdspi.com/quote. (Contest closes on December 31, 2009. Entry and participation is at all times subject to the complete contest rules. Eligibility requirements, terms and conditions do apply. No purchase is necessary. Residents of Quebec are not eligible. Visit www.cdspi.com/more-info for complete contest rules.)

1CDSPI Home & Auto Insurance is underwritten by The Personal Insurance Company. This auto insurance is not available to residents of Manitoba, Saskatchewan and British Columbia and this home and auto insurance is not presently available to residents of Quebec.

The Canadian Dentists’ Insurance Program is sponsored by CDA and co-sponsored by participating provincial dental associations and is administered by CDSPI.
Evidence-based Dentistry: Part 1. An Overview

Now that evidence-based practice is becoming increasingly common in dentistry, it might be time for a refresher. This month, we’ll take a look at the basics of evidence-based dentistry and provide some online resources to get you started.

What is evidence-based dentistry (EBD)?

The American Dental Association’s definition is by far the most comprehensive, as it captures the core elements of EBD. They define it as “an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences.”

History of the evidence-based movement

The evidence-based movement first took hold in the medical field. Formally introduced in the 1990s by David Sackett and Gordon Guyatt of McMaster University, evidence-based medicine outlines a methodical way to incorporate the best available evidence into the decision-making process for clinical assessments and patient treatments. These principles ensure that decisions regarding patient care are not only based on experience and expertise, but on current medical research.

EBD’s incorporation into dentistry is progressing quickly. Dental schools are integrating the principles into their curriculum and resources are becoming more widely available. Various countries have established centres for evidence-based dentistry (most notably the Centre for Evidence-Based Dentistry in the United Kingdom and DSM-Forsyth Center for Evidence-Based Dentistry in the United States) and the Cochrane Collaboration has an Oral Health Group. In addition, there are journals focusing on EBD practice which offer reviews of the current literature on dental-related topics.

How does evidence-based practice benefit a profession?

Today, evidence-based principles are widely being incorporated in most health care fields, as well as some non-health professions. Academic institutions, human resources, even library studies are using evidence-based principles to guide their day-to-day decisions. Evidence-based principles help strengthen professions by identifying knowledge gaps and encourage us to formulate clear questions regarding the evidence that we need. A cycle starts to emerge: the more gaps that are identified means more questions are asked, the more questions that are asked means more research is performed, the more research that is available means better decisions are made, thereby strengthening the profession.

How to practise EBD:

1. Recognize a need for information and formulate an answerable question.
2. Find best evidence with which to answer that question. Look for systematic reviews, meta-analyses and double-blind randomized controlled studies.
3. Evaluate the evidence for its validity, reliability, relevance and usefulness.
4. Integrate the evidence with your clinical expertise and your patient’s needs.
5. Evaluate the overall results and your process. Make any necessary changes.

Where do you find this evidence?

Some of the best sources of evidence that are fast and easy to use are online. Initially, some sites might seem daunting, but there are tricks of the trade that will help the novice researcher. In addition, the CDA Resource Centre offers professional literature searches and a document delivery service for CDA members. The
You Ask, We Answer

information specialist is available to answer your questions on how to search for information. Below are some essential online resources for evidence-based research.

PubMed

- PubMed is a free medical database provided by the U.S. National Library of Medicine and the National Institutes of Health (NLM). Highly authoritative and up-to-date, PubMed gives you access to MEDLINE, NLM’s database of citations and abstracts in the fields of medicine, nursing, dentistry, veterinary medicine, health care systems and preclinical sciences. Updated daily, PubMed gives you access to over 14 million citations dating back to the 1950s. Records are indexed using the NLM’s Medical Subject Headings (MeSH).
- You can narrow down your results to include systematic reviews by selecting Clinical Queries on the left-hand sidebar, or in the Limits screen under “Subsets.”
- For more information visit: www.pubmed.gov

The Cochrane Library

- The Cochrane Library is an international collection of 7 evidence-based health care databases updated quarterly. With the latest research on the effectiveness of health care treatments and interventions, current technology assessments, economic evaluations, and individual clinical trials, the Cochrane Library is the best single source of the world’s highest quality research studies and current evidence on clinical treatments.
- The Library includes the Cochrane Database of Systematic Reviews (Cochrane Reviews), which is recognized as the gold standard in evidence-based health care. The international Cochrane Oral Health Group produces systematic reviews of evidence-based research on oral health care topics. For more information visit: www.ohg.cochrane.org/
- The Cochrane Collaboration is an international non-profit and independent organization dedicated to providing information and evidence via the Cochrane Library to support clinicians, researchers, patients and policy makers.
- Access to the Cochrane Library is part of your CDA Membership. The Cochrane Library offers podcasts of audio summaries of selected reviews.
- Questions about how to search the Cochrane Library? See the “You Ask, We Answer” on the Cochrane Library or contact the Resource Centre at library@cda-adc.ca.

The next installment of “You Ask, We Answer” will provide tips on how to frame dental research questions, search strategies and more online resources to locate scientific evidence. *

References


THE AUTHOR

Danielle Rabb-Waytowich is acting information specialist at the Canadian Dental Association.
For many years, CDA advocated for the creation of a Chief Dental Officer position in Canada. Health Canada’s appointment of Dr. Peter Cooney to this role in 2004 has helped to raise awareness of oral health issues among Canadians. It has also enabled the federal government to coordinate its public education efforts and facilitate the collection of comprehensive oral health data.

CDA continues to maintain a strong working relationship with the Office of the Chief Dental Officer, and this JCDA interview is intended to provide an update on the ongoing activities and initiatives of Dr. Cooney and the Office.

JCDA: Can you tell JCDA readers a little bit about your background and your involvement in public health policy throughout your career?

Dr. Peter Cooney: I’ve always been interested in oral health. I grew up in Ireland where decay rates were quite high. So we all had to sit and have ourselves drilled. These experiences evolved into a general interest in the whole issue of oral health. I was in private practice for a number of years in London, England. Then I did my Canadian exams and bought a practice in Newfoundland. I spent 5 years there and loved it.

In 1991, after I completed my specialty, master’s and fellowship in community dentistry, I joined Health Canada and worked in the Medical Services Branch in the Manitoba Region. Then in 1997, I moved to Ottawa to take on the position of National Dental Officer at the head office of the Medical Services Branch (now the First Nations and Inuit Health Branch), and went from there to be director general of the Non-Insured Health Benefits division from 1999 to 2003.

I have had the opportunity to hold the position of president with the Canadian Association of Public Health Dentistry and I am currently the chief examiner for the specialty of Dental Public Health with the Royal College of Dentists of Canada.

After I became the Chief Dental Officer at Health Canada in 2004, I had many different and exciting opportunities open up to me, including being appointed chair of the International Chief Dental Officers Public Health Section of the FDI World Dental Federation.

JCDA: How did the Office of the Chief Dental Officer come to be?

Dr. Cooney: The Office of the Chief Dental Officer was created in 2004 to improve the oral health status of Canadians and to increase awareness about the prevention of oral diseases. This position came about as a result of a number of dental stakeholders, including CDA, advocating for Canada to have a Chief Dental Officer. There was a need for this position nationally, and for Canada to be represented internationally as well. Canada joins about 160 other countries worldwide that have a Chief Dental Officer.

JCDA: Who works in the Office of the Chief Dental Officer?

Dr. Cooney: Our personnel have a combination of skills and backgrounds. There is a dental therapist, a dental hygienist and 2 dentists, as well as people with a background in health promotion, finance and administration.
Each summer we also have 1 or 2 students who are doing either their master’s degree or a PhD.

JCDA: What materials does the Office produce?

Dr. Cooney: The Office does not produce materials in the sense of pamphlets or posters, but rather strives to provide expert advice on oral health, consultation and information. To meet this mandate, we have been busy over the last 4 years conducting various environmental scans, surveys and other types of needs assessments to get information about dental public health in Canada and make it accessible to the public.

JCDA: What interested you about taking on the role of Chief Dental Officer?

Dr. Cooney: I worked in private practice for a number of years, and while I enjoyed it, it can be frustrating to treat one person at a time. Public health dentistry enables me to work with the whole population and I am able to have a much broader effect. This is the area that interests me and what motivated me to take on the role of the Chief Dental Officer of Canada.

JCDA: What does the Office of the Chief Dental Officer do for Canadian dentists?

Dr. Cooney: The Office of the Chief Dental Officer aims to be a point of contact on oral health issues for dentists and other health professionals. For instance, the Office has recently supported both dentists and dental organizations on the promotion of water fluoridation.

JCDA: What is the Office of the Chief Dental Officer’s role globally?

Dr. Cooney: My Office has had a very active international role over the past 4 years. As mentioned, I was appointed chair of the International Chief Dental Officers Public Health Section of FDI and I now network with 194 Chief Dental Officers from about 160 countries.

I have also had the opportunity to represent Canada on a 4-country advisory group that worked on the development of an oral health strategy with the Pan American Health Organization (PAHO) for 2005–2015. The purpose of this oral health strategy is to improve general health in the Americas through improvements in oral health. The details of the strategy can be found on the PAHO website at www.paho.org/english/gov/cd/CD47.r12-e.pdf.

JCDA: Can you talk about the importance of the relationship between CDA and the Office of the Chief Dental Officer?

Dr. Cooney: My Office and CDA have had a good relationship from the time we opened our doors in 2004, and we work hard to maintain this positive and collaborative relationship. We have been working with CDA on an oral health promotion campaign that will focus on oral cancer awareness and the connections between oral health and general health. This project has been in development for a few years and we hope it will launch this year.
JCDA: What has the Office of the Chief Dental Officer accomplished since its inception?

Dr. Cooney: I think that the Office has accomplished quite a bit. We have worked hard to begin filling in some of the knowledge gaps in the dental field and are participating in surveys to continue to get a better understanding about the oral health status of Canadians. For example, we now know the type of dental public programming that exists across Canada and who is working in these programs. We also know the percentage of Canadians who had access to fluoridated drinking water in 2005 and 2007 for each province and territory in Canada.

To obtain the current oral health status of Canadians, the Office is involved in 4 different surveys. The first is a partnership with Statistics Canada on its Canadian Health Measures Survey (CHMS). The data collection methods for this survey are unique in Canada and involve a self-report questionnaire on oral health, nutrition, smoking habits, alcohol use, medical history and current health status, as well as demographic and socioeconomic variables. Following the self-report questionnaire, direct measurements will be collected in a clinical setting, including blood pressure, height and weight, blood and urine sampling, clinical oral examination and physical fitness testing. This type of data collection will take 2 years and is planned to be completed by this March.

My Office has also partnered with First Nations and Inuit organizations to get a better understanding of the oral health status of First Nations on reserves and in Inuit communities. For these 2 surveys, we are using the same protocols as the CHMS so that direct comparisons can be made to the general population. This survey will be completed at the same time as the CHMS, in March.

Finally, our Office has also partnered with Statistics Canada on a Healthy Aging survey. Through this survey, we hope to get a better understanding of how people’s oral health status and access to oral health services change as we get older. This survey will begin data collection this winter and will have a collection period of about one year.

JCDA: What goals would the Office of the Chief Dental Officer like to accomplish in the short- and long-term?

Dr. Cooney: We look forward to the results from the CHMS and other surveys to help us determine the current oral health status of Canadians, to evaluate the association of oral health with major health concerns such as diabetes, respiratory and cardiovascular diseases, and to determine relationships between oral health and certain risk factors like poor nutrition and socioeconomic factors related to low income levels and education.

My Office plans on releasing an Oral Health Report Card in 2010 that will highlight the oral health status of Canadians including the First Nations and Inuit populations.

In the long term, we want to continue our relationship with the provinces and territories, professional associations, academic institutions and regulatory bodies and work with these organizations to improve the oral health of Canadians.

JCDA: Can you elaborate on the importance of the CHMS? How do you plan to translate the preliminary results of the survey into action by the profession and governments?

Dr. Cooney: The oral health module of the CHMS is very important for the dental field. We haven’t had solid evidence on the oral health status of Canadians for over 30 years. We need the results from the survey to support policy and program development within the field.

Our plan is to release the results of the survey in 2 different reports. The first report will be directed to the general population, our leaders and other stakeholders, and will highlight the findings from the survey. The second report will be aimed at dental professionals and will go into the findings in more depth.

My Office intends to examine the results with our stakeholders, such as CDA, other professional associations and the provinces and territories, and then we will determine how to address the findings.

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In a particularly interesting article that appeared in *JCDA*, Dr. Andrew Nette listed 10 conclusions he had reached over the years that increased his enjoyment of our wonderful profession. It is always helpful to pass along useful tips or share difficulties we may have encountered in our dental practices. This allows our peers to benefit from the lessons we have learned from our experiences.

