

CANADIAN JOURNAL OF DENTAL HYGIENE · JOURNAL CANADIEN DE L'HYGIÈNE DENTAIRE

# CJDH JCHD

MAY-JUNE 2009, VOL. 43, NO. 3



**Psychiatric illness and optimal oral health care**  
**Removable partial dentures and periodontal disease**

*Woodland Dental Hygiene Inc., King City, Ontario, 126*




## On participation

Spring has arrived across the country, and we are filled with a renewed sense of purpose. At CDHA, we are always looking for opportunities to connect with our members, and to engage each and every one of you in the future planning of your profession.

There are many ways to feel connected to your professional association. Yes, you can become a member of the Board of Directors, and sit at that table. However there are many other ways to engage in the decision making that moulds our future. There are always opportunities to interact with your area's board member and discuss your views on dental hygiene. Meetings are held in your province, and linking with your colleagues is a great chance to discuss our profession and its future. Contributing to surveys and forums provides an invaluable source of opinions for our national board members when they are asked to examine the vision that will guide us through our professional evolution.

As members of CDHA, we have a dual relationship as owners and members. We are dental hygienists, and we own this association and have an investment in its future, its vitality and strength. As owners, we need to continue to invest so that we leave a worthy legacy for our successors. Our current environment is a product of the drive and determination of those who preceded us, and we owe no less to our future colleagues. We are also members, and in that capacity we expect services from this same organization that we own. This relationship is very different, and is driven by needs that arise to support us in our profession.

As owners, we are all charged with the responsibility to contribute to our health and future. In an effort to provide you with a venue to interact with your national Board of Directors, we have initiated a national president's tour this year to allow you and me the chance to meet. As always, time is a factor, and I am attempting to visit each province at some time before my term ends this October. I shall attend as many provincial association conferences as I can, and I am excited to be able to hear what dental hygienists across our country think about our future and the promises it holds for us. Please take the time to search me out if I am attending your event to have a chat; we all believe in a strong, vibrant CDHA.

Let's support it together. 

*Wanda Fedora RDH.*

CDHA welcomes your feedback: [president@cdha.ca](mailto:president@cdha.ca)



Wanda Fedora,  
RDH


## Une tournée d'engagement

Le printemps est là, dans tout le pays. Nous ressentons toutes un regain de vigueur et de détermination. À l'ACHD, nous cherchons toujours de nouvelles occasions de communiquer avec les membres et de nous engager toutes personnellement dans la planification de l'avenir de notre profession.

Il y a plusieurs façons de vous sentir unies à votre association professionnelle. Oui, vous pouvez devenir membre du conseil d'administration et vous asseoir à cette table. Il y a cependant bien d'autres façons de participer aux décisions qui façonneront notre avenir. Il y a toujours des occasions d'interagir avec les membres du conseil de votre région et de présenter vos vues sur l'hygiène dentaire. Les réunions tenues dans votre province vous donnent une bonne occasion de vous joindre aux collègues et de discuter de notre profession et de son avenir. La participation aux sondages et les forums sont une source précieuse d'informations pour votre conseil national quand on lui demande d'examiner les perspectives d'avenir qui guideront l'évolution de notre profession.

Membres de l'ACHD, nous avons une double relation, comme propriétaires et membres. D'une part, à titre de propriétaires, nous possédons cette association et investissons dans son avenir, sa vitalité et sa force. Nous devons aussi continuer d'investir de façon à laisser à celles qui nous succéderont un héritage valable. L'environnement dans lequel nous évoluons est le produit de l'énergie et de la détermination de celles qui nous ont précédées, et nous n'en devons pas moins à nos futures collègues. D'autre part, nous sommes membres et, à ce titre, nous attendons des services de la même organisation. Cette relation est toute différente et provient du besoin que nous avons de soutenir notre profession.

À titre de propriétaires, nous avons toutes la responsabilité de contribuer à notre santé et à notre avenir. Dans un effort de vous donner une occasion d'interagir avec votre conseil national d'administration, nous avons amorcé une tournée de la présidente qui nous permettra de nous rencontrer, vous et moi. Comme toujours, il y a le facteur temps, et je m'efforce de visiter chacune des provinces à un moment donné avant la fin de mon mandat, au mois d'octobre. J'assisterai à autant de conférences provinciales que je pourrai et il me tarde d'entendre ce que les hygiénistes dentaires du pays pensent de notre avenir et de ce qu'il nous promet. Quand j'assisterai à votre réunion, venez me rencontrer pour jaser un peu; nous croyons toutes en une ACHD forte et dynamique.

Ensemble, soutenons-la! 

L'ACHD accueille vos commentaires : [president@cdha.ca](mailto:president@cdha.ca)



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DES HYGIÉNISTES DENTAIRES

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## Rites of passage and progress

*Every community is an association of some kind and every community is established with a view to some good; for mankind always act in order to obtain that which they think good. But, if all communities aim at some good, the state or political community, which is the highest of all, and which embraces all the rest, aims at good in a greater degree than any other, and at the highest good.*

Aristotle,<sup>1</sup> Greek philosopher, 384–323 BC.



Dr. Susan Ziebarth

CDHA is a membership organization of individual dental hygienists. Through membership, dental hygienists become part of a community. In CDHA's case, members belong to a national community of people who share a common underlying knowledge base and interest. Currently, the world is experiencing economic and consequent social challenges that affect our community, and hence, clients our community serves. The impact of these stresses affects the organizations in two ways. The first is that our members need more support. The second is that the very entity of the organization itself must remain strong, as the stresses upon community grow in relation to the stresses the members of the community experience.

As a national association and community of dental hygienists, the organization faces uncertainties from both external and internal factors. Conceptualizing a series of potential futures is one way to help the community continue to develop its potential, and its contributions. Scenario planning is in essence a form of *what if* analysis. Questioning assumptions, and explicitly stating perceptions of the organization and its environment allow an organization to illuminate missed or denied opportunities and threats.

CDHA has been actively engaged in developing scenarios and testing them. These scenarios are informed by external environmental scans as well as knowledge gleaned from our members. I want to thank everyone who has taken the time to act in focus groups, complete surveys, and share thoughts and opinions on various aspects of community membership in order to allow CDHA to grow, and to better serve our communities. Over the coming months we will be introducing you to some of the scenarios, inviting you to play an active role in your national dental hygiene community.

A focus of the new scenarios is communication; a necessary factor in building community. We are excited to be able to offer you new modes of communication, in addition to retaining such familiar ones as conferences, workshops, e-mail messages, and the journal. Your responses to the *CJDH* readership survey and the CDHA events' surveys will guide us in the final scenarios that are chosen. While

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## Rites de passage et progrès

*Toute communauté est une sorte d'association et chaque communauté se crée en vue d'un certain bien; parce que les êtres humains agissent afin d'obtenir ce qu'ils pensent être un bien. Mais, si toutes les communautés visent un certain bien, l'État, ou communauté politique, qui est le plus élevé et englobe tout le reste, vise un bien supérieur à tout autre, le bien suprême.*

Aristote<sup>1</sup>, 384-323 A.C.

L'ACHD est une organisation de membres individuels regroupant des hygiénistes dentaires. Par cette adhésion, les hygiénistes dentaires forment une communauté. Ainsi, les membres de l'ACHD appartiennent, à l'échelle nationale, à une communauté de personnes qui partagent une base sous-jacente de connaissances et d'intérêts communs. Actuellement, le monde vit des défis économiques et conséquemment sociaux qui affectent notre communauté, ainsi que les clients qu'elle sert. Le stress qui en découle affecte les organisations de deux façons : d'abord, le soutien dont nos membres ont besoin; ensuite, la force que doit conserver notre entité elle-même, car la tension de la communauté croît au rythme des tensions que vivent ses membres.

Association et communauté nationales des hygiénistes dentaires, l'organisation fait face à des incertitudes dues à des facteurs externes et internes. La conception d'une série de possibilités futures est une façon d'aider la communauté à poursuivre le développement de son potentiel et de sa contribution. Planifier un scénario, c'est en somme une sorte d'analyse de qu'arriverait-il si. S'interroger sur des présomptions et dire explicitement ce qu'on pense de l'organisation et de son environnement, voilà qui permet à une organisation de voir clairement les occasions et les menaces qu'elle a ratées ou niées.

L'ACHD poursuit activement l'élaboration et la vérification de scénarios. Ceux-ci s'inspirent d'analyses de l'environnement externe de même que de l'information glanée auprès de nos membres. Je remercie toutes celles qui ont pris le temps de participer aux groupes témoins, de répondre au sondage et de partager leurs avis et opinions sur les divers aspects de notre organisation, permettant ainsi à l'ACHD de grandir et de mieux servir la communauté. Au cours des prochains mois, nous vous présenterons certains de ces scénarios et vous inviterons à assumer un rôle réel dans votre communauté nationale d'hygiène dentaire.

Un des principaux points du scénario portera sur la communication, un des outils essentiels du développement de la communauté. Il nous tarde de vous offrir de nouveaux modes de communication, en plus de maintenir ceux qui sont déjà en place comme les conférences, les ateliers, les messages électroniques et le journal. Vos réponses au sondage effectué auprès du lectorat du *JCHD* et à ceux tenus lors des activités de l'ACHD

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Dear editor:

#### Access to care: Be the change you want to see

Last year, as President of CDHA, I challenged members to reach out and extend care beyond traditional practice settings. If you haven't yet found that special group to work with, keep on reading. This February, I had the most amazing experience of attending the Special Olympics World Winter Games in Boise, Idaho—along with my colleague Mary Bertone—to train as calibrated examiners with the Special Olympics *Special Smiles* program. Working with athletes with intellectual disabilities from around the world, while doing what I love, was a life changing experience for me.

A true testimony of human kindness is in the story of the gift of hand knitted scarves. The Boise organizing committee undertook a modest project to have the community give athletes a handmade gift from the heart. Little did they know their request would spread like wildfire across the country; over 51,000 lovingly made blue and white scarves were gifted to the 2,100 athletes, and to numerous volunteers and fans.

The Special Olympics program began in 1968 with Eunice Kennedy Shriver's desire to give individuals with intellectual disabilities a chance to experience sport, joy and friendship, and demonstrate courage and achievement. Her sister, Rosemary's, diagnosis of poor oral health in 1993, made Eunice aware of the plight individuals with intellectual disabilities face in accessing adequate dental and medical care. Working collaboratively with Dr. Steven Perlman, Eunice launched *Special Smiles* oral health program for athletes at the 1994 Special Olympics summer games in Boston. Now in its second decade, this initiative has grown to become the *Healthy Athletes* program, offering free health screenings, education and services involving seven unique disciplines: *Opening Eyes, Special Smiles, Healthy Hearing, Fit Feet, Health Promotion, Funfitness, and MedFest*. As the largest public health organization for people with intellectual disabilities, Special Olympics



▲ Eddie (second from right) is a member of the Board of Directors of Special Olympics. Johnny Knoxville (with dark glasses) and Eddie starred in "The Ringer", a movie about a fraud who joins a Special Olympics competition to win the prize money. Flanking the stars are Mary Bertone (left) and Carol-Ann (right).

reaches out to 2.8 million athletes in over 175 countries.

Special Olympics offers a tremendous leadership opportunity for dental hygiene to reach out and make a difference by mobilizing and educating colleagues and community members, mentoring dental and dental hygiene students, and involving other health professionals to bring about *access to care* that can improve quality of life.

In 2003, CDHA released the position paper<sup>1</sup>, *Access Angst: A CDHA Position Paper on Access to Oral Health Services*, calling on provincial and federal governments to increase oral health funding and programs for the underserved, including those with intellectual disabilities. Unfortunately, little has changed. These individuals still face huge health disparities, with dental care as their greatest unmet health need worldwide. Factors that perpetuate this situation include lack of funded programs, lack of training among health professionals, and an inaccurate public perception that their needs are being met.

Visit [www.specialolympics.ca](http://www.specialolympics.ca) to learn how you can help bring oral health screenings, preventive care, treatment, and education to these individuals in your community. Through this supportive network, you'll be mentored to train and calibrate dental volunteers, access funds, and receive all the supplies you need to run a successful program. Interested in research? Special Olympics offers grants and access to a wealth of data to help bring your research idea to fruition while growing the RDH body of knowledge.

Be the change you want for our profession. Get involved. Be a fan. I am.

Sincerely,

Carol-Ann Yakiwchuk

Past President, CDHA

e-mail: [carolyaki@gmail.com](mailto:carolyaki@gmail.com)

#### REFERENCE

1. Access Angst: A CDHA Position Paper on Access to Oral Health Services. *Probe*. 2003;37(6):261-72.

◀ A beautiful 11-year old Russian figure skater who was in pain, received care on an equipped mobile dental office once her competitions were over. Assisting her were her interpreter (back), Jennifer (right), a dental hygienist and key organizer for *Special Smiles* in Boise, and Carol-Ann (left).

Dear editor:

### An “independent” practice

With so much interest in independent dental hygiene practices in Canada, I would like to share my own experience within a unique, alternative practice setting. It could be deemed ‘independent’ as well, as I certainly was on my own. In 1997, after 28 years in clinical hygiene, I accepted an offer for an 8-hour/week contract to develop a dental prevention program for a health centre owned by the largest First Nations Band in British Columbia. Their Health Director was concerned that almost 80 per cent of the children required hospital admission for dental treatment by the age of three. Thus began eight years of the most rewarding work of my long career. I enrolled in four semesters of First Nations Studies to gain cultural understanding and competency.

Working with an interdisciplinary staff, I was guided by nurses, a dietician, infant development and prenatal program implementers, community health representatives, and teachers. My target group was under five years old but it was the caregivers that I spent the most time with. I was my own boss, but had loads to learn; I became the student again with my clients being my teachers. I left a “dentist centred, production-profit-efficiency” environment and blossomed in a family centred relationship. Hearing their stories, and listening to the anxiety and fears around dental treatment received in the past, helped me understand the context of their lives, and the perspective that families brought with them regarding oral health issues.

Tuesday's *Well Baby Day* continued to be my focus when babies came in for immunization visits. My props now included Mr. Thirsty, the saliva ejector, sucking water noisily out of a cup. I used the puppet to role play everything I was going to do with the child. Caregivers had the benefit of a small TV/video unit—paid for by CDHA/Colgate's 1998 Community Health Grant—to view movies about Early Childhood Caries (ECC). Parents received photos of their child's visit with me.



▲ Sherry coaches Lisa Lacaille at the Terrific Twos Health Fair in Duncan, BC.

My work was based on the advice of Milgrom and Weinstein<sup>1</sup> who indicate that polishing the teeth prior to fluoride applications does not yield any significant antimicrobial effect and also removes the fluoride rich outer layer of enamel. I provided periodontal care for ages 5–80 on two other days. Today, back in private practice, I continue to use only brush prophylaxis and fluoride varnish instead of gels.

My outreach included visiting the Reserve's kindergarten, elementary school, and participating in the Terrific Twos Health Fair with other program staff. Pre-kindergarten screenings performed each year over a five year period saw the ECC rate drop from 79 to 56 per cent in five year olds. Clients were encouraged to seek and ask for better dental care and outcomes.