Among the conclusions mentioned by Dr. Nette was a recommendation to charge patients for missed appointments. I believe some clarification of this point is needed to allow dentists who are using or wish to use this method of dissuasion and compensation to do so appropriately. Dr. Nette rightly notes that “missed appointments are bad for staff morale as well as the bottom line.” On the other hand, charging for missed appointments does not fully rectify the situation and can cause other problems. As the author accurately points out, “you hope for 1 of 2 desirable outcomes: the charge stings and encourages the client to act more responsibly next time, or the charge annoys them enough that they leave your practice.” However, a different outcome could also be possible — the patient may be offended, refuse to pay the charge for the missed appointment (which forces the dentist to go to court to claim the amount owed) and lodge a complaint. Such a complaint was brought before the College of Physicians and Surgeons of New Brunswick.

A patient claimed that a physician had wrongly refused to continue treating her because she had failed to pay a fee for a missed appointment. She alleged that it had been impossible to contact the physician’s office to let him know she couldn’t attend the appointment, and maintained that she had not been informed in advance that she would have to pay such a fee. In his defence, the physician argued that an answering machine was available after hours and asserted that he had other reasons for refusing to see the patient.

The committee responsible for reviewing the case highlighted a number of interesting points in the guidelines of the College of Physicians and Surgeons of New Brunswick. For example, the office policy regarding missed appointments must be clearly communicated and patients must know how to inform the office if they are unable to make their appointments. In this case, the investigation revealed that although the office did have an answering machine, it did not specifically ask patients to leave messages related to cancelled appointments. The committee also determined that it was difficult for patients to communicate with the staff or leave a message. In short, the committee concluded that the charge was inappropriate and even questioned whether the conflict over the invoice was sufficient reason to refuse to continue treating the patient, noting that “where there is an outstanding invoice, denial of care is a poor way to enforce it. Such may generate a complaint and seldom causes the bill to be paid.”
Some Guidelines for Consideration

To protect themselves from excessive cancellations, dentists who charge or wish to charge fees for missed appointments should proceed with caution and assess each situation carefully to avoid regrettable consequences. To this end, the following guidelines should be considered:

- Know and respect existing laws and regulations. Verify positions adopted by the regulatory authority or the provincial association and comply with them.
- Establish a clear policy for charging for missed appointments, applicable to all patients.
- Discuss fees in advance with all patients and ensure that they understand and accept this policy. Once patients have been duly informed and agree to the policy, have them sign an approval form that outlines all the required information.
- Charge a reasonable amount that reflects actual costs incurred because of missed appointments and not the amount of the intended service.
- Provide a telephone messaging service at all times that will allow patients to advise your office if they cannot make their appointments and be sure to inform patients of this service.
- Ensure that the patient did not cancel an appointment at least 24 hours in advance or that the missed appointment was not due to an unforeseen event.
- Be available to see the patient at the time of the appointment. If you were able to fit in another patient during the time slot left open by a cancellation, no fee should be charged.

These guidelines do not address all the issues surrounding this subject, particularly certain ethical questions that may arise from such a practice (including reciprocity). A debate within regulatory authorities on a clear regulation for charging for missed appointments would be desirable. The regulatory authority for psychologists in Quebec recently amended its code of ethics to add a clause allowing for charges for missed appointments on the condition that there was an agreement in writing between the psychologist and the patient. In such cases, the psychologist may “require administrative fees for an appointment missed by the client according to pre-determined and agreed-upon conditions, those fees not to exceed the amount of the lost fees.”

Moreover, it would be inappropriate to refuse to provide care due to an unpaid fee for a missed appointment. A patient’s frequent failure to show up for appointments may, however, constitute justification for terminating your contractual relationship with him or her.

In conclusion, it is not illegal to require reasonable fees for a missed appointment. However, to be in a position to levy such a charge, the dentist must adequately and clearly inform the patient of this policy and the patient must agree to these conditions.

Given that communication is the key to success in the relationship between patient and dentist, it is important to properly explain to the patient from the outset the importance of mutual cooperation. For some dentists, providing clear explanations to patients about the importance of respecting appointments may suffice, without having to resort to more radical steps such as charging for missed appointments. A “3 strikes and you’re out” style of policy (where 3 missed or cancelled appointments without sufficient notice automatically leads to termination of treatment and the end of the contractual relationship between the dentist and patient) may be a suitable alternative or complementary strategy to this type of billing. However, it should be noted that certain rules must be respected before ending a contractual relationship. Finally, those wishing to charge for missed appointments but who fear a negative reaction from patients (this practice could be seen as a way to get money from patients) might consider donating the revenues from these fees to a charitable organization. This way, while the dentist and patient both lose out because of a missed appointment, at least the money will go to a good cause.

THE AUTHOR

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The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

This article has been peer reviewed.

References

Infectious Dental Diseases in Patients with Coronary Artery Disease: An Orthopantomographic Case–Control Study

Kyosti Oikarinen, DDS, PhD; Mohammad Zubaid, MB, ChB, FRCPC; Lukman Thalib, PhD; Kari Soikkonen, DDS, PhD; Wafa Rashed, MD, FRCP (UK); Tryggve Lie, DDS, PhD

Several studies have suggested an association between cardiac diseases and oral infections. Both acute myocardial infarction and dental infection are common in Kuwait.

Purpose: We investigated whether coronary artery diseases were related to the type and severity of radiographically diagnosed dental infections in patients who had experienced and received treatment for a first episode of coronary artery disease in Kuwait’s largest hospital.

Materials and Methods: The type and severity of dental infections were analyzed by means of panoramic radiography and several background factors were recorded for 88 patients with coronary artery disease and the same number of controls matched for age, sex and nationality. All patients and control participants were interviewed and examined by a cardiologist, and radiographs were analyzed by an experienced radiologist. Several signs of dental infection such as caries, marginal bone loss, furcation lesions and periapical osteolysis were recorded. The severity of signs of periodontitis, classified as either mild or severe, was determined according to magnitude of marginal bone loss. Cases and controls were also compared by means of a total dental index.

Results: Cases and controls were well matched for age, sex, marital status, professional status and household income. Diabetes mellitus was more frequent and cholesterol levels, glucose levels and white blood cell counts were higher among cases than among controls. Cases and controls did not differ in terms of the mean number of teeth present or the number of teeth with fillings, root fillings or caries. The number of teeth needing extraction was significantly greater among cases than among controls. The numbers of periapical lesions and molars with furcation lesions and the extent of severe marginal bone loss provided further evidence of worse dental health among the cases than among the controls. The total dental index, which quantified the severity of oral infections, was higher among cases than among controls.

Discussion and Conclusions: This study yielded evidence that radiographically diagnosed signs of dental infections were more frequent among patients with coronary artery disease than among matched controls. In this study, the dental infections were diagnosed from radiographs only, so the data must be evaluated with caution. Clinical examination would have been needed to confirm periodontitis. Although these results agree with the findings of many earlier studies, a causal relation between coronary artery disease and oral infections is difficult to prove because of several confounding factors. As expected (given the criteria used to define the cases), more patients than controls had elevated cholesterol levels and hypertension. Further studies are needed to confirm this relation. In particular, longitudinal epidemiologic, clinical and interventional studies are needed. Although the literature is far from unanimous, the authors recommend that dental infection be listed as a possible contributing factor to coronary artery disease, along with smoking, overweight, high lipid concentration and high blood pressure. To date, however, dental infections have not been mentioned in books dealing with risk factors for coronary artery disease.

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Dental Burs and Endodontic Files: Are Routine Sterilization Procedures Effective?

Archie Morrison, DDS, MS, FRCD(C); Susan Conrod, DDS

Diseases may be transmitted by indirect contact when dental instruments contaminated by one patient are reused for another patient without adequate disinfection or sterilization between uses. Resterilization is the repeated application of a sterilization procedure to an instrument or device to remove contamination, allowing for its use in treating multiple patients. Resterilization is used on dental burs and endodontic files in many dental offices. These devices can become contaminated with blood, saliva, necrotic tissue and pathogens; therefore, if such devices are to be reused, it is important to ensure sterility and minimize any associated risk of cross-contamination. However, the complex miniature architecture of dental burs and endodontic files makes precleaning and sterilization difficult. Devising a sterilization protocol for endodontic files and dental burs requires care, and some have suggested that these instruments be considered single-use devices.

Purpose: One purpose of this study was to determine the effectiveness of various sterilization techniques currently used in dentistry for the resterilization of dental burs and endodontic files. The second aim was to determine whether new dental burs and endodontic files, as supplied in packages from the manufacturer, are sterile.

Materials and Methods: The sterility of new (unused) and used dental burs and endodontic files before and after various sterilization procedures was analyzed. New burs and files were tested immediately after removal from manufacturers’ packaging, with or without prior sterilization. Burs and files that had been used in various dental offices were precleaned, packaged, resterilized and then tested for various pathogens. Each test group (unused sterilized burs and files, unused and unsterilized burs and files, and used burs and files sterilized using 1 of 5 techniques) consisted of 40 items. There were many differences between the groups, such as methods of precleaning, type of packaging, length of sterilization cycle and type of sterilizer. Each item was individually removed from the sterilization packaging, transferred by sterile technique into Todd-Hewitt broth, incubated at 37°C for 72 hours and observed for bacterial growth.

Results: The 5 techniques of resterilization tested in this study were deemed inadequate. Rates of contamination ranged from 15% of the items in one group of used burs ($p < 0.001$) to 58% of the items in one group of used files ($p < 0.001$). Even the new burs and files had contamination rates of 42% and 45%, respectively, when the devices were tested without sterilization. The only groups with no bacterial contamination were the previously unused burs and files that were sterilized before testing.

Conclusions: Dental burs and endodontic files are not sterile at the time of purchase and should be cleaned and sterilized before first use. Sterilization procedures were successful for burs and files that had not been previously contaminated by organic debris. The comparison of new and used items in this study revealed that the problem with sterilization procedures may lie in the method employed to remove gross debris from the burs and files, which in turn probably relates to the small size and complex surface detail of these items. Routine resterilization procedures for previously used burs and files are ineffective, and more rigorous sterilization procedures are needed. If such procedures cannot be devised, these instruments should perhaps be considered single-use devices.

For citation purposes, the electronic version is the definitive version of this article.

The complete article is published in the electronic JCDA at www.cda-adc.ca/jcda/vol-75/issue-1/39.html

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Dental Surgery for Patients on Anticoagulant Therapy with Warfarin: A Systematic Review and Meta-analysis

Adeela Nematullah, BHSc; Abdullah Alabouzi, BHSc; Nick Blanas, BSc, DDS, FRCD(C); James D. Douketis, MD, FRCP(C); Susan E. Sutherland, DDS, MSc

Warfarin therapy is used by more than 4 million patients in North America for conditions such as atrial fibrillation, mechanical heart valve and venous thromboembolism. Despite widespread use of this therapy, the management of patients taking warfarin who require dental procedures varies considerably. Although continuation of the regular dose of warfarin before dental procedures may increase the risk for perioperative bleeding, discontinuation of warfarin increases the risk for life-threatening thromboembolic events such as stroke.

Purpose: We conducted a systematic review of the published literature to evaluate the effect of continuing warfarin therapy on the bleeding risk for patients undergoing elective dental surgical procedures.

Methods: Data sources were the MEDLINE and EMBASE databases, the Cochrane Central Register of Controlled Trials, a manual citation review of the relevant literature, content experts and relevant abstracts from the proceedings of the International Association for Dental Research. Study selection was carried out independently by 2 reviewers. Two reviewers also independently assessed study quality, with differences resolved by consensus. Eligible studies were randomized controlled trials that compared the effects of continuing the regular dose of warfarin therapy with those of discontinuing or modifying the dose on the incidence of bleeding for patients undergoing dental procedures. All reported bleeding events were reclassified into the following 3 categories to allow comparison between studies: major bleeding, clinically significant nonmajor bleeding and minor bleeding. Data extraction was done independently by 3 reviewers; disagreements were resolved by consensus and discussion with a fourth reviewer. A sensitivity analysis to exclude studies of low quality was planned. Two subgroup analyses were done after the fact, one in patients maintained at an international normalized ratio (INR) > 3 and the other in studies that used hemostatic interventions.

Results: Five trials (a total of 553 patients) met the inclusion criteria. Compared with interruption of warfarin therapy (either partial or complete), perioperative continuation of warfarin with patients’ usual dose was not associated with an increased risk of clinically significant nonmajor bleeding or an increased risk for minor bleeding. Because 4 of 5 trials were assessed as low quality, a sensitivity analysis that excluded studies of low quality could not be conducted. The results of the primary analyses were supported by the subgroup analyses done in studies with a mean INR > 3.0. Results from the subgroup analyses of studies that used antifibrinolytic agents were also not significant.