Successful innovative programs must have health promotion and prevention strategies entrenched within the mission and core operations of an organization in order to become institutionalized. Without the training of new staff, when key players transfer from the reserve, community wide activities may no longer be seen as routine duties, and the focus may be turned back to only dental treatment. I would encourage you to take the initiative and seek opportunities to support the oral health needs of diverse groups in our communities. Step outside your comfort zone—and the challenges will become those opportunities for change and personal growth.

Sincerely,

Sherry Saunderson, RDH  
2966 Cameron Taggart Road  
Cobble Hill, BC V0R 1L6  
e-mail: [sherlar@shaw.ca](mailto:sherlar@shaw.ca)

### REFERENCE

1. Milgrom P, Weinstein P. *Early Childhood Caries, A Team Approach to Prevention and Treatment*. University of Washington School of Dentistry in Seattle. 1999:57. ❧

◀ “Ride in the chair” is not a daunting prospect for these children participating in a field trip to Cowichan Tribes Dental Program.

## Uniforms and microbial contamination

Jean Barbeau, PhD

Working with an ultrasonic scaler, an air–water syringe, or a rotating instrument for 30 to 60 minutes—that’s enough time for about 300,000 to 600,000 bacteria to leave your client’s oral cavity and land on your mask and uniform.<sup>1,2</sup> Imagine a full work day’s worth.

Work uniform contamination is often a neglected aspect of infection control programs. The scientific literature is an incomplete source of information on this topic. Nevertheless, it has been well documented that nursing personnel carry daily a large variety of pathogenic microorganisms on their uniforms, and considering the rate at which these microorganisms travel, they can easily contaminate a patient’s room or an operating room.<sup>3,4</sup> Since textiles do not provide the same natural antibacterial properties as skin, germs survive longer on work uniforms—long enough to be transmitted to the least desirable locations by a quick hand contact.

We can expect the situation for the dental care environment to be similar or possibly even worse because of the saliva atomization resulting from our regular practice. Fortunately, in the dental care environment, the majority of microorganisms are not particularly problematic pathogens though the occasional presence of opportunistic pathogens should not be ignored. Whereas the use of gloves and masks, hand asepsis, surface disinfection, and sterilization ensure a safe environment, adequate attention is rarely paid to work uniforms.

### Care of work uniforms

Where contamination is cause for concern, work uniforms should be treated like hard surfaces. Bearing this in mind, work uniforms should not be worn outside clinics.<sup>5</sup> The entire hospital sector is currently dealing with this issue of infection control, and safeguarding the high concentration of immunocompromised, weakened and vulnerable patients from microbial contamination. When health professionals report to work in uniforms that have come into contact with the seat of a vehicle or subway car or a dusty or muddy sidewalk, bacteria are being introduced to the environment, defeating even the most rigorous aseptic controls.

That being said, work uniforms must be laundered regularly for adequate decontamination. Ideally, they should be washed daily.<sup>6,7</sup> Experts seem to agree that home laundering is acceptable,<sup>6,7</sup> since the risk for health professionals and their families is probably negligible. Studies have also shown that cold or hot water washing with a laundry detergent is sufficient to kill 99.9 per cent of germs on the textile surface. The combined effects of dilution in water, mechanical agitation, and the scrubbing action of soap do

most of the decontamination work and the microorganisms are carried away in the dirty water when the washing machine empties. Tumble drying at a high temperature ensures a further reduction of contaminants and ironing should deal with any surviving bacteria.<sup>6,7</sup> Although bleach is recommended, it does not seem to be a crucial step in the decontamination process, and also reduces the garment’s durability.<sup>8</sup>

### An innovative solution

Although daily washing has proven to be an efficient method of decontaminating uniforms, this minimal maintenance cannot contend with contamination that occurs while health professionals carry out their clinical tasks. A promising solution has recently emerged: the development of textiles with antimicrobial properties. Indeed, Stedfast Inc. has perfected an innovative, silver particle free textile treatment that provides textiles with the prolonged ability to resist germs. Tests have confirmed that when a heavy bacterial load (*Staphylococcus aureus*, *Pseudomonas aeruginosa*) is sprayed, the textile eliminates almost all contaminants in less than 30 minutes. This interesting technology, which addresses the issue of cross contamination, finally provides work uniforms the attention that they deserve.

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★ ★ YOU ARE INVITED TO ATTEND ★ ★

## North American Dental Hygiene

# RESEARCH CONFERENCE

Opportunities for Advancing Dental Hygiene Research

**JUNE 2009**

**15, 16, 17**

**Bethesda, Maryland, USA**

Mark your calendars! Save these dates!

15 June: The National Institute of Dental  
and Craniofacial Research-NIH  
16-17 June: DoubleTree Conference Hotel

### CONFERENCE TOPICS:

- Strategic Planning for Future Research (NIDCR, ADHA, CDHA, CIHR, HP 2020)
- Translating Research into Practice (Cochrane Collaboration, Dental Practice-Based Research Networks)
- Cultural Considerations for Practice (Healthcare Across Cultures, Health Disparities and Literacy)
- Emerging Technology from the Bench (Stem Cell Research, Salivary Diagnostics, Oral Cancer)
- Linking Dental Hygiene and Systemic Health (Medically Challenged Populations, Outcome Measures)
- Assessing the Efficacy of Dental Hygiene Delivery Models (Alternative Settings and Populations)
- The Changing Climate of Research (Building Relationships with Industry)
- Preparing Competitive Grants, and Grant Programs and Training Opportunities

### CONFERENCE SPEAKERS:

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### PURPOSE:

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# How understanding psychiatric illness can help clinicians provide optimal oral health care

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## ABSTRACT

**Background:** Psychiatric illness and its medical management carry significant risks for oral disease. Given the ongoing shift in treatment approach from the traditional institutionally based model to more community focused alternatives, dental hygienists can expect to see and treat patients with various forms of psychiatric disorders. **Discussion:** The purpose of this paper is to provide the dental hygienist with a background understanding of psychiatric disease and highlight the various oral health findings that so frequently manifest themselves in this specialized patient population. The type, severity, and stage of mental illness, a patient's own mood, motivation and personal perception of oral disease and lifestyle, and side effects of medications all contribute to the oral manifestations of many of the more serious psychiatric diagnoses. Both the disease itself and its pharmacologic management exact a range of oral complications and side effects, with caries, periodontal disease, and xerostomia being encountered most frequently. **Conclusion:** Through an increasingly successful combination of pharmacotherapy, psychotherapy, and life adjustment skills counselling, patients are attempting to better understand and cope with their underlying psychiatric illness. In turn, this will promote a more positive and progressive interaction and re-integration within society as a whole. The dental hygienist can also contribute to this process of rehabilitation not only through a heightened sensitivity and understanding of a patient's specific psychological vulnerability but also through the management of specific oral health needs and concerns that are often a component of psychiatric illness.