Conclusions: Continuing the regular dose of warfarin therapy does not seem to confer an increased risk of bleeding when compared with discontinuing or modifying the warfarin dose for patients undergoing minor dental procedures. However, pragmatic questions arise about the management of patients with comorbid factors, use of additional local measures and antifibrinolytic agents, and indications for specialist referral, hospital care or bridging therapy. Clinical experts from both medicine and dentistry need to review the available evidence, apply their collective knowledge and clinical expertise, and develop concrete practice guidelines to assist practitioners in the management of the dental patient on anticoagulant therapy.
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 Oral Health Care for the Pregnant Patient

James A. Giglio, DDS, MEd; Susan M. Lanni, MD; Daniel M. Laskin, DDS, MS; Nancy W. Giglio, CNM

ABSTRACT

Pregnancy is a unique time in a woman's life, accompanied by a variety of physiologic, anatomic and hormonal changes that can affect how oral health care is provided. However, these patients are not medically compromised and should not be denied dental treatment simply because they are pregnant. This article discusses the normal changes associated with pregnancy, general considerations in the care of pregnant patients, and possible dental complications of pregnancy and their management.

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Most pregnant patients are generally healthy and need not be denied dental treatment solely because they are pregnant. However, even a healthy pregnancy causes major changes in maternal anatomy, physiology and metabolism. These can include changes in the cardiovascular, respiratory and gastrointestinal systems, as well as changes in the oral cavity and increased susceptibility to oral infection. Although these adaptations of maternal organ systems are normal, they do necessitate consideration and adjustments in treatment by any dentist who is providing oral health care and prescribing medications for the patient. This article discusses the various changes that occur during normal pregnancy and suggests modifications in dental management that should be considered.

Systemic Changes
Cardiovascular System

Cardiovascular changes in pregnancy include increases in cardiac output, plasma volume and heart rate. A benign systolic ejection murmur, caused by increased blood flow across the pulmonic and aortic valves, occurs in 96% of pregnant women, but no treatment is required. In addition, as a result of vasomotor instability, pregnant patients are susceptible to postural hypotension. Consequently, changes in dental chair position from reclining to upright should be performed very slowly. As the uterus increases in size, it causes pressure on the vena cava and aorta, which can result in decreases in cardiac output, venous return and uteroplacental blood flow. Aortocaval compression, which occurs specifically in the supine position, leads to supine hypotensive syndrome, which is characterized by symptoms and signs such as lightheadedness, weakness, sweating, restlessness, tinnitus, pallor, decrease in blood pressure, syncope and, in severe cases, unconsciousness and convulsions. Patients who experience this syndrome are usually aware of its occurrence and can alert their caregivers if they begin to notice symptoms developing. The condition can be corrected by having the patient roll on her left side and placing a pillow or rolled towels to elevate her right hip and buttock by about 15°. This manoeuvre lifts the uterus off the vena cava and re-establishes aortocaval patency.
Increased estrogen production during pregnancy causes the capillaries in the mucosa of the nasopharynx to become engorged, which results in edema, nasal congestion and predisposition to epistaxis. Nasal breathing becomes more difficult, and there is a tendency to breathe with the mouth open, especially at night. If xerostomia subsequently develops, patients lose the protection against dental decay afforded by saliva. Patients who are experiencing these problems, especially those with a high caries index, should undergo early caries control to minimize deleterious effects on the dentition.

Gastrointestinal System

The increase in progesterone levels during pregnancy causes a decrease in lower esophageal tone and gastric and intestinal motility. The combined effects of hormonal and mechanical changes in the gastrointestinal system and greater sensitivity of the gag reflex also increases the risk of gastric acid reflux. In addition, the stomach is displaced superiorly as the uterus increases in size, which increases intragastric pressure. Consequently, the chair should be kept as upright as possible during dental treatment to relieve abdominal pressure and keep the patient comfortable.

Ptyalism (excessive secretion of saliva) is a complication of pregnancy that occurs most often in women suffering from nausea. The presence of excessive saliva in the mouth may also reflect the inability of nauseated women to swallow normal amounts of saliva rather than a true increase in production. In some cases as much as 2 L of saliva per day is lost through drooling. Reducing the consumption of complex carbohydrates may improve this condition.

High-Risk Patients

Obstetric consultation is usually not required before initiating dental treatment for normal, healthy pregnant patients. However, consultation should be sought before caring for patients who have been identified by the obstetrician as being at risk for pregnancy complications, such as those with pregnancy-induced hypertension.
**Timing of Treatment**

Coronal scaling, polishing and root planing may be performed at any time as required to maintain oral health. However, routine general dentistry should usually only be done in the second and third trimester of pregnancy. Organogenesis is completed by the end of the first trimester, and uterine size has not increased to the extent that sitting in the dental chair is uncomfortable. Moreover, nausea has generally ceased by the end of the first trimester. Extensive elective procedures should be postponed until after delivery. Any treatment should be directed toward controlling disease, maintaining a healthy oral environment and preventing potential problems that could occur later in the pregnancy or during the postpartum period.  

**Radiography**

Oral radiography is safe for pregnant patients, provided protective measures such high-speed film, a lead apron and a thyroid collar are used. No increase in congenital anomalies or intrauterine growth retardation has been reported for x-ray radiation exposure during pregnancy totalling less than 5–10 cGy, and a full-mouth series of dental radiographs results in only $8 \times 10^{-4} \text{ cGy}$. A bitewing and panoramic radiographic study generates about one-third the radiation exposure associated with a full-mouth series with E-speed film and a rectangular collimated beam.  

Patients who are concerned about radiography during pregnancy should be reassured that in all cases requiring

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**Pregnant Patients**

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<table>
<thead>
<tr>
<th>Table 1</th>
<th>Pregnancy drug risk categories, as defined by the U.S. Food and Drug Administration</th>
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</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
<td><strong>Evidence</strong></td>
</tr>
<tr>
<td>A</td>
<td>Adequate, well-controlled studies in pregnant women have not shown an increased risk of fetal abnormalities.</td>
</tr>
<tr>
<td>B</td>
<td>Animal studies have revealed no evidence of harm to the fetus, however, there are no adequate and well-controlled studies in pregnant women.</td>
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<td></td>
<td>or</td>
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<tr>
<td></td>
<td>Animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus</td>
</tr>
<tr>
<td>C</td>
<td>Animal studies have shown an adverse effect and there are no adequate and well-controlled studies in pregnant women.</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>No animal studies have been conducted and there are no adequate and well-controlled studies in pregnant women.</td>
</tr>
<tr>
<td>D</td>
<td>Studies, adequate well-controlled or observational, in pregnant women have demonstrated a risk to the fetus. However, the benefits of therapy may outweigh the potential risk.</td>
</tr>
<tr>
<td>X</td>
<td>Studies, adequate well-controlled or observational, in animals or pregnant women have demonstrated positive evidence of fetal abnormalities. The use of the product is contraindicated in women who are or may become pregnant.</td>
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</tbody>
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such imaging, the dental staff will practise the ALARA (As Low As Reasonably Achievable) principle and that only radiographs necessary for diagnosis will be obtained.8

Periodontal Disease

Pregnancy gingivitis (Fig. 2) usually appears in the first trimester of pregnancy. This form of gingivitis results from increased levels of progesterone and estrogen causing an exaggerated gingival inflammatory reaction to local irritants. The interproximal papillae become red, edematous and tender to palpation, and they bleed easily if subjected to trauma. In some patients, the condition will progress locally to become a pyogenic granuloma or “pregnancy tumour,” which is most commonly seen on the labial surface of the papilla (Fig. 3). Small lesions respond well to local debridement, chlorhexidine rinses and improved oral hygiene measures, but large lesions require deep excision. Because intraoperative bleeding can be difficult to control, such surgery should be performed by clinicians with requisite training and experience.

Tooth mobility is a sign of periodontal disease caused by mineral changes in the lamina dura and disturbances in the periodontal ligament attachments. Vitamin C deficiency contributes to this problem, so the patient should be advised accordingly.3 Removal of local gingival irritants, therapeutic doses of vitamin C and delivery typically result in reversal of the tooth mobility.3

Some observational and interventional studies have shown an association between periodontal disease and adverse pregnancy outcomes such as preterm labour and low birth weight,9,10 but other studies have shown no relation between periodontal disease and pregnancy outcomes.11 While research continues into the pathophysiology of a cause-and-effect relation between oral health and pregnancy outcomes, it is prudent to keep the pregnant patient’s periodontal system as free of disease as possible.

Infection

Odontogenic infection should be treated promptly at any time during pregnancy. Although pregnant patients are usually not immunocompromised, the maternal immune system does become suppressed in response to the fetus.7 As such, there is a decrease in cell-mediated immunity and natural killer cell activity. Consequently, odontogenic infections have the potential to develop rapidly into deep-space infections and to compromise the oral–pharyngeal airway. Abscesses should be drained and the offending pulp extirpated or the tooth removed to control the infection. The obstetrician should be informed of the patient’s status and the planned course of and rationale for treatment discussed. Patients who are in acute dental pain should be cared for in a similar manner. Long-term use of analgesics instead of definitive treatment is inappropriate. The patient should not have to wait until after delivery before treatment is provided.

Medications

Another concern is the prescribing and administration of drugs. The most obvious concern is that the drug will cross the placental barrier and cause teratogenic effects to the fetus. The U.S. Food and Drug Administration (FDA) has defined categories of pregnancy risk associated with various drugs (Table 1), and guidelines for safely prescribing drugs during pregnancy have been published.4

Analgesics

Analgesic drug categories are based on short-term use (over 2 or 3 days) to treat a specific disease process. Acetaminophen, which is in pregnancy risk category B, is the safest analgesic for use during pregnancy. However, because various strengths and preparations are available and because there is a potential for liver toxicity, patients should be instructed on how to take the drug and the maximum recommended daily dose (no more than 4 g/day for adults).

The majority of the other commonly prescribed analgesics are in pregnancy risk category C. It should be remembered that although category C drugs are generally safe, information from well-controlled human studies is not available. Therefore, prescriptions for these drugs should specify the most effective therapeutic dose for the shortest time. Ibuprofen is a category B analgesic in the first and second trimesters, but it is a category D drug during the third trimester because it has been associated with lower levels of amniotic fluid, premature closure of the fetal ductus arteriosus and inhibition of labour when taken during this time.12 It should be
prescribed only after consultation with and advice from the obstetrician. Obstetricians often prescribe a combination of acetaminophen and codeine or oxycodone in place of nonsteroidal anti-inflammatory drugs. Prolonged use of narcotic analgesics in the third trimester can lead to neonatal respiratory depression. In general, this does not appear to be a concern for the dose regimens typically prescribed in association with dental treatment. Recently, however, concern has been raised about the use of codeine by nursing mothers. In some women, codeine is more rapidly metabolized into morphine, and the morphine can be passed along by a mother who is breast-feeding an infant. Genetic testing is the only way to determine whether someone is a “rapid metabolizer,” so nursing mothers who are taking codeine should be made aware of the signs of morphine overdose in their infants. A mother should contact her doctor if her baby shows signs of increased sleepiness (more than 4 hours at a time), limpness or difficulty nursing or breathing.

**Antibiotics and Antimicrobials**

Most antibiotics that are commonly prescribed by dentists are category B drugs, with the exception of tetracycline and its derivatives (e.g., doxycycline), which are in category D because of their effects on developing teeth and bone. Ciprofloxacin, a broad-spectrum fluoroquinolone antibiotic used to treat periodontal disease associated with Actinobacillus actinomycetemcomitans, is in category C. Its use in pregnancy has been restricted because of arthropathy and adverse effects on cartilage development observed in immature animals. There are not enough data to definitively determine its safety in humans. Metronidazole is in category B. Some authors caution against its use in the first trimester because of potential harm to the fetus; however, recent studies showed no definitive teratogenic effects. The risk–benefit ratio for the patient should be determined and the obstetrician consulted before prescribing this drug. The estolate form of erythromycin should be avoided because of deleterious effects on the mother’s liver. Chlorhexidine gluconate is a category B antimicrobial mouth rinse.

**Local Anesthetics**

Local anesthetics are relatively safe when administered properly and in the correct amounts. Lidocaine and prilocaine are category B drugs, whereas mepivacaine, articaine and bupivacaine are in category C. Epinephrine is also a category C drug. This drug has been studied in amounts of up to 0.1 mg added to local anesthetics used for epidural anesthesia (administered for pain relief during labour); no unusual side effects or complications have been reported in this context. During administration of a local anesthetic with epinephrine, an intravascular injection may, at least theoretically, cause insufficiency of uteroplacental blood flow. However, for a healthy pregnant patient, the 1:100,000 epinephrine concentration used in dentistry, administered by proper aspiration technique and limited to the minimal dose required, is safe.

**Fluoride**

Fluoride is a category C drug. Fluoride treatment may be needed for patients with severe gastric reflux caused by nausea and vomiting during early pregnancy, which can cause erosion of tooth enamel. In these cases, fluoride treatment and restorations to cover the exposed dentin can diminish the sensitivity of and injury to the dentition. Topical fluoride gel may cause nausea, so application of a fluoride varnish may be better tolerated. The application of topical fluoride should follow evidence-based guidelines.

**Sedatives and Anxiolytics**

Barbiturates and benzodiazepines are category D drugs and should be avoided during pregnancy. Benzodiazepines have been implicated in the development of cleft lip and palate. Nitrous oxide is not rated in the FDA classification system, and its use during dental treatment is still controversial. The results of a survey of more than 50,000 dentists and dental hygienists, which suggested that long-term exposure to nitrous oxide may be associated with reproductive problems such as spontaneous abortion and birth defects, have been called into question because of perceived inherent biases of the study design. However, nitrous oxide is known to affect vitamin B12 metabolism, rendering the enzyme methionine synthase inactive in the folate metabolic pathway. Because methionine synthase is vital for the production of DNA, it is best to avoid the use of nitrous oxide in the first trimester of pregnancy, when organogenesis is occurring.

The greatest concern for patient safety during the administration of nitrous oxide analgesia is the potential for hypoxia. The use of modern anesthetic machines, which are equipped with fail-safe and flow-safe systems, greatly diminishes the potential for hypoxia. If nitrous oxide is necessary for patient comfort, the analgesia technique should be discussed with the patient and obstetrician to be sure the pregnancy is progressing normally. After the first trimester of pregnancy, short-term administration of nitrous oxide (to ease apprehension during administration of a local anesthetic), with a minimal concentration of 50% oxygen, should be safe.

**Conclusions**

Optimal oral health is very important for the pregnant patient and can be provided safely and effectively. Paying attention to the physiologic changes associated with pregnancy, practising careful radiation hygiene measures, prescribing medications on the basis of drug safety...
categories and timing appointments and aggressive management of oral infection appropriately are important considerations. Given the possibility that periodontal disease may affect pregnancy outcomes, dentists need to play a proactive role in the maintenance of the oral health of pregnant women.

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References

The Changing Field of Temporomandibular Disorders: What Dentists Need to Know

Gary D. Klasser, DMD; Charles S. Greene, DDS

ABSTRACT

Diagnosis and treatment of temporomandibular disorders (TMDs) have been within the domain of dentistry for many decades. However, the field of TMDs and other causes of orofacial pain is undergoing a radical change, primarily because of an explosion of knowledge about pain management in general. As a result, etiological theories about TMDs are evolving toward a biopsychosocial medical model from the traditional dental framework. Conservative and reversible management approaches (especially of chronic pain conditions) are becoming the norm rather than the exception in treating TMD patients, and already certain biological and psychosocial factors are known to affect the outcomes. Current research in this field is focused on genetic and environmental susceptibility factors as well as individual adaptive potentials. To continue as the main providers of care for TMD patients, dentists will need to recognize and appreciate these important changes.
It was subsequently shown that Costen’s explanation of the anatomic relations between the TMJ and ear and sinus structures was incorrect.28 However, terms such as overclosed vertical dimension, condylar malposition, trapped mandibles, occlusal disharmony and neuromuscular imbalance developed from the initial conceptual framework, and treatments to correct these problems became the basis for a variety of invasive and irreversible dental therapies, including bite-opening, occlusal adjustments, major restorative dentistry, orthodontics and even surgeries. Whatever one may think of these concepts and interventions, it is clear that they were the basis for a mechanical, dentistry-oriented etiological viewpoint and that the related therapies were seen as being anti-etiologic. In fact, the word definitive was often used to describe the curative value of these approaches to TMD treatment.

Over the next 7 decades, the field of TMDs experienced many taxonomic and conceptual changes. Various labels, such as TMJ syndrome, TMJ pain-dysfunction syndrome and myofascial pain-dysfunction syndrome, were applied to TMDs. Fortunately, single-disease concepts have been discarded because of their simplicity and naiveté, and the early dental mechanical theories of misaligned jaws or faulty occlusal relations have largely been discredited.9 Today, TMDs are being studied and treated from a medical perspective that involves orthopedic principles, combined with a biopsychosocial understanding of how chronic pain disorders affect those who have them.10,11 Furthermore, studies of patients with TMD have shown that many of them, especially females, experience a multitude of other functional (nonorganic) disorders, such as fibromyalgia, interstitial cystitis, irritable bowel syndrome and pelvic pain, while others have reported multiple sites of pain throughout their bodies.12 These high levels of comorbidity with other conditions have led to hypotheses about centrally mediated dys-regulatory problems producing multiple symptoms in susceptible patients.

The aim of this paper is to make dentists aware of the significant conceptual and practical changes that have already occurred or are in the process of emerging in the field of TMDs, so that they can continue to play an important role in the management of these disorders.

Etiology of TMDs

Greene13 defined etiology as the following: “We want to know why a particular patient began to have both the biology and the perception of his/her pain (in the absence of frank trauma).” It is within the context of this definition that the etiology of TMDs is discussed here.

In addition to the early views described above, various disciplines of dentistry and other areas of health care have proposed theories about the etiology of TMDs. For example, the field of orthodontics developed its own version of structural disharmony concepts and corrective treatments within an orthodontic framework.14 Another structural concept of TMD etiology, proposed by some physical therapists, chiropractors and dentists, is based on the notion that “bad” craniocervical relations may be causing TMDs. Although this idea has enjoyed some popularity in the past (and is still popular in some regions of the world), several studies have demonstrated that there are no consistent postural findings that differentiate TMD patients from other people.15–18 Although many patients complain of concomitant cervical pain and TMDs, this should be understood as comorbidity resulting from functional rather than structural relations. In addition, this common clinical finding may be a result of heterotopic (referred) pain in these areas, due to the neuroanatomic and neurophysiologic convergence of cervical and cranial sensory nerves in the brainstem nuclei.19,20

The theories of TMD etiology that have made the largest impact are related to various types of occlusal im-perfection. Occlusion is a very important subject within the profession of dentistry, especially as it pertains to orthodontics, restorative dentistry and prosthodontics; however, its relevance to the etiology of TMDs is questionable, especially in chronic conditions. In a review of 57 epidemiological studies of the relation between occlusion and TMDs, Okeson21 found that 35 suggested a relation compared with 22 studies that suggested no relation. The “positive” occlusal findings in the 35 studies varied so widely that no consistent feature could be identified. The occlusal disharmonies cited in these studies were also prevalent among many symptom-free people.

McNamara and others22 reviewed the role of morphologic and functional occlusal factors with respect to development of TMDs and found only a weak relation between them. Koh and Robinson23 systematically reviewed the literature pertaining to occlusal adjustments

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**Box 1** Common signs and symptoms of temporomandibular disorders

- Pain or tenderness in the temporomandibular joint, muscles of mastication, facial areas, ear region, shoulder and neck
- A clicking, popping or grating sound when opening or closing the mouth or while chewing
- Catching or locking of the joint with deviations or deflections of the mandible on opening or closing the mouth
- Limitations in opening or closing the mouth
- Difficulty or discomfort while chewing
- Sensation of an uncomfortable bite

...
Changing Field of TMDs

for treating and preventing TMD. After reviewing specific outcome measures, they concluded that there was no evidence for the use of occlusal adjustment procedures for either the treatment or prevention of TMD.

In addition to structure, other etiological factors have been proposed and discussed as a result of large studies of patient populations. For example, trauma at both the macro and micro levels has been noted in the history of certain TMD patients, with a rather clear relation to onset of symptoms in many cases. A psycho-physiological theory of the etiology of TMDs was developed in the 1950s and 1960s, with particular emphasis on the category of myofascial pain and dysfunction. Even though Laskin’s classic article about the etiology of myofascial pain and dysfunction served as the basis for much of this work, eventually his psychophysiological theory proved to be incomplete as an explanation for the development of myofascial pain. Today, the importance of psychological factors in the onset, progression, treatment and persistence of various TMDs is well recognized as foundational knowledge in this field. However, the reasons why some patients exhibit TMD symptoms while others do not remains unexplained by the psychophysiological theory of etiology.

Currently the most popular theories regarding TMD etiology are based on the biopsychosocial model, which involves a combination of biological, psychological and social factors. These 3 words provide an excellent descriptor of the world that most patients with pain (and especially patients with chronic pain) are living with on a daily basis. They have a biological problem (i.e., activation of pain pathways, with or without a demonstrable pathological condition) that may have psychological antecedents as well as behavioural consequences. This situation exists in a social framework that includes interpersonal relationships with friends, families and health care providers, which almost always produces major negative experiences for the patients as well as for their immediate families. Unlike the mechanistic dental theories of etiology, the biopsychosocial model encourages a rehabilitation–management approach rather than providing the unrealistic expectation of a permanent cure (which is even less likely in chronic conditions). Unfortunately, due to the limitations of current physical diagnostic procedures for assessing pain conditions, as well as the crude psychometric tools that are currently available, the biopsychosocial model lacks the ability to assess all of these variables at the individual patient level and, therefore, is useful only at the group level.

Dentists should appreciate and recognize that the inability to identify precise etiologies or the lack of a perfect theoretical model does not prevent the rendering of reasonable and effective treatment. It is acceptable, as occurs daily in the medical profession, to provide a presumptive diagnosis that is probably correct, then to deliver reversible, conservative, noninvasive and empirically validated targeted treatments (Table 1). For example, a painful TMJ that began to cause pain without any specific initiating event or cause can still be successfully treated using medications, appliances or physical therapy in various combinations. By following these foundational concepts, dentists can take a “low-tech and high-prudence” therapeutic approach to TMD patient care.

Future Directions in the Field of TMDs

The changes taking place in the field of TMDs are not driven purely by dental research, but are coming more from progress in the larger field of pain management. Multiple research projects around the world involving basic and clinical sciences as well as translational activities (the merging of basic and clinical activities) are greatly influencing our understanding of pain. TMDs are
currently being investigated in terms of orthopedic principles, neurophysiological aspects of pain, neuroanatomic regions of pain processing, molecular and cellular pathophysiology of muscle and joints and behavioural aspects of chronic pain. From these domains, 3 main areas of investigation have emerged.

**Genetics**

Human genetic studies are providing us with a better understanding of inherent susceptibility to pain, variability in pain perception and responses and the factors that predict risk of chronification of pain. Some investigators have looked at catechol-O-methyltransferase (COMT), an enzyme that is responsible for metabolizing catecholamine and is involved in pain perception, cognitive function and mood. Studies have reported that carriers of the low-pain haplotype on the gene that codes for COMT appear to have 2.3 times less risk of developing myogenous TMD. In another study, people who have genetic coding for certain levels of adrenergic receptor expression were shown to be about 10 times less likely to develop TMDs. Numerous other genes code for the neurotransmitters and neuromodulators that influence pain sensitivity. The implications of these findings for the management of patients with pain may ultimately be to tailor treatment approaches to the individual or provide pharmaceutical agents targeted at specific receptors.

**Pathophysiology**

A plethora of information is erupting regarding the molecular chemistry and cellular biology of various types of pain. Understanding of the pathophysiology of conditions that affect the TMJ has been greatly enhanced by these discoveries. For example, inflammation in the synovial tissues of the TMJ is the main determinant of whether the joint becomes painful. Complex cellular processes such as activation of T cells, macrophages and plasma cells with the expression of a multitude of inflammatory mediators, such as prostaglandins, serotonin, proinflammatory cytokines and their antagonists, drive the inflammatory cascade. It appears that both the absolute levels of this inflammatory "soup" and the balance between pro- and anti-inflammatory substances are important in the pain process and the propensity for chronification. In addition, neurochemicals from sympathetic efferents (neuropeptide Y, norepinephrine and others) and neuroendocrine peptides (substance P, calcitonin gene-related peptides and others) are involved by bidirectional communication with the immune system and, thus, contributing to TMJ pain.