## RÉSUMÉ

**Contexte :** La maladie mentale et sa gestion médicale comportent d'importants risques de santé buccale. Vu l'évolution en cours du traditionnel cadre de prestation des soins vers des choix davantage orientés vers la communauté, les hygiénistes dentaires peuvent s'attendre à voir et à soigner les patients atteints de diverses formes de problèmes psychiatriques. **Discussion :** Cet article a pour objet de présenter à l'hygiéniste dentaire des notions de base sur la maladie mentale et un aperçu des problèmes de santé buccale qui se présentent souvent chez cette population particulière de patients. Le type, la gravité et le stade de développement de la maladie mentale, l'humeur du patient, sa motivation, sa propre perception de la maladie buccale et son style de vie, tout cela contribue aux manifestations buccales de plusieurs diagnostics plus sérieux de maladie mentale. La maladie elle-même et son traitement pharmacologique engendrent une gamme de complications buccales et d'effets secondaires : caries, maladies parodontales et xérostomie qu'on voit très fréquemment. **Conclusion :** Grâce à une combinaison de pharmacothérapie, de psychothérapie et de conseils sur les capacités de rajustement de la vie, les patients essaient de mieux comprendre et surmonter la maladie mentale sous-jacente. Cela entraînera une interaction plus positive et progressive ainsi que la réinsertion sociale. L'hygiéniste dentaire peut elle aussi contribuer à ce processus de réhabilitation non seulement par le biais d'une plus grande sensibilité et d'une meilleure compréhension de la vulnérabilité psychologique du patient mais aussi de la gestion des ses besoins spécifiques en santé buccale et des préoccupations qui font souvent partie de ses problèmes psychiatriques.

**Key words:** psychiatric illness, psychotropic medications, oral health complications, drug interactions

## INTRODUCTION

Psychiatric disease and dental disease are viewed as two of the most prevalent health problems in society today. In fact, current statistics show one of five people in North America will suffer from some form of psychiatric illness at some point during their lifetime.<sup>1-4</sup> While it is currently believed that people may have a genetic vulnerability to many of the more commonly diagnosed psychiatric illnesses, it is often a trigger factor involving such life experiences as bereavement, physical/sexual abuse, trauma and substance abuse that is seen as the precipitating event in uncovering or manifesting a specific psychiatric diagnosis.<sup>5,6</sup> As common as mental illness is, in many cases it remains unrecognized, misunderstood, and often undertreated. Ignorance, silence, fear, disbelief, and blame are just some of the more common reactions of people to those they encounter having a particular psychiatric disorder. These attitudes can all be condensed into one word: "stigma"—from family members who are embarrassed, friends who turn away, health professionals who remain judgmental, and employers who are concerned only about the bottom line of productivity and profit margins. Stigma is worse than the disease itself, and is

nourished through the misconceptions that still exist in society.<sup>7,8</sup> Such misconceptions include the acceptability of treating people with psychiatric disorders differently since they are supposedly getting what they deserve as a result of their own personal inadequacies. They must lack the motivation to do things or overcome their problems, and by "being lazy" give into their emotions and stresses instead of simply "getting on with the program".

Despite 20<sup>th</sup> century advances in disease diagnosis and treatment, the concept of a distinction between mental illness and physical illness has persisted in our perception and dialogue surrounding disease.

Mental functions are in fact physical, with physical changes in the brain often resulting in a disorder of mental function. A more accurate description might be mental versus somatic health. The brain carries out both mental and somatic functions (e.g. movement, touch, and balance),

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Table 1: Stigma of mental illness among Canadians

46% of respondents believe mental illness is used as an excuse for bad behaviour.
25% of respondents fear to be around those with mental illness.
50% of respondents would disclose their relationship with someone with mental illness vs. 72% for someone with cancer; 68% for someone with diabetes.
50% of respondents view alcohol/drug addictions as not being mental illnesses.

and diseases or disorders of brain function can be seen as either a mental disorder or somatic disorder depending on the function affected by the specific disease. For example, a stroke patient may display disturbances of movement or paralysis of extremities (somatic) versus changes highlighting mood, thought, or behavioural alterations leading to such a mental disorder as vascular type dementia.

The prior misconceptions surrounding the separation of mind and body as well as the later separation of mental health treatment from mainstream medical care provided significant impetus to the stigmatization of people suffering from psychiatric illness.<sup>6</sup> Results of a national survey, in 2008, of the public's perception of mental illness revealed some startling, and yet not surprising, views on this devastating illness as shown in Table 1.<sup>9</sup>

Mental illness is an "equal opportunity disease" affecting all ages, all races, all economic groups, and both genders.<sup>10</sup> As many as two-thirds of individuals suffering from the various signs and symptoms of a psychiatric illness will not receive a proper and timely diagnosis and appropriate treatment with stigma being cited as the key barrier.<sup>6</sup> Coping strategies utilized in lieu of seeking professional treatment ranged from such behaviours as the pursuit of spirituality or social supports to the much more commonly sought out negative behaviours of both denial and substance abuse.<sup>6</sup>

Dental patients are often reluctant to disclose a current or past history of psychiatric care out of embarrassment and the stigma that they feel. Dental hygienists must feel comfortable, sensitive, and empathetic to various vulnerability factors and psychological problems in order to provide consistent, and high quality dental care. To that end, a more specific line of questioning, given in Table 2, may be used to elicit additional information concerning a patient's mental health history.<sup>3</sup>

Table 2: Questions used to help expand on a patient's mental health history

1.	What psychiatric medications (antidepressants, anti-anxiety agents, antipsychotics) are you taking?
2.	How long have you been taking the medications? Does it help?
3.	What are/were your symptoms?
4.	When was your mental illness diagnosed?
5.	Have you experienced any oral/dental side effects such as dry mouth, burning tongue, excessive saliva, or swollen gums?
6.	Who is the general practitioner/psychiatrist treating this condition?

With enhanced knowledge and understanding of mental illness, dental hygienists can, for example, recognize the clinical oral signs of lingual enamel erosion, highly indicative of an eating disorder (bulimia), and participate in facilitating a referral for treatment of this potentially life threatening illness.<sup>11,12</sup> As well, the development of communication skills for these patients allows for increased levels of comfort and clinical interaction particularly in the field of preventive oral care. There is a need for heightened awareness towards potential drug interactions between medications used to manage various psychiatric illnesses and drugs used in the oral health care setting.

While there remains no "cure" for psychiatric illness, the concept of recovery allows an individual to live a satisfying and rewarding life within the limitations imposed by the illness itself. As described earlier, chances for a complete recovery can be greatly diminished by the many myths surrounding psychiatric disease which may lead to social isolation, lack of employment, increased substance abuse, homelessness, and often excessive institutionalization. In society today, approximately 4 per cent of violent criminal acts can be attributed to someone with a mental illness, generally those exhibiting acute psychotic symptoms (such as from non compliance with prescribed medications) often exacerbated by the use of street drugs, alcohol, or both. This is in contrast to the 96 per cent of the violent acts being committed by those without any form of psychiatric disease. The film and print depiction of the "axe-wielding psycho", fuelled by both publicity and sales, has distorted the reality that more mentally ill patients will be of significant harm to themselves or will be the victims of criminal violence than will be perpetrators.<sup>1,2</sup>

### THE INFLUENCE PSYCHIATRIC ILLNESS MAY HAVE ON ONE'S ORAL HEALTH

There are several factors arising from psychiatric disorders that are seen to have a highly influential effect on oral health, by impacting self care and affecting routine access and provision of oral care. These factors include:

#### Type, severity, and stage of mental illness

Mental illness is regarded as a chronic disease which, in many instances, tends to fluctuate in terms of symptomatology depending on the specific diagnosis (e.g. bipolar affective disorder) as well as individual responses to medications and psychotherapy including the availability of support systems (e.g. family, friends). Patients who are experiencing the depths of a major depression will often show a total disregard for maintaining proper daily oral hygiene. Salivary gland output may decrease, along with increased consumption of carbohydrates, and an increased *lactobacillus* count, patients will quickly display a greater tendency for increased caries as well as periodontal disease.<sup>13</sup> Patients involved in either a manic or hypomanic phase of bipolar disorder may exhibit more aggressive tendencies in terms of carrying out their daily oral hygiene practices, for instance, excessive tooth brushing causing abrasion lesions to teeth with or without soft tissue lacerations.<sup>5,14,15</sup> Individuals with a prior history of physical or sexual abuse may be unable to adapt to the close contact inherent in otherwise routine dental procedures. As a result, years may

pass during which they avoid seeking proper oral health care services resulting in more rapid deterioration of otherwise such preventable diseases as periodontal disease and dental caries. Patients who have been diagnosed as suffering from a somatoform disorder may present with complaints of physical symptoms suggestive of a physical disorder but for which there is no demonstrable underlying physical basis.<sup>16</sup> Body dysmorphic disorder represents one such somatoform disorder whereby the individual develops a preoccupation with an imagined or exaggerated defect in some aspect of their physical appearance. This condition can affect up to 25 per cent of the population, and may be one of the key underlying causes of patient dissatisfaction with certain physical or *dental* features such as the appearance of teeth, facial asymmetry, or a disproportion of shape and size involving the lips, mouth, or jaw. The dental practitioner must possess increased vigilance to the potential presence of disproportionate concerns surrounding appearance particularly in comprehensive aesthetic treatment plans.<sup>17</sup>

Obsessive Compulsive Disorder (OCD) is an anxiety disorder wherein those individuals afflicted will describe the presence of intrusive, preoccupying thoughts that make them anxious and upset. Such obsessive thoughts are unwanted, trivial, or often highly charged, and the individual will carry out compulsive or repetitive behaviours (most commonly cleaning and checking) to allay the anxiety. Such compulsive behaviour can begin to dominate a person's life interfering with day to day activities including relationships and work leading to embarrassment, further anxiety, or depression (referred to as having a comorbid psychiatric illness).<sup>18</sup>

Patients suffering from long term addictive illnesses may present with behavioural changes as well as demonstrating early impairment of cognitive functioning. The long term effects of the use of street drugs (e.g. methamphetamines, cocaine, ecstasy) have been well documented in the dental literature as to the devastating results that invariably occur with both the teeth and periodontium, as well as the oral mucosa in general.<sup>19,20</sup>

#### Patients' mood, motivation, level of self esteem

Individuals diagnosed with schizophrenia or other forms of psychoses may display varying predominance of positive, negative, or disorganized symptoms inherent in the disease itself.<sup>21</sup> In particular, the negative symptom complex of this disease (absence of emotion, social detachment, lack of expression, lack of motivation and initiative), is associated more with the long term chronicity of the disease, and will impact on one's ability and desire to perform activities of normal daily living including oral health care. This lack of motivation or apathy is often misconstrued by others as simple laziness. Patients during the course of their illness will experience long periods of neglect resulting in the pattern of rampant decay with or without periodontal disease so often diagnosed at a later date, and for which full mouth clearance is often required. The progression of dementia invariably carries with it the decline in self care (including oral health care) unless a familiar caregiver has been involved in the very early stages of the disease to provide these services on a regular basis during the latter

part of the illness.<sup>22,23</sup> It is not surprising that progressive decline in oral care, combined with such other factors as dry mouth secondary to medications, caries and periodontal disease, will predominate with an inevitable decline in self esteem. Unfortunately, it is often mistakenly believed that the individual is no longer capable of experiencing such an emotion because of their overlying psychiatric illness.

#### Lack of personal perception of oral health problems

Preventive dental education remains a critical aspect of the dental management protocol for patients suffering from a variety of psychiatric illnesses. In light of the episodic and recurrent nature of these diseases (as seen in bipolar affective disorder for example), the dental hygienist must be capable of applying some modification to their treatment regimens. Non compliance to prescribed dental care may often mirror a non compliant attitude to medical care in general, and it is these perceptions of need on the part of the patient that will present the most challenges to the dental hygienist. Lack of understanding or insight into a specific mental illness, and the sometimes intolerable side effects of medications, account for the high rate of non compliance with psychopharmacotherapy. In addition, approximately 60%–80% of patients with schizophrenia demonstrate some degree of cognitive impairments (as well as the other more well known psychotic symptoms) that underlie the reason why such patients do not acknowledge they have any psychiatric illness. The positive outcome of any treatment will be jeopardized until there is acceptance of the existence of the disease.<sup>21</sup> There is a requirement on the part of the dental health professional for flexibility and pragmatism in terms of the capacity and motivation of the patient towards oral health care at any point during their illness. Oral hygiene practices may vary from complete cooperation at one appointment to partial or total lack of participation at another visit based on the symptom status that the patient exhibits each time. This lack of perception of the existence of any oral health problems may necessitate more frequent appointment scheduling or other treatment adjustment, particularly for those patients suffering from moderate to severe xerostomia secondary to psychotropic medications.<sup>3,14,15,21</sup> Engaging the support of family members to ensure some form of adherence to daily oral hygiene practice is another viable management strategy.

#### Patients' habits, lifestyle, socio-economic factors, and the ability to sustain self care

Patients diagnosed with a psychiatric illness often experience a "double burden" with their illness, including not only the signs and symptoms of the disease but also the associated stigma and discrimination which jeopardize their ability to access needed resources to sustain treatment. This may further exacerbate an already compromised quality of life and lead to diminished self esteem, isolation, and a sense of hopelessness, all of which provide fertile ground for increased substance abuse. This cycle becomes self perpetuating in a very short period of time. For example, the reported incidence of alcohol abuse in patients with bipolar disorder is approximately 44 per cent

compared to less than 17 per cent of the general population.<sup>24</sup> This comorbidity may result in increased challenges for medical treatment, a much greater incidence of suicidal ideation as well as an increase in completed suicide. The onset of schizophrenia is often in early adulthood at a time when individuals are pursuing post secondary educational opportunities, or embarking on a newly chosen career path. The delay in such pursuits impacts significantly on their level of independence both financial and otherwise.<sup>2</sup>

A dental hygienist may expect that a patient presenting with a history of psychiatric illness and treatment may also present with other significant medical problems. Accurate background medical knowledge is needed to appropriately perform that patient's ongoing dental care. Mortality data indicates that those patients who suffer from schizophrenia—incidence of 1 in 100 adult Canadians—have a 20 per cent shorter life expectancy than the general population.<sup>25</sup> This shortened life span is not attributable to increased rates of suicide or accidents but rather to the increased rates of coronary artery disease (CAD) and Type 2 diabetes stemming from the higher incidence of such risk factors as smoking, hypertension, obesity and alterations in both glucose and fat metabolism seen in this specific patient population.<sup>26,27</sup> These risk factors stem largely from both medication side effects as well as the significant lifestyle differences inherent in those who suffer from this illness. This cluster of findings is defined by the term “metabolic syndrome”.