Currently, the pathophysiology of muscle pain is not as well understood. Numerous mechanisms have been considered as sources of muscle pain, yet the literature has not provided definitive answers. Localized factors, such as microtrauma, local ischemia or hypoperfusion can produce structural or functional consequences, because of the release of endogenous algesic substances (glutamate, histamine and others) from tissue cells and afferent nerve fibres leading to excitation or sensitization of muscle nociceptors. Central processes involving neuroendocrine factors (endogenous and exogenous hormones) as well as neurophysiological mechanisms (peripheral and central sensitization) also play a role in the pathophysiology of muscular pain. Combinations of local and central factors must also be considered.

As more research is undertaken and new information emerges, dentists should be aware of it and recognize that treatments directed at the underlying pathophysiology of both arthrogenous and myogenous painful conditions will inevitably result in a more precise and targeted medical approach to treatment.

**Predictive Factors**

Predicting responses to therapeutic interventions in pain patients (including those with TMDs) by identifying certain physical and psychological factors is currently being done with some success. A major focus of current research is trying to prevent acute pain conditions from developing into chronic ones. This requires good early intervention and treatment strategies as well as better predictors of who is most likely to develop such problems. The discovery of more predictors should enhance the ability of dentists to develop appropriate treatment plans tailored to the individual patient.

**Conclusions**

The field of TMDs is undergoing a major transformation as a result of research findings about pain in general, as well as specific advances within the field. As a result, TMDs are currently recognized as a subset of musculoskeletal pain conditions, and this requires a medical perspective to understand and manage TMD patients. For the dental profession, the implications of this information are profound and serious in most TMD cases, but especially in chronic conditions. Essentially, it means that dentists should try to avoid invasive, irreversible and aggressive treatments that are intended to “cure” these problems. Instead, more reversible and conservative medically based management strategies are recommended to reduce pain and improve function, an approach that has been shown to be successful for most TMD patients.

In the future, treatment modalities directed at the pathophysiological processes of joint and muscle pain as well as the psychosocial aspects of chronic pain will need to be tailored to each patient’s individual problems. For now, the cautious approach recommended by Stohler and Zarb (low-tech and high-prudence) must be understood and followed so that dentists can continue to serve as the primary providers of care for TMD patients. If not, then it seems inevitable, as scientific discovery continues and
provides us with a deeper understanding of these patients, that “ownership” of this group of disorders will be lost to other medically oriented health practitioners.

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References


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Dental Pulp Neurophysiology: Part 1. Clinical and Diagnostic Implications

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ABSTRACT

Diagnosis in endodontics requires an understanding of pulpal histology, neurology and physiology, and their relationship to the various diagnostic tests commonly used in dental practice. Thermal changes in the oral environment cause rapid displacement of dentinal tubular contents, resulting in pain. This effect, known as the hydrodynamic effect, is the regulator of pain sensation in thermal-pulp testing. Hundreds of axons enter the tooth from the apical foramen to provide it with its sensory supply. The nerve supply of the dentin–pulp complex is mainly made up of A fibres (both delta and beta) and C fibres. They are classified according to their diameter and their conduction velocity. The A fibres are mainly stimulated by an application of cold, producing sharp pain, whereas stimulation of the C fibres produces a dull aching pain. Because of their location and arrangement, the C fibres are responsible for referred pain. This first part of a 2-part review examines the relation between clinical sensations during the diagnostic visit and the neurophysiology of the dental pulp to explore the connection between the art (clinical diagnosis) and the science (neurophysiology) of endodontics.

Once a preliminary or differential diagnosis is reached, further clinical examination is needed to confirm the diagnosis, such as inspection of the extraoral soft tissues, examination of regional lymph nodes and an intraoral examination that includes looking for signs of a sinus tract, swelling of the soft tissues, a mobile tooth or teeth, the condition of the gingiva, and the number of decayed and restored teeth. A transillumination test may reveal hidden decay or a fractured tooth and may result in the diagnosis of a necrotic tooth if enamel translucency is lost. In this simple test, a strong light is placed behind the tooth. A vital tooth transmits light well because of its translucency, hence the term transillumination. A necrotic tooth appears dull and dark because of its compromised blood supply and

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the degeneration of the pigments inside its dentinal tubules. Radiographs, along with these data, can localize the offending tooth; then more specific tests can be done to assess the vitality of the tooth pulp.

Assessment of pulp vitality is especially critical in diagnosing cases where a periapical radiograph does not show any obvious pathosis. This includes evaluating cases of traumatized teeth or bridge abutments where a delay in diagnosing a dead pulp or a poor evaluation before bridge preparation may lead to inflammatory root resorption or apical periodontitis respectively.

Pain is produced when a stimulus strong enough to trigger a nervous response is applied to a tooth. The intensity, location and quality of pain will differ, depending on the type of stimulus, as well as the type of nerve fibres excited in the process. Pain is the main complaint for which dental treatment is mostly sought. One study found that the most common orofacial pain is dental.

In this first part of our 2-part review, we discuss the types and interpretation of pulpal pain induced by various sensory fibres, using different clinical diagnostic methods. We do not discuss the different stages of pulpal inflammation, namely reversible and irreversible pulpitis, and pulp necrosis as they are beyond the scope of this review.

Types of Nerve Fibres and Their Distribution Inside the Dental Pulp

Teeth are supplied by the alveolar branches of the fifth cranial nerve, namely the trigeminal nerve (the maxillary branch in the upper jaw and the mandibular in the lower jaw). Dental pulp is a highly innervated tissue that contains sensory trigeminal afferent axons. Sympathetic efferent fibres regulate the blood flow; no consensus about the role of parasympathetic fibres exists.

The cell bodies of the sensory neurons of the pulp are located in the trigeminal ganglion. Hundreds, perhaps thousands, of axons found in the canines and premolars enter the pulp through the apical foramen where they branch following the distribution of the blood supply all over the pulp. The majority of the nerve bundles reach the coronal dentin where they fan out to form the nerve plexus of Raschkow. There, they anastomose and terminate as free nerve endings that synapse onto and into the odontoblast cell layer (approximately 100–200 μm deep in the dentinal tubules) and the odontoblastic cell processes.

The 2 types of sensory nerve fibres in the pulp are myelinated A fibres (A-delta and A-beta fibres) and unmyelinated C fibres. Ninety percent of the A fibres are A-delta fibres, which are mainly located at the pulp–dentin border in the coronal portion of the pulp and concentrated in the pulp horns. The C fibres are located in the core of the pulp, or the pulp proper, and extend into the cell-free zone underneath the odontoblastic layer.

The ratio of myelinated to unmyelinated fibres is difficult to ascertain because the nerve fibres in recently erupted teeth with open apices may not yet have acquired the myelin sheath.

Clinical Implications for Intrapulpal Sensory Nerve Fibres

The A-delta fibres have a small diameter and therefore a slower conduction velocity than other types of A fibres, but are faster than C fibres. The A fibres transmit pain directly to the thalamus, generating a fast, sharp pain that is easily localized. The C fibres are influenced by many modulating interneurons before reaching the thalamus, resulting in a slow pain, which is characterized as dull and aching.

The A fibres respond to various stimuli such as probing, drilling and hypertonic solutions through the hydrodynamic effect. This effect depends on the movement of the dentinal fluid in the dentinal tubules in response to a stimulus. Although the normally slow capillary outward movement does not stimulate the nerve endings and cause pain, rapid fluid flow, as in the case of desiccating or drying dentin, is more intense and is likely to activate the pulpal nociceptors. Heat or cold stimuli cause fluid movement through the dentinal tubules, resulting in a painful sensation in a tooth with a viable sensory pulp. (Fig. 1). This response is due to the rapid temperature change that causes a sudden fluid flow within the tubules and deforms the cell membranes of the free nerve endings. A gradual change in temperature, however, does not cause an immediate pain response because rapid fluid movement excites the A-delta fibres.

Figure 1: Illustration of the movement of dentinal fluid inside dentinal tubules in response to a hot stimulus (red arrow) and a cold stimulus (blue arrow).
The C fibres elicit a response to a gradual temperature change.\textsuperscript{10,22,23}

A recent study\textsuperscript{24} attributed the pain caused by thermal changes to the mechanical deformation of the enamel and dentin that causes the outward movement of the fluid inside the dentinal tubules, triggering the nerve impulse (indirect effect). The authors explained their findings by the fact that fluid movement occurred before any change in temperature reached the dentinoenamel junction. More investigation is needed, however, to verify their results.

Application of cold decreases the blood flow because of its vasoconstrictive effect on the blood vessels. If this application is continued, anoxia results and the A fibres cease to function. With continuous application of heat, the C fibres are affected: vasodilation temporarily increases intrapulpal pressure and causes intense pain.\textsuperscript{10}

Hypertonic solutions activate the intradental nerves through osmotic pressure,\textsuperscript{16,19,25,26} manifested clinically by the pain that results when saturated sucrose solutions come into constant contact with sensitive dentin. The patent dentinal tubules are an important factor in the induction of pain in sensitive dentin. This sensitivity is a direct response to the stimulation of the A fibres. Another example is the use of an etchant on the dentinal surface. The osmotic pressure of the acid used for etching the dentin is as important as the acid’s chemical composition in the induction of pain because this osmotic pressure causes the outward fluid flow in the tubules, together with aspiration of the odontoblastic nucleus.\textsuperscript{16–28}

The ionic concentration of the material also affects the reduction of pain in sensitive dentin. A normally irritant substance such as potassium chloride temporarily relieves pain because the high concentration of potassium temporarily blocks the conduction of nerve impulses, causing a hyperpolarization that decreases the excitability of the nerve fibres. This hyperpolarization is the basis for the addition of potassium ions to dentifrices.

In addition to pain from sensitive or exposed dentinal tubules, persistent pain may decrease the threshold of the nociceptors, usually during pulpal inflammation in which the A and C fibres respond differently.\textsuperscript{15,16} This explains the varying degrees of pain in pulpsitis. These nociceptors, when stimulated, may induce pulpal inflammation by producing neuropeptides such as CGRP and substance P. These molecules, when released inside the pulp, begin the inflammatory reaction by dilating the blood vessels and increasing their permeability, thus inducing the release of histamine, which results in neurogenic inflammation.\textsuperscript{30}

Injury sensitizes the intradental nerves. This sensitivity is mediated by prostaglandins, as indicated by the lack of symptoms after anti-inflammatory drugs are administered.\textsuperscript{31} Serotonin sensitizes the A fibres,\textsuperscript{16,32} whereas histamine and bradykinin activate the C fibres of the pulp.\textsuperscript{15,16} The response of the A and C fibres to different inflammatory mediators is regulated by the pulpal blood flow.\textsuperscript{31,34}

The location of the C fibres within the nerve bundles in the core or central region of the pulp may explain the diffuse pain, called referred pain, from a specific tooth because nerve fibres innervate multiple teeth with multiple pulps.\textsuperscript{35} These fibres have less excitability than the A fibres and a higher threshold, so they need more intense stimuli to be activated. The C fibres may survive in the presence of hypoxia,\textsuperscript{33,36} which may explain pain sensed during preparation for the root canal of a necrotic pulp.\textsuperscript{37} The dentist should tell the patient that the pain will not be completely resolved after the dental visit, and that this pain may be caused by deafferentiation, or the interruption of the afferent input into the central nervous system.\textsuperscript{38}

All functional changes to the nociceptors are reversible on removal of the cause. For example, in the case of dentin hypersensitivity, the tubules are treated by blocking, which directly affects the A fibres (hydrodynamic cessation) and resolves the neural changes in the pulp, causing the pain to subside.\textsuperscript{39}

In contrast to these morphologic and functional changes in pulpal nerve endings, the pulp, through its defensive mechanism, responds by secreting endogenous opioids, noradrenalin, somatostatin and specific chemical mediators in response to the toxins secreted by carious lesions to regulate the activity of nociceptors.\textsuperscript{3,40,41} Some of these mediators are excitatory; others, such as morphine, have an inhibitory effect. The neuroinflammatory and the neuropulpal interactions (nerve–odontoblast interactions) still need to be clarified.\textsuperscript{35}

Based on this discussion of fibres and their responses, we can relate the type of fibres to clinical pulp testing methods:

- Thermal pulp testing depends on the outward and inward movement of the dentinal fluid, whereas electric pulp testing depends on ionic movement.\textsuperscript{10}
- Because of their distribution, larger diameter than that of C fibres, their conduction speed and their myelin sheath, A-delta fibres are those stimulated in electric pulp testing.\textsuperscript{10,36}
- C fibres do not respond to electric pulp testing. Because of their high threshold, a stronger electric current is needed to stimulate them.\textsuperscript{36}
- Based on the hydrodynamic effect, outward movement of dentinal fluid caused by the application of cold (contraction of fluid) produces a stronger response in A-delta fibres than inward movement of the fluid caused by the application of heat.\textsuperscript{16,42,43}
- Repeated application of cold will reduce the displacement rate of the fluids inside the dentinal tubules, causing a less painful response from the pulp for a short time, which is why the cold test is sometimes refractory.\textsuperscript{10}
• The A-delta fibres are more affected by the reduction of pulp blood flow than the C fibres because the A-delta fibres cannot function in case of anoxia.33,34
• An uncontrolled heat test can injure the pulp and release mediators that affect the C fibres.44,45
• A positive percussion test indicates that the inflammation has moved from the pulp to the periodontium, which is rich in proprioceptors, causing this type of localized response.