Between 50 and 80 per cent of patients suffering from various psychiatric illnesses smoke versus approximately 25 per cent of the general population.<sup>27</sup> Not only does this increase the rates of lung cancer in this population but also the deleterious oral effects that are significant both from a periodontal standpoint as from an increased risk of oral cancer. Increased vigilance on the part of the dental hygienist is required as part of the routine head and neck examination.<sup>28</sup> Smoking cessation also becomes a part of one's lifestyle modification, and is often a challenge in those suffering from psychiatric illness. Recent Canadian research describes the mortality rate from cancer to be 65 per cent higher among those with mental illness. Stigma is felt to be at the root of this problem in that those people with mental health problems who subsequently developed cancer are less likely to be diagnosed and treated in a timely manner. Health professionals often fail to look beyond one's mental health issues in order to properly diagnose actual physical problems such as cancer, heart disease, or diabetes.<sup>29</sup>

### Medication side effects

Along with the various modalities of psychotherapy and skills training, pharmacotherapy remains a cornerstone for the stabilization and long term management of most psychiatric illnesses. As with many of the medications that dental patients might be taking, psychotropic medications have significant side effects which can clearly manifest in the oral cavity.<sup>5,30,31</sup> Xerostomia or dry mouth remains the most common and frequently reported side effect. The prevalence varies by drug and concomitant use of other medications, and may induce an added degree of xerostomia. Xerostomia can have significant

deleterious consequences including increased incidence of caries (especially root caries), gingivitis, oral ulcerations, dysphagia, burning mouth, difficulty chewing and speaking, and increased susceptibility to yeast (candidiasis) infections.<sup>5,32,33</sup>

Denture wearers will also experience greater difficulty in retaining and wearing their dentures comfortably. This can impact secondarily on their overall nutritional status as well as self esteem. Protocols aimed at reducing the subjective feelings of dry mouth as well as providing preventive oral care must now be part of a dental hygienist's treatment armamentarium.

Drug induced orofacial movement disorders or oral dyskinesias are represented by abnormal involuntary movements that may vary both in severity and distribution dependent on the drug dose and duration of therapy.<sup>34</sup> One subtype, tardive dyskinesia, is a long term complication seen in approximately 25 per cent of patients undergoing treatment with the conventional or earlier group of antipsychotic drugs (e.g. chlorpromazine, haloperidol). The incidence of such movement disorders has decreased significantly with the more widespread use now of the atypical antipsychotic, for example, olanzapine, risperidone, quetiapine, ziprasidone and clozapine. Clozapine carries one per cent risk of agranulocytosis ( $wbc < 3000/mm^3$ ) and, as such, the dental health practitioner needs to be cognizant of such signs and symptoms that may indicate infection as pain, secondary to oral ulcerations or fever. In contrast to the predominance of xerostomia as a medication side effect, nearly one-third of patients taking clozapine frequently complain of drooling or sialorrhea, both a stigmatizing and functionally disabling side effect that will affect the individual's compliance in taking the medication.<sup>35</sup>

An additional side effect reported with the use of Selective Serotonin Reuptake Inhibitors (SSRI)—also reported with antipsychotic use—is the increased prevalence of both clenching and bruxism thought to be a consequence of the effects of these drugs on serotonergic receptors. As a result, patients who are identified as exhibiting or complaining of this side effect should be recommended for a nightguard appliance to minimize the deleterious effects on the teeth as well as associated temporomandibular joint (TMJ) structures.<sup>36,37</sup> Dental hygienists must be cognizant of significant drug interactions involving the various classes of psychotropic medications. Some of these interactions are noted in Table 3.

### CONCLUSION

One of the fundamental tenets of any oral health professional-patient relationship is trust, respect, and education; and these factors are just as important in dealing with patients diagnosed with a psychiatric illness. Mental health and oral health are intertwined and the ability of the dental hygienist to enhance the self esteem and feeling of self worth of a person diagnosed with a psychiatric illness is a very fulfilling experience that continues the momentum of bringing mental illness “out of the closet”. Mental illness must be viewed with the same perspective and parameters as cancer, heart disease, diabetes, and HIV/AIDS. In particular, the dental hygienist dealing with elderly



Table 3: Drug interactions involving psychotropic medications

Class of drug	Interacting drug	Effect
Neurolyptic (antipsychotic) drugs		
	Warfarin sodium	· decreased blood levels of warfarin sodium · lower International Normalized Ratio (INR) level
	Tricyclic antidepressants	· increased serum level of both drugs · marked anticholinergic effect
	Opioid analgesics	· increased sedative effect of opioids · increased risk of respiratory depression
	Anti hypertensives	· increased risk of hypotension
	Alcohol	· increased risk of hypotension · increased risk of respiratory depression
	Anxiolytics	· increased risk of sedation · increased risk of respiratory depression
	Nicotine	· decreased blood levels of all antipsychotics
	Anti convulsants	· decreased effects of antipsychotic medications
Antidepressant drugs		
a) SSRI	Codeine containing analgesics	· reduced analgesic efficacy via action P450 hepatic microsomal enzymes
	Warfarin sodium	· inhibits metabolism of warfarin · increased INR level
	Sedatives	· potentiate respiratory depressant effects
b) Tricyclics	Levonordefrin (LA vasoconstrictor)	· blocks re-uptake of levonordefrin · marked rise in blood pressure, cardiac dysrhythmias
	Ethanol, opioids; benzodiazepines	· potentiate respiratory depressant effects
	Warfarin sodium	· inhibits metabolism of warfarin · increased INR level
Mood stabilizers		
Non steroidal anti-inflammatory drugs (NSAID)	Lithium	· impairs renal excretion of lithium · potential lithium toxicity · anticholinergic effect

patients, living either independently or in long term care facilities, must embrace the fact that disabilities due to mental illness will become an increasing public health issue. Declining health, loss of mates, family members or friends create stressful life events which may transform into persistent bereavement or severe and prolonged depressive episodes. These are a major contributor to the high suicide rates mostly among males in this age group. Dementia produces a significant and progressive dependency, and patients suffering with this disease will often present with lengthy medication profiles, the oral side effects of which have been discussed in this paper. Patients with psychiatric illness display unique needs and differing priorities than other patients in the dental practice, and the dental hygienist must be mindful and flexible of these factors. Above all, the health professional must maintain a positive, empathetic and caring attitude—an attitude which is highly correlated to success in the patient's overall rehabilitation and recovery. In doing so, the barriers of stigma of mental illness may continue to be broken down.

"Labels belong on soup cans and not on people."<sup>4</sup>

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## Mobile dental hygiene practice: What are the specific challenges?

CDHA's Independent Practice Advisor, Ann E. Wright

Last fall, CDHA surveyed dental hygienists in Canada who own independent dental hygiene practices. Amazingly, 43 per cent of these practices are mobile or own mobile equipment. Mobile practitioners may set up business from their homes in addition to treating the homebound, or clients who live in residential or long term care facilities. At first glance, packing up your hygiene equipment and transporting it in the car may appear to be a simple business model. Not so; managing a mobile dental hygiene practice is a complex business.

The obstacles:

- Mobile equipment is heavy, and can be awkward to transport.
- Set-up and take-down are time consuming.
- Travel time and fuel consumption must be factored into business costs.
- It will take longer to accomplish the same treatment for physically or cognitively challenged clients.
- Systems must be established for obtaining guardian consents, medical histories and clearance, fee quotations, and authorization for payment.
- Treatment time may be restricted due to institutional timetables.
- Clients scheduled may refuse to comply or cooperate.

Initially dental hygiene entrepreneurs may lean towards purchasing mobile equipment because it is less expensive, and the financial investment is considerably lower than that for fixed equipment. While this is true, one must also factor in the potential revenue stream. Certainly fewer clients will be treated per day, thus significantly reducing total daily fees.

Choice of mobile equipment is an important consideration. The type of equipment chosen will affect productivity and patient and provider comfort. Portable dental equipment ranges from smaller units under 100 lb to large self contained units with water/air sources and waste collection. Determining the type of portable equipment to use should be based on:

- Physical environment of the site, for example, space considerations and availability of electricity and water supply.
- Range of oral health procedures that will be provided.
- Physical limitations of the dental hygiene owner to transport and set up equipment.

The dental hygiene provider must also consider limitations of the work environment. Locating such portable equipment as hand pieces, air-water syringe, suction, light, and instruments within the immediate reach of the operator is important to minimize fatigue, and maximize efficiency by reducing twisting or extensive reaching movements. Illumination from overhead lights or hand piece fibre optics must also be considered. Last but not




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least, the dental hygiene owner needs to ensure that there is access to a grounded 110 volt electrical outlet. Always ensure you have extra extension cords. When choosing mobile equipment one has to balance the frequency of use of the equipment and type of treatment planned versus the varying costs of equipment. More expensive equipment is generally more durable. Additional important items to consider include purchase or lease options, the reputation and availability of the vendor for warranties and repair, and bona fide endorsements from satisfied owners.

Maintaining excellent relationships with the staff and administrator(s) of the facility is paramount to the success of a mobile dental hygiene program. A good work relationship will improve the efficiency and effectiveness of your oral care. Conserve treatment time by enlisting the services of a key staff person to:

- Assist in scheduling the facility and individuals, consents and medical histories.
- Coordinate the flow of patients.
- Assist with wheelchair transfers and behaviour management.
- Provide reports of oral health problems.
- Assure availability of the work area, and make arrangements to have it cleaned before and after on-site clinic days.
- Follow up on recommendations or referrals.
- Provide medical charts, if kept in the facility, and assist in record keeping.
- Identify changes in medical condition, pay status, and guardianship.
- Work with the dental hygienist to communicate treatment information to families and/or guardians of patients.

With all the foregoing to consider, what do the mobile dental hygienists in Canada have to say? They report:

- Clients and family members are overwhelmingly appreciative of the services.
- They are seeing dental clients who previously had minimal or no oral health care.
- **The highest personal job satisfaction rates.** 





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# Use of removable partial dentures and progression of periodontal disease

Sana Umar, RDH, BDS, DipDH

## ABSTRACT

**Purpose:** This review explores the relationship between the progression of periodontal disease and the use of removable partial dentures. **Method:** Medline/Pubmed, Cochrane Library, and Google Scholar were searched for studies published after 2000 regarding periodontal health considerations with the use of removable partial dentures in clients using key words *periodontal health* and *removable partial dentures*. The search resulted in twenty-four published articles, of which twelve were relevant to the topic including eight studies and four reviews. **Results:** Research shows that removable partial dentures (RPD) can cause an increase in the accumulation of plaque bacteria that could lead to progression of periodontal disease, but if clients have effective self care strategies and regular periodontal maintenance this increase in plaque bacteria could be prevented. Defective RPDs and certain design features can cause progression of periodontal disease. RPDs are a good treatment alternative provided that the prosthesis is well constructed, and that the client attends regular periodontal maintenance visits. **Conclusion:** Current research indicates that well constructed RPDs, used with regular periodontal maintenance, are not likely to pose a risk to existing periodontal health. However, additional research in the form of longitudinal studies is needed to further investigate the effects of RPDs in the progression of periodontal disease.

## RÉSUMÉ

**Contexte :** Examen des rapports entre la progression de la maladie parodontale et l'utilisation de prothèses dentaires partielles amovibles. **Méthode :** L'on a recherché, dans Medline/Pubmed, Cochrane Library et Google Scholar, des études publiées après l'an 2000 sur la santé parodontale lors du port de prothèses dentaires partielles amovibles, en utilisant les mots clés *santé parodontale* et *prothèses dentaires partielles amovibles*. La recherche a donné vingt-quatre articles dont douze étaient pertinents à notre sujet, notamment huit études et quatre revues. **Résultats :** La recherche montre que les prothèses dentaires partielles amovibles (PDPA) peuvent augmenter l'accumulation de la plaque bactérienne qui pourrait, à son tour, augmenter la progression de la maladie parodontale; mais les clients pourraient prévenir cette accumulation de plaque bactérienne par des soins efficaces et des visites d'entretien assidu du parodonte. Une PDPA défectueuse et certaines formes de conception peuvent causer la progression de la maladie parodontale. Les PDPA offrent une bonne option de soins pour autant qu'elles soient bien construites et que le client aient un suivi régulier de leur parodonte. **Conclusion :** La recherche actuelle indique qu'une PDPA bien construite, avec entretien parodontal régulier, ne présente vraisemblablement pas de risque de maladie parodontale. Toutefois, il faudrait d'autres recherches, de nature longitudinale, pour connaître davantage les effets des PDPA dans la progression de la maladie parodontale.

**Key words:** periodontal disease, removable partial dentures and dental prosthesis, dentures

## INTRODUCTION

RPDs are constructed for replacement of missing natural teeth in order to restore function and aesthetics in partially edentulous clients.<sup>1</sup> A fixed prosthesis, like a bridge or an implant with overdentures, is a more common treatment option as it is considered functionally better than an RPD.<sup>2-4</sup> However, owing to certain factors like financial issues, compliance, and bone levels, RPDs may offer a viable alternative treatment option.<sup>2,3</sup>

There are concerns about RPDs causing increased mobility of abutment teeth, increased accumulation of plaque bacteria and attachment loss, thus causing progression of periodontal disease.<sup>4,5</sup> The purpose of this paper is to review the role of RPDs in the progression of periodontal disease.

## PERIODONTAL HEALTH IN CLIENTS

Recent data from the US National Health and Nutrition Examination Survey<sup>6</sup> indicate that 8.52 per cent of adults aged twenty years and over, and 17 per cent of seniors aged 65 and over have periodontal disease. Ten percent of these seniors have moderate or severe periodontal disease.<sup>6</sup> Ismail et al.<sup>7</sup> found that the prevalence of severe periodontal disease, defined by presence of a pocket depth of at least 6 mm, was 12 per cent in Ontarians over 60 years of age. Only 3-13% of North American population is susceptible

to rapid and advanced loss of periodontal attachment, while about 80 per cent of adults over the age of 21 experience low or moderate progression.<sup>7</sup>

Progression of periodontal disease is assessed by the increase in attachment loss.<sup>6,7</sup> Using definitions of the Centers of Disease Control and Prevention (CDC) and the American Academy of Periodontology (AAP), "mild periodontal disease" is defined as having one tooth with 3 mm or more of attachment loss and 4 mm or more of pocket depth. "Moderate periodontal disease" involves having two teeth with interproximal attachment loss of 4 mm or more or two teeth with 5 mm or more of pocket depth at interproximal sites. "Severe periodontal disease" is defined as having two teeth with interproximal attachment loss of 6 mm or more and one tooth with 5 mm or more of pocket depth at interproximal sites.<sup>6</sup>

Periodontal maintenance includes an update of the medical and dental histories, extraoral and intraoral soft tissue examination, dental examination, periodontal evaluation, implant evaluation, radiographic review, removal of bacterial plaque and calculus from supragingival and

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subgingival regions, selective root planing or implant debridement if indicated, polishing of teeth, and a review of the patient's plaque removal efficacy. These procedures are performed at selected intervals to assist the patient in maintaining oral health. A therapeutic goal for periodontal maintenance is preventing or minimizing recurrence of disease progression in patients who were previously treated for periodontitis.<sup>8</sup>

Evidence is increasing that oral health, especially periodontal health, has significant influence on systemic health<sup>9-13</sup> as well as on the quality of life.<sup>14,15</sup> Prevention of tooth loss and prosthodontic replacement of missing teeth can improve clients' diets, and help in reducing the incidence of such chronic systemic diseases as diabetes, obesity and cardiovascular disease related to nutrition.<sup>9,12,13</sup> It has been observed that adults with tooth loss have a lower intake of fibre, vitamins and minerals which can lead to obesity and an adverse effect on their overall health.<sup>11</sup> Given these oral systemic links, it is important to assess the risk factors associated with periodontal disease.