Conclusions

The dental clinician should not rely solely on the type of pain to determine a diagnosis. Other nonodontogenic types of pain, as well as psychological pain, may obfuscate the correct diagnosis. Type of pain has not been correlated with the histopathologic condition of the pulp.46,47 The A and C fibres are activated by different stimuli and different inflammatory mediators, producing changes in the quality of pain that range from a sharp shooting pain to a dull and prolonged pain. Mechanical stimulation such as probing causes a sharp pain by stimulating the A-delta fibres, whereas prolonged pain manifests after the removal of a thermal stimulus (mainly heat) activates the C fibres. The stimulus itself may indicate the type of pain, but does not indicate the changes occurring in the pulp tissue or the stage of inflammation occurring.6

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References


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For more information contact:
Ontario Dental Association
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Offices and Practices

ALBERTA - Calgary: Well-established, highly successful prosthodontic practice for sale. Low overhead. 1175 square feet. 2 operatories plus one plumbed. Located in a professional building. In-house lab. Appropriate transition available. Contact Ron Mackenzie at: (604) 685-9227 or email: mackenz@telus.net.

ALBERTA - Calgary: Premium locations available for lease in a new professional building on Calgary’s west side; Springborough Professional Centre. The development has abundant free parking and is surrounded by the strongest demographics for retail trade in the city. This 60,000 square foot project is well under construction and will be ready for tenants to occupy in the summer of 2009. Call or email Mike Brescia at: (403) 206-2136 or email: mbrescia@taurusgroup.com to obtain more information on locating your practice in this fantastic new building.

ALBERTA - Cental Alberta: Busy general practice billing $800,000 on a four day week with potential for expansion. Low stress, ultra low overhead and high revenue. Experienced staff, four Adc operatories, pan, intra-oral camera, great leaseholds. Willing to aid in transition, valuation in progress to price reasonably. Email: albertadentalpractice4sale@hotmail.com.

ALBERTA - Edmonton: Well-established family practice for sale in West Edmonton area in a very pleasant community. Three operatories, low rent and highly profitable. Great opportunity for dentist who wants to start with low investment and great new patient flow. Available immediately. Please call Ephraim Baragona: (780) 487-1010 or (780) 904-2619. Email: egbar@telus.net.

ALBERTA - Lac La Biche: Busy, established general practice in Northern Alberta lake-land area with 3 operatories and plumbed for a fourth. Practice has excellent long-term staff and is dental hygienist supported. Dentist retiring. Contact Dr. Ronald Gee at: (780) 623-4910 or email at: rgeellb@gmail.com.

PRACTICE WANTED IN BRITISH COLUMBIA: Mature dentist looking to purchase established practice in under-serviced region. Will consider buy in. Want to work 3 months on - 3 months off schedule and employ departing dentist as associate. Confidential email: dentistinsearch@hotmail.com.

BRITISH COLUMBIA - Abbotsford: Established Abbotsford endodontist has office space to share or transfer to a general dentist or specialist. Central location with ground level access and parking. Phone: (604) 504-7668 or fax: (604) 504-7669.

BRITISH COLUMBIA - Clearwater: Established low overhead, high profit and stress free dental practice for sale, lease, or associate position ASAP. Surrounded by beautiful lakes, rivers, mountains and gorgeous Wells Gray Park, this is the only practice in a radius of 120km. 1-1/4 hour drive to Kamloops plus 1 hour flight to Vancouver is excellent opportunity to make tons of money while able to live 2-3 days a week in big cities.

Classified ads are published in the language of submission.
Real estate available to purchase if desired. Vendor is relocating out of country for other opportunities. Very reasonably priced. Email: toma2@telus.net.


BRITISH COLUMBIA - Okanagan: Enjoy living in the beautiful Okanagan Valley where you will anxiously await all four seasons. Excellent opportunity to be part of a well-established practice with untapped potential for exceptional growth. Existing dentist would like an associate/partner (cost sharing) to service the increasing demand for dental care in the area. Enjoy life working daytime weekdays and have a partner to share costs and management responsibilities with while making more money at the end of the day. Successful candidate must associate first with agreement to buy in. Associateship without purchase agreement is also an option. Email: daisy09@telus.net.

BRITISH COLUMBIA - Prince George: State of the art 6 operatory clinic with ceramic lab on site, 3 full-time hygienists and 2400+ ACTIVE recall patients awaits you here in the heart of beautiful BC. General practice in accessible downtown location, long term lease, modern top of the line finishes and even a Koi pond! PG is a university town that attracts professionals from across the country! Vendor offers flexible transition terms. Contact Nadean Burkett via email: burkett@dentalbusiness.ca or phone: (604) 939-5009.

BRITISH COLUMBIA - Shuswap/ North Okanagan: Enjoy the outdoors and amenities of Shuswap Lake in this turn-key 3+ operatory, well managed and nicely equipped, productive family practice in Salmon Arm, B.C. Strong dental team willing to transition to new owner/operator. Vendor is retiring - flexible on terms and price to your benefit. Building ownership is also offered - be your own landlord! Contact Nadean Burkett confidentially via email: burkett@dentalbusiness.ca or phone her at: (604) 939-5009 to get all the details of how you can work and play in the beautiful and popular Shuswap Lake area.

BRITISH COLUMBIA - South Vancouver Island: Live the island lifestyle! Four operatory, recently extensively remodelled and upgraded clinic with full time hygiene. This busy, productive general practice is located in a popular, upscale residential neighbourhood and serves an highly retentive adult-oriented patient base. Vendor is retiring and offers flexible transition terms. Fully documented practice valuation. Contact Nadean Burkett via email: burkett@dentalbusiness.ca or phone: (604) 939-5009.

BRITISH COLUMBIA - Whistler Village: Practice for sale. 400K gross on Mon-Wed schedule. Great staff and huge new patient numbers. Owner very motivated to sell for family reasons. Contact: smerkley@gmail.com.

WESTERN NEWFOUNDLAND: For sale: well established, pleasantly situated, air-conditioned two operatory practice in own building. Hygienist services, Panorex, lab, good gross, rental income, recreational facilities locally including downhill skiing, golf, fly fishing, snowmobiling. Airport 5 minutes away. Further details fax: (709) 635-4535. Contact: peter.bass@nf.sympatico.ca.

NOVA SCOTIA - Halifax: 35 minutes from Halifax. “Goldmine for sale” - 36 year old dental practice (28 years in same location). High gross, low overhead, low stress. Dental practice and building (free standing). Transition period very flexible. Golf courses (3) within 10 minutes; skiing, universities (9) within easy commute. This practice has given me a lifestyle that I could only dream about. Contact: Cameronlove@aol.com or phone: (902) 228-2795.

NUNAVUT - Iqaluit: $1 Million clinic for sale in Iqaluit, Nunavut. Very productive and successful, 7 year old, 3 operatory clinic for sale for $225,000. Gross productivity for 2007 exceeded $1 million. For details email: drg@stillwatersdental.com.

ONTARIO - GTA: Practices Wanted! Altima Dental Canada seeks to purchase 5 additional practices within 1 hour of the Greater Toronto Area, to complement our existing 20 locations. Thinking about selling? Contact us about our exciting purchase incentives. Call Dr. George Christodoulou at: (416) 785-1828, ext. 201, or email: drgeorge@altima.ca. Website: www.altima.ca.

ONTARIO - Ottawa: Dental office for sale in Ottawa (Orleans). Four fully equipped operators. Satellite office opened 6 months ago, superb location and modern construction. French speaking clientele with 100% insurance coverage. Region in vast development. Dentist occupied with his main office. Please contact Dr. Rizk or Roseanne: (613) 232-9282.

ONTARIO - Ottawa: Downtown practice located minutes from Parliament
Hill and surrounded by government offices with dental insured government employees is now available for sale. Established in 1961 this low overhead, high revenue office is currently operating four days per week however it can easily be expanded. There are two fully equipped operatories, digital x-ray and Zoom. The retiring owner is flexible and can stay on during transition. For more information please contact us at: domire@rogers.com or leave a message at: (613) 746-1960.

ONTARIO - Toronto: Paediatric/orthodontic office with in house G.A. facility seeking a full-time certified paediatric associate with option to purchase. Start date would be summer of 2009. The individual must have a strong aptitude for behavior management. We have a comprehensive preventive program based on caries risk assessments. One location mid-Toronto and the other just North. Please send resumes and inquiries to: barryrube@rogers.com.

SASKATCHEWAN - Rocanville: Growing, family-oriented community in rural S.E. Saskatchewan, population 1,000, requires a dentist to open a practice. Local employer, Potash Corp., is expanding, creating 280 permanent jobs after 2.8 billion dollar expansion. Residents must currently travel out of town for dental services. Please call Traci Burke B.S.P.: (306) 645-2633 day, (306) 645-2890 evening, (306) 645-2175 fax, or send email to: tracib@superthrifty.com.

Positions Available

ALBERTA - Calgary/Edmonton: Experienced associate required for our well-established, busy practices in Calgary. For more information visit our website at: www.ihp.ca or contact Dr. George Christodoulou, tel.: 1 (888) 81SMILE ext. 201, or via email: drgeorge@ihp.ca.

ALBERTA - Calgary: Great downtown Calgary location, offering no weekend or evening hours, seeking a full-time associate. Newly renovated office with digital radiographs, hygienist, and wonderful staff. Have autonomy in a remarkable environment. Email: info@dentalchoice.ca or fax Candice at: (780) 444-9411.

ALBERTA - Calgary: Pediatric dentist is required for a caring, preventive-oriented, idealistic private pediatric practice. Hospital affiliation is necessary. This position is as an associate leading to role reversal through practice purchase. For further information please contact: (403) 248-5015, or email: narveydpc@telus.net

ALBERTA - Calgary: High-end practice searching for an experienced associate. Our current associate is relocating and an opportunity has now opened in our well-established dental practice with a large, regular patient base and strong hygiene and recare program. Our non-assignment practice offers extended hours to patients where fees are consistently 30% greater than the fee schedule. We look forward to hearing from enthusiastic, skilled applicants who wish to participate on a friendly and supportive team. Please reply to: dentalprofessionalcalgary@gmail.com.

ALBERTA - Calgary: Full-time associate required for progressive, busy, well established SE family practice. Digital radiography, computerized operatories, Cerec, neuromuscular, implants, and orthodontics. Tons of potential for the right candidate, excellent patients and long-term staff. Come join our team! Please email resume in confidence to: drcpatton@shaw.ca.

ALBERTA - Calgary: Associate needed. Our well established, high end NW practice, which has served Calgary for 25 years, is looking for part-time associate with the possibility of leading to a full-time position. We are a non-assignment (fee for service) practice with minimal AR, and we pride ourselves in providing excellent care and patient education utilizing the latest technology including intra-oral cameras and laser therapy. We have a large and loyal patient base with a highly motivated team. Please email resumes in confidence to: smilesbyus@hotmail.com or fax to: (780) 672-4700. Prior inquiries please call: (780) 679-2224 to leave number where you can be reached at.

ALBERTA - Camrose: Wanted: Associate dentist for busy well established practice in Camrose, Alberta. 50 minutes SE of Edmonton. Modern, up-to-date facility. Forward resume by email to: smilesbyus@hotmail.com or fax to: (780) 594-5056 fax: (780) 594-5965 email: drtworowery@shawcable.com.

ALBERTA - Cold Lake: The perfect opportunity awaits an ambitious associate to join our friendly and dedicated team at Alberta’s best kept secret. We offer patients all areas of general dentistry including implants, Invisalign, orthodontics and sedation dentistry. Please contact Bettina at: (780) 594-5056 fax: (780) 594-5965 email: drtworowery@shawcable.com. New grads welcome.

ALBERTA - Drumheller: Two full-time associate positions available in a newly renovated, very well established, busy practice close to Calgary. Excellent opportunity for new graduate or experienced dentist. Ideal for husband and wife team! Future ownership possible. Please email: rdc@magtech.ca.

ALBERTA - Edmonton: Experienced associate required for great opportunity in a busy, well-established practice close to downtown for 4-5 days/week. No evenings or weekend hours. All applications kept strictly confidential.Fax Candice at: (780) 444-9411 or email: candice@dentalchoice.ca.
ALBERTA - Edmonton: Associate required to take over existing patient base of long term associate. Full or part time. Busy office in north Edmonton with high new patient flow of all ages. Excellent hygiene program supports all aspects of general dentistry. Excellent team to work with in newly renovated office with no evenings or weekends required. Phone: (780) 455-6806 or email: davidmilner@shaw.ca.

ALBERTA - Edmonton: We urgently require a full-time associate to take over a full patient load. This truly is a unique opportunity for the incoming associate to be immediately busy virtually from day one. Our office is bright, modern and very well equipped. A positive attitude, a sense of humour and some flexibility in scheduling will lead to a very successful and rewarding position for the right individual. Fax: (780) 434-0824. Email: QDental@shaw.ca.

ALBERTA - Edmonton: Forty year old practice needs a French- and English-speaking dentist for a retirement transition. Well established hygiene program. Call Dr. Ron Breault at: (780) 439-3797 or cell at: (780) 918-4482. Fax: (780) 439-9361, email: info@drbreault.com.

ALBERTA - Fort McMurray: Be a part of the action! Excellent full-time GP associate opportunity immediately available in the fastest growing place in Canada. Need 1 or 2 highly motivated, energetic individuals who want to make a ton of money! Rapidly expanding family practice in Fort McMurray, Alta., has an excellent team already established but can’t keep up. Rotary endo and Cerec already in place. Don’t miss out on making more money than you ever dreamed possible. Please phone: (780) 743-3570 or fax to: (780) 790-0809.

ALBERTA - Grande Prairie: Rewarding associateship in busy, growing Grande Prairie. Vibrant, well established, high grossing, family dental practice. Excellent, motivated staff. Please call: (780) 539-6769, fax: (780) 538-2387, or email: wpiepgrass@msn.com.

ALBERTA - Grande Prairie: Associate required for a busy, well-established family dental practice. We offer all aspects of general dentistry, an excellent hygiene program and a terrific team to work with. Please fax your resume to: (403) 335-8625 or
email resume to: drmccracken@shaw.ca.
New grads welcome.

ALBERTA - Peace River: Work smarter, not harder! Full time associate wanted for busy well established family dental practice. Excellent hygiene program. 4-5 day weeks, no evenings or weekends. Versawave, Odyssey, Dentrix, Schick digital x-ray, Fantastic staff following LVI Continuum together. New grads/experienced dentists. Excellent income! Fax resumes to Rosalyne: (780) 624-8596. Contact us for photos of clinic! Tel: (780) 624-2004.

ALBERTA - Red Deer: Progressive modern family dental practice in the thriving community of Red Deer, Alberta requires an associate for possible future buy-in. Explore all disciplines of dentistry within our practice from oral surgery and implants to orthodontics and cosmetic dentistry. If you are caring, compassionate and want to have access to the latest technology, please contact Jody at: (403) 340-2633 or email: chandley@telus.net.

ALBERTA - Red Deer: Excellent family oriented general practice centrally located in a newer downtown plaza. Five operatories, office with friendly certified staff, offers flexible hours, and management free worries! Central Alberta offers year-round recreation as well as easy access to either Calgary or Edmonton. Come and enjoy a lower stress lifestyle with us if you are comfortable with surgery, endo, and pedo. New grads welcome! Future buy-out potential for interested candidate. (403) 309-1900 (work), (403) 309-7310 (home), (403) 346-3594 (fax).

ALBERTA - Red Deer: Excellent opportunity available for a full-time associate to join our dental team. Our established, busy and progressive family practice has just relocated to a brand new 6-operatory office and building. We focus on excellence in patient care with a caring and compassionate staff. The latest technology including digital radiography, computerized operators, operating microscope, intra-oral cameras and sedation is available. We are a non-assignment office with a healthy new patient flow, and a conscientious
hygiene program. Experience preferred but new grads welcome. Please email CV to Dr. Caroline Krivusoff-Sanderson at: dr.caroline@shaw.ca.

ALBERTA - Stony Plain: Associateship position available to replace dentist in a group practice in Stony Plain, Alberta. We are looking for a dedicated, enthusiastic team-player, for compassionate care. Friendly staff, future buy-in, and in-building child care. Please send resume by fax to: (780) 963-2904, or by email to: rgturner@telus.net. D5470

ALBERTA - Westlock: Dental implant surgery and teaching center. A full-time associate position is available in one of Canada’s most successful dental implant centers in early spring 2009. Our state-of-the-art, computerized facility with CT-scan is located 45 minutes north of Edmonton in a beautiful ranching community ideal for families. Patients come from across Canada to this unique dental facility. Become a part of our outgoing, fun and highly qualified young dental team. Assume a very busy full service general, cosmetic dental practice with extremely high earnings and a 50% split. Be mentored by the senior dentist whose practice is limited exclusively to implantology. Please reply by faxing CV or resume to: The Implant Smile Center, (780) 349-2626 (Attn: Anita), or email to: drleigh@telus.net. Phone inquiries: (888) 877-0737 (toll free). Websites: www.albertadentalimplants.com and: www.implantsmilecenter.com. D5397

ALBERTA - Valleyview: Associate position available immediately. Existing patient base, high percentage paid, choose your lifestyle. No evenings or weekends. Full or part time. Fast growing region with a balanced economy. Local government in planning stages of new Health Care Centre where practice will be relocating. Be in on ground floor with affordable ownership option possible. Apply to Dr. Darryl R. Smith: (780) 957-0442 (home) or: fishdoc@telusplanet.net. D4816

BRITISH COLUMBIA - Chilliwack: Full time associate position available to dentist committed to continuing education/excellence in patient care. Area offers year-round recreation including skiing, boating, hiking, etc. 100 km east of Vancouver. There is potential for partnership. Reply to: Dr. Michael Thomas, Ste. 102-45625 Hodgins Ave., Chilliwack, BC, V2P 1P2; phone: (604) 795-9818 (res), (604) 792-0021 (bus), fax: (604)792-1318 or email: drthomasoffice@telus.net. D4534

BRITISH COLUMBIA - Cranbrook: Full-time associate position available. Busy, modern practice. Six operators. Option to purchase/buy-in. An exciting opportunity in a fabulous area. (250) 489-4551 or (250) 489-1902. Email: c.callen@shaw.ca. D4525

BRITISH COLUMBIA - Fort St. John: Full-time associate needed for busy and profitable practice in North East BC. This position entails two operatories and 47% of net payments. Our office has been non-assignment for 4 years and currently has 11,000+ active patients. Fort St. John is a thriving and growing community which offers small town atmosphere with larger center amenities. For more information please email fsjdental@telus.net or call (250) 785-1867. D4814

BRITISH COLUMBIA - Northeast: Four full-time positions starting at $20/hour; relocation allowance. Choose to work in either traditional, modern & young or 11 operatory mega-clinic in the city of Fort St. John. British Columbia’s growing energy capital with airport, fast food, big-box stores and jobs. Or choose to work in friendly Mackenzie. Email: drhmacanada.com or fax resumes to: (250) 785-0625. D5426

BRITISH COLUMBIA - Okanagan: Enjoy living in the beautiful Okanagan Valley where you will anxiously await all four seasons. Excellent opportunity to be part of a well established practice that keeps up with changes in dentistry. Our team is a well trained
group of people who makes everyone feel at home. Expansion of the practice is needed to meet the needs of our patients. Enjoy life working daytime weekdays. New grads welcome. Future partnership is available for the right person. Email: daiselv@telus.net. D3447

BRITISH COLUMBIA - Revelstoke: Full-time associate required for very busy, well-established general practice in beautiful Revelstoke. Future partnership opportunity for the right candidate. We are Canada’s most talked about mountain resort town boasting a booming economy and world class skiing. Check out this mountain paradise online: www.seerevelstoke.com. Please call: (250) 837-9431 evenings or email us at: schwenck@telus.net. D4467

BRITISH COLUMBIA - Vancouver: Great opportunity! FT/PT dental associate needed to join team of innovative dentists, physicians and naturopaths offering a multi-disciplinary approach to healthcare in Vancouver. Experience in surgery, implantology an asset - participation as a team player and a thirst for knowledge a must. www.draelmajian.ca. Contact us by fax: (604) 876-1347 or email: aelmajian@shaw.ca. D3322

BRITISH COLUMBIA - Victoria: Associate position. Associate to join our diverse and busy treatment centre. Dr. Luckhurst has many years of experience and has taught internationally and has built a well-established practice offering patients family-centred dentistry, restorative, cosmetics, implants, and full mouth rehabilitations. Dr. Luckhurst is looking for a hard working, ethical, professional individual to join our progressive team. Replies to: Dr. A. Luckhurst, phone: (250) 386-3044, fax: (250) 386-3064, email: crluck2@shaw.ca. D3801

BRITISH COLUMBIA - Victoria: Associate wanted for progressive, prevention-based, established practice in Victoria, B.C. Flexible working conditions in an office with 10 newly renovated operatories and 4 existing doctors. Suitable for a new grad. Fax resume to: (250) 477-3722 or email: csonl@shaw.ca. D4776

BRITISH COLUMBIA - Victoria: Part-time or full-time associate required for very busy practice. Current associate moving. Experience is preferred. Please email your resume to: victoriadentaloffice@yahoo.ca. D4870

BRITISH COLUMBIA - Victoria: Full-time associate/locum needed starting March 15th, 2009 in beautiful Victoria, BC. Well established cosmetic and general practice. High tech: fully computerized digital radiography, intraoral cameras, rotary endodontics, soft tissue laser. Buy-in is possible. Contact office manager, cell: (250) 516-2154 or email: aoserban@shaw.ca. D5485


BRITISH COLUMBIA - West Kootenays: Full-time associate required for a busy general practice. Well established patient base, new patients daily, two hygienists, long term staff, six operators. We enjoy all the seasons have to offer. Just go outside your back door or travel less than 1 hour to all activities. Red Mountain and White Water Ski areas for skiing in the winter and bike trails in the summer. The Arrow/Kootenay and Christina lakes are right here for your summer swimming, sailing or water skiing. There are many golf courses for all skill levels. Come and join our practice. If this is the place for you owner would like to arrange a future buy-in or purchase of the practice. Email: donellis@shaw.ca. D5415

WESTERN NEWFOUNDLAND: Associate/long-term locum. Well established, pleasantly situated, air-conditioned two operatoriy practice in own building. Hygienist services, Panorex, lab, good gross, clinical freedom, recreational facilities locally including downhill skiing, golf, fly fishing, snowmobiling. Airport 5 minutes away. For further details fax: (709) 635-4535. Contact: peter.bass@nf.sympatico.ca. D5380

MANITOBA - Winnipeg: Seeking associates to join our very progressive practice. Currently with 4 locations in and around Winnipeg. Potential opportunity to make over 20K a month for the right candidate. New graduates encouraged to apply. We feature an onsite lab and a part-time orthodontist. Expect a fully booked schedule. Impeccable management is the foundation to the success and progression of this practice. Contact D.K. Mittal: cell: (204) 297-5344 res.: (204) 633-8280 off.: (204) 774-7774 email: dmittal@shaw.ca. D4765

MANITOBA - North Central: Want to be busier and earn what you are worth? We offer a unique practice setting for an eager associate. Do all the forms of dentistry you are comfortable doing a good job with! Earn a high minimum plus a percentage based bonus. Accommodations and travel are completely paid for the right candidate. Please phone: (204) 620-1585 or email: saursriv@yahoo.ca. D3675

WESTERN CANADA: Associate and locum positions available for qualified dentists with our clients throughout western Canada. Full and part time positions with compensation of 40-50% on contract. Some travel and/or accommodation benefits may also apply. New grads OK. Contact Nadean at Nadean Burkett & Associates Inc.: (604) 939-5009. Visit our website for more info: www.dentalbusiness.ca. D3514

CLASSIFIED ADS

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NUNAVUT - Iqaluit: Associate position(s) available for immediate start. Established clinic offers generous package and full appointment book to associates. All round clinical skills are your ticket to a wide range of recreational activities! No travel required and housing available in Canada's newest and fastest growing capital city. Please apply to: Administration, PO Box 1118, Yellowknife, NT X1A 2N8 or tel: (867) 873-6940, fax: (867) 873-6941.

ONTARIO - 20 Locations: Experienced associate required for our well-established, busy practice. Enjoy a small town or a large city atmosphere. For more information visit our website at: www.altima.ca or contact: Dr. George Christodoulou, Altima Dental Canada, Tel: (416) 785-1828 ext 201 or via email: drgeorge@altima.ca.

ONTARIO - Brantford: Full time associate required to join our busy, well established practice. We perform all aspects of dentistry in our fully computerized, all digital office. Please contact: lferao@weststreetdental.com or fax: (519) 756-0745.

ONTARIO - Collingwood: Associate opportunity in busy, family-oriented practice. Must enjoy working with children and be nitrous certified. No evenings or weekends. Non-assignment practice located on beautiful Georgian Bay. Please forward resume to fax: (705) 445-8671, email: dfox@drlaurafox.com, or mail: 186 Erie Street, Suite 101, Collingwood, ON, L9Y 4T3.

ONTARIO/QUEBEC - Cornwall & Hawkesbury: Choose the location you want, very busy practices. In Quebec, only 30 minutes southwest of Montreal. Full schedule (crown bridge, endodontics etc.). Possible sale. Outstanding growth income. Stability, flexibility and respect assured! For further information call Luc at: (450) 370-7765 or send email to: lucleboeuf291@hotmail.com.

ONTARIO - Ottawa: Part-time associate required immediately (2 days to start) in a modern, well established, family-oriented practice. No evening or weekend hours. Practising dentistry with great team support. Owner wishes to focus on her specialties in orthodontics and TMJ treatment. Reply to: bsomnet@live.ca.

ONTARIO – Sault Ste Marie: Full time associate required immediately for a busy, large family practice in Sault Ste Marie. 10 new computerized operators with digital x-ray, Laser, Cerec, Intraoral cameras, Caesy Education System. It’s a great opportunity for a motivated, team-oriented individual with good communication skills. Come join our team. Please fax resume to: (705) 945-5149 and visit us online at: www.saultdentistry.com.

QUÉBEC – Région Outaouais-Gatineau : Demande dentiste à pourcentage visant l’excellence pour pratique de groupe multidisciplinaire et achatandée. Excellent emplacement, beaucoup de nouveaux patients par mois, très faible pourcentage de RAMQ. On recherche un dentiste bilingue ayant de l’entregent avec une personnalité sympathique, dynamique et sachant travailler en équipe. Une hygiéniste et assistante seront à votre disposition. Envoyez vos coordonnées au : (819) 246-2662 (téléc.) ou centredentairelimbour@videotron.ca à l’attention d’Isabelle Tremblay.


SASKATCHEWAN - North Battleford: Associate required for a busy Saskatchewan office located in the Battlefords. Experience is preferred but new graduates are welcome. We offer a spacious brand new, high-tech, highly productive, 9 operatory clinic with a well established patient base and excellent new patient flow. Please call for more information. Please contact Cheryl: (306) 446-0007 or email: cheryl@riverbenddental.ca.

SASKATCHEWAN - Swift Current: An excellent opportunity for an associate to join our well-established family-oriented practice. Recently renovated office, equipped with the latest technology and with wonderful highly-motivated staff. We presently have one full-time hygienist and one part-time hygienist, and have 5 operators with room to grow. We are looking for a friendly, team-oriented person. New grads are welcome. Phone: (306) 773-9355 or fax CV to: (306) 773-5326.

UNITED STATES - Illinois, Texas, and Massachusetts: A unique and exciting opportunity is available for general dentists in the U.S. Earn between 250-350k per year with paid malpractice and health insurance while working in a great environment. The group is owned and operated by Canadians and will look after all immigration needs. Must have started or be prepared to complete US boards. Email: dwolle@gmail.com, fax: (312) 274-0760.

YUKON - Whitehorse: If you are looking for a vibrant, progressive city to live and work in come join our two established practitioners. The practise has nine chairs and we are looking for someone with a positive attitude and exceptional clinical and patient management skills. Check out our website www.klondike-dental.com Phone Dr. Pearson at home: (867) 668-4618 Fax: (867) 667-4944 or Berni at work: (867) 668-3152.

YUKON - Whitehorse: Come live and work in Canada’s outdoor city! Whether it’s fishing, hiking, hunting or biking, Whitehorse has it all. If you’re looking for an adventure, this is the place! Only a two hour flight from Vancouver, Edmonton or Calgary. We’re
looking for a full-time associate for our well-established 2 dentist family practice. Excellent, enthusiastic staff and an opportunity to do all aspects of general dentistry. Contact Darrin at: (867) 668-6077 or by email: dsinclair@northwestel.net.

Conferences


LEARN VIRTUALLY ANYTIME ANYWHERE: With NEI Conferences. Technologically advanced CDE courses are all presented in a vacation environment and are all tax-deductible. The flexible year-round open registration allows you to choose travel destinations and dates that are convenient for you, ANYTIME - ANYWHERE. Have travel plans or planning to travel? Looking for a conference-to-go? Visit us at: www.neiconferences.com.

Equipment Sales & Service

FOR SALE: Cerec 3D by Sirona with compact milling chamber and wireless remote. Barely used and in excellent condition. Latest 3D software installed. $59,900. Please contact Jamie: (780) 464-4166 ext. 102.

CEREC 3D FOR SALE: Slightly used Cerec 3D Sirona milling unit, with software, mobile computer terminal, blocks/burs. Works perfectly, serviced regularly by Patterson. Recently sold practice outside of GTA and need to sell Cerec unit. Please call: (519) 942-8421 or email: heritagedental@sympatico.ca.
### CDA Funds

**Leading Fund Managers  Low Fees**

CDA Funds can be used in your CDA RSP, CDA TFSA, CDA RIF, CDA Investment Account, CDA RESP and CDA IPP.

**CDA Fund Performance (for period ending December 31, 2008)**

<table>
<thead>
<tr>
<th>Fund Name</th>
<th>MER</th>
<th>1 year</th>
<th>3 years</th>
<th>5 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CDA Canadian Growth Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressive Equity Fund (Altamira)</td>
<td>1.00%</td>
<td>-46.8%</td>
<td>-17.0%</td>
<td>-7.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Common Stock Fund (Altamira)</td>
<td>0.99%</td>
<td>-33.8%</td>
<td>-4.5%</td>
<td>3.2%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Canadian Equity Fund (Trimark)</td>
<td>1.50%</td>
<td>-27.5%</td>
<td>-8.5%</td>
<td>-1.9%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Dividend Fund (PH&amp;N)</td>
<td>1.20%</td>
<td>-32.5%</td>
<td>-8.9%</td>
<td>-0.4%</td>
<td>6.6%</td>
</tr>
<tr>
<td>High Income Fund (Sceptre)</td>
<td>1.45%</td>
<td>-31.4%</td>
<td>-7.2%</td>
<td>2.9%</td>
<td>n/a</td>
</tr>
<tr>
<td>Special Equity Fund (KBSH)</td>
<td>1.45%</td>
<td>-44.0%</td>
<td>-14.5%</td>
<td>-3.5%</td>
<td>1.0%</td>
</tr>
<tr>
<td>TSX Composite Index Fund (BGI)**</td>
<td>0.67%</td>
<td>-33.0%</td>
<td>-5.2%</td>
<td>3.6%</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>CDA International Growth Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emerging Markets Fund (Brandes)</td>
<td>1.77%</td>
<td>-35.6%</td>
<td>-6.2%</td>
<td>1.9%</td>
<td>6.8%</td>
</tr>
<tr>
<td>European Fund (Trimark)</td>
<td>1.45%</td>
<td>-30.5%</td>
<td>-5.2%</td>
<td>-3.1%</td>
<td>-5.0%</td>
</tr>
<tr>
<td>International Equity Fund (CC&amp;L)</td>
<td>1.30%</td>
<td>-30.2%</td>
<td>-7.2%</td>
<td>-4.4%</td>
<td>-3.3%</td>
</tr>
<tr>
<td>Pacific Basin Fund (CI)</td>
<td>1.77%</td>
<td>-22.2%</td>
<td>-2.0%</td>
<td>1.3%</td>
<td>-1.6%</td>
</tr>
<tr>
<td>US Large Cap Fund (Capital Intl)</td>
<td>1.46%</td>
<td>-24.3%</td>
<td>-12.1%</td>
<td>-7.0%</td>
<td>n/a</td>
</tr>
<tr>
<td>US Small Cap Fund (Trimark)</td>
<td>1.25%</td>
<td>-30.0%</td>
<td>-11.7%</td>
<td>-1.8%</td>
<td>n/a</td>
</tr>
<tr>
<td>Global Fund (Trimark)</td>
<td>1.50%</td>
<td>-28.7%</td>
<td>-6.6%</td>
<td>2.2%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Global Growth Fund (Capital Intl)</td>
<td>1.77%</td>
<td>-27.7%</td>
<td>-6.4%</td>
<td>0.0%</td>
<td>n/a</td>
</tr>
<tr>
<td>S&amp;P 500 Index Fund (BGI)**</td>
<td>0.67%</td>
<td>-22.1%</td>
<td>-7.6%</td>
<td>-4.1%</td>
<td>-4.6%</td>
</tr>
<tr>
<td><strong>CDA Income Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bond and Mortgage Fund (Fiera)</td>
<td>0.99%</td>
<td>6.1%</td>
<td>3.6%</td>
<td>3.5%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Bond Fund (PH&amp;N)</td>
<td>0.65%</td>
<td>3.1%</td>
<td>3.2%</td>
<td>4.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Fixed Income Fund (McLean Budden)**</td>
<td>0.97%</td>
<td>5.9%</td>
<td>3.4%</td>
<td>4.4%</td>
<td>4.9%</td>
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<tr>
<td><strong>CDA Cash and Equivalent Fund</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money Market Fund (Fiera)</td>
<td>0.67%</td>
<td>3.1%</td>
<td>3.3%</td>
<td>2.7%</td>
<td>3.1%</td>
</tr>
<tr>
<td><strong>CDA Growth and Income Funds</strong></td>
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<td></td>
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<tr>
<td>Balanced Fund (PH&amp;N)</td>
<td>1.20%</td>
<td>-18.5%</td>
<td>-3.5%</td>
<td>0.7%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Balanced Value Fund (McLean Budden)**</td>
<td>0.95%</td>
<td>-12.3%</td>
<td>-1.5%</td>
<td>2.6%</td>
<td>4.0%</td>
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<tr>
<td><strong>CDA Managed Risk Portfolios (Wrap Funds)</strong></td>
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<tr>
<td><strong>Index Fund Portfolios</strong></td>
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<tr>
<td>CDA Conservative Index Portfolio (BGI)**</td>
<td>0.85%</td>
<td>-9.7%</td>
<td>-0.5%</td>
<td>2.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>CDA Moderate Index Portfolio (BGI)**</td>
<td>0.85%</td>
<td>-17.1%</td>
<td>-2.2%</td>
<td>2.3%</td>
<td>3.2%</td>
</tr>
<tr>
<td>CDA Aggressive Index Portfolio (BGI)**</td>
<td>0.85%</td>
<td>23.7%</td>
<td>-3.9%</td>
<td>2.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td><strong>Income/Equity Fund Portfolios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDA Income Portfolio (CI)**</td>
<td>1.65%</td>
<td>-7.4%</td>
<td>-0.4%</td>
<td>2.7%</td>
<td>3.8%</td>
</tr>
<tr>
<td>CDA Income Plus Portfolio (CI)**</td>
<td>1.65%</td>
<td>-13.6%</td>
<td>-1.9%</td>
<td>2.7%</td>
<td>3.8%</td>
</tr>
<tr>
<td>CDA Balanced Portfolio (CI)**</td>
<td>1.65%</td>
<td>-18.1%</td>
<td>3.1%</td>
<td>2.6%</td>
<td>3.9%</td>
</tr>
<tr>
<td>CDA Conservative Growth Portfolio (CI)**</td>
<td>1.65%</td>
<td>-21.3%</td>
<td>-4.4%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>CDA Moderate Growth Portfolio (CI)**</td>
<td>1.65%</td>
<td>-23.9%</td>
<td>-6.8%</td>
<td>0.5%</td>
<td>n/a</td>
</tr>
<tr>
<td>CDA Aggressive Growth Portfolio (CI)**</td>
<td>1.65%</td>
<td>-28.5%</td>
<td>-6.8%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

† Returns shown are for the underlying funds in which CDA funds invest.

†† Returns shown are the total returns for the indices tracked by these funds.

For current unit values and GIC rates visit [www.cdspi.com/values-rates](http://www.cdspi.com/values-rates).

To speak with a representative, call CDSPi toll-free at 1-800-561-9401, ext. 5020.
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- Outstanding esthetics
- Conventional cementation
- Indicated for inlays, onlays, crowns and veneers

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