## Method

Online databases, Medline/Pubmed, Cochrane Library, and Google Scholar were searched for papers in peer reviewed journals published after 2000, regarding periodontal health considerations with use of RPDs in clients. The search resulted in twenty-four published articles, of which twelve were relevant to the topic including eight studies and four reviews. Overall, the highest level of evidence includes individual cohort studies/observational studies as discussed in Oxford Centre of Evidence Based Medicine.<sup>16</sup>

## Effects of RPD on periodontal health

Environmental and acquired risk factors (systemic conditions for example diabetes, medications, pregnancy, plaque bacteria) affect the onset, rate of progression and severity of periodontal disease as well as the response to therapy.<sup>17-19</sup> Risk factors are defined as "an aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or inherited characteristic, which on the basis of epidemiologic evidence is known to be associated with a health related condition."<sup>20</sup> It has been observed that the use of RPDs lead to detrimental quantitative and qualitative changes in plaque bacteria, where qualitative change is the change in the pathogenicity of plaque bacteria which increases if the plaque bacteria is left undisturbed.<sup>21</sup> A classic study<sup>22</sup> of experimental gingivitis on humans found that bacteria in plaque represents the main etiological factor of periodontal disease. It was seen that plaque bacteria, if left undisturbed, can cause a shift in the bacterial composition to more pathogenic bacteria which causes occurrence and progression of periodontal disease.<sup>22-24</sup> Current research supports an interaction between the bacteria in plaque and the client's systemic response to it. This interaction plays an essential role in periodontal disease expression and progression.<sup>23,24</sup> This further strengthens the argument that increased amount of plaque bacteria due to RPDs, when left undisturbed, leads to changes in the composition of plaque bacteria causing progression of periodontal disease. Hence, the use of RPDs may be a risk factor to the

progression of periodontal disease. Tuominen et al.<sup>25</sup> found that wearing RPDs significantly increased ( $p < 0.0001$ ) the potential for having periodontal pockets in general 4 mm or more as well as the odds of having deeper periodontal pockets exceeding 6 mm. This phenomenon was observed both in the maxillary and mandibular teeth. It was concluded that the use of RPDs is a risk factor for periodontal disease, and that clients need frequent supportive periodontal appointments because regular periodontal and denture maintenance help prevent and reduce the progression of periodontal disease.<sup>25</sup>

The design and maintenance of RPDs also help in preserving periodontal health. Petris and Hempton<sup>21</sup> concluded that the periodontal health of teeth can be maintained if basic principles of RPDs design are followed; these include such factors as rigid major connectors, simple design, and proper base adaptation. Improper design of RPDs may lead to changes in tooth mobility and increased probing depth owing to increase in plaque bacteria accumulation.<sup>21,26,27</sup>

## Effects of RPD on existing periodontal disease

A number of studies have shown the progression of periodontal disease with RPD use in the absence of regular periodontal maintenance. Table 1 summarizes key features of the studies.

A two-year longitudinal study<sup>28</sup> conducted in Japan involved 436 clients, seventy years of age. Measuring probing depths and clinical attachment levels, it was found that 75 per cent of the clients experienced attachment loss of 3 mm and above in the period of the study. There was no regular periodontal maintenance provided to the participants. It appears that there is increased attachment loss with the use of RPDs in the absence of regular periodontal maintenance.

A retrospective study<sup>29</sup> conducted in China showed that there was increased tooth loss associated with periodontal disease in RPD wearers. This study investigated thirty-six clients with RPDs over a period of 5-12 years. It was observed that there was a correlation between tooth loss by arch, and the wearing of RPD in that arch. The loss of 253 teeth in RPD wearers was analyzed; of these teeth, 195 were reported to be lost due to periodontal disease. Up to 26.8 per cent sites were with pockets of 6 mm or greater. Positive correlations were found between total periodontal tooth loss and time spent on oral self care, and years since periodontal maintenance. The study did involve self reporting, and this may have affected the reliability of data.

A cross sectional study<sup>30</sup> of 200 participants with RPDs conducted in Brazil linked RPDs with periodontal disease progression. The community periodontal index was used to evaluate participants' periodontal health. The study results showed that wearing RPDs was associated with periodontal disease ( $X^2=10.75$ ;  $p=0.0014$ ); there was an increase in calculus (44.5%) and deeper pockets (8.5%) with RPD use.

A 10-year retrospective study<sup>31</sup> found that an increase in probing depth and tooth mobility was found in RPD wearers. Wagner et al.<sup>31</sup> evaluated 101 RPDs in seventy-four clients, and compared the abutment teeth of RPDs with the abutment teeth of conical crown retained dentures, and a combination of conical crown and clasp retained dentures. There was no emphasis on regular periodontal

Table 1: Studies of periodontal disease progression with RPD use

	Year of study	Country of study	Study type	No. of participants	Time of wearing RPDs	Findings
1. Hirotomi et al. <sup>28</sup>	2002	Japan	Cross sectional study	436 clients	2 yrs	Shown significant increase in periodontal disease.
2. Leung et al. <sup>29</sup>	2006	China	Retrospective study	36 clients	5–12 yrs	Increased tooth loss in RPD wearers with lack of periodontal maintenance because of periodontal disease progression.
3. Suzely et al. <sup>30</sup>	2006	Brazil	Cross sectional study	200 clients	Not specified	Wearing of partial dental prosthesis was associated with periodontal disease.
4. Wagner et al. <sup>31</sup>	2001	Germany	Retrospective study	74 clients 101 RPDs	10 yrs	Abutment teeth of RPDs suffer more severe periodontal disease.
5. Yeung et al. <sup>32</sup>	2000	Hong Kong	Cross sectional study	87 clients	5–6 yrs	Increase in gingivitis and plaque bacteria accumulation in denture wearers.
6. Akaltan et al. <sup>33</sup>	2005	Turkey	Follow-up study	36 clients	30 months	With good periodontal maintenance clients may experience improvement in oral health.
7. Jorge et al. <sup>34</sup>	2007	Brazil	Follow-up study	68 abutment teeth	6 months	No significant change in abutment periodontal disease at 6 months.
8. Zlataric et al. <sup>27</sup>	2002	Croatia	Case control study	205 clients	1–10 yrs	Partial denture design can cause increase in plaque bacteria accumulation and hence progression of periodontal disease.

Studies showing progression of periodontal disease with RPD use and no regular periodontal maintenance.

Studies showing no changes in periodontal health with RPD use and regular periodontal maintenance.

Study evaluating design features of RPDs.

maintenance. Periodontal findings (probing depth, calculus, tooth mobility) were compared with baseline values at insertion. Results showed a deterioration of the probing depth and tooth mobility. The abutment teeth of the RPDs exhibited more ( $p < 0.01$ ) severe periodontal disease than the abutment teeth of the conical crown retained dentures, and the combination of conical crown and clasp retained dentures.

Yeung et al.<sup>32</sup> in their study of cobalt–chromium RPDs found that there was a significant ( $p < 0.01$ ) increase in the prevalence of plaque bacteria, gingivitis and gingival recession, especially in areas within 3 mm proximity to the RPDs. A total of eighty-seven RPD users were evaluated by an examiner for the amount of plaque bacteria, gingivitis, and gingival recession. There was no emphasis on periodontal maintenance during 5–6 years of the study period. It was seen that 63 per cent of the participants examined had increased probing depth in teeth in contact with RPDs. There was a statistically ( $p < 0.05$ ) significant increase in the gingival bleeding and plaque accumulation. Loss of 4 mm of periodontal attachment ( $p < 0.001$ ) was also seen in examined teeth.

Studies show that regular periodontal maintenance with RPDs use helps support periodontal health. A 30-month follow up study<sup>33</sup> was conducted in Turkey involving thirty-six clients to evaluate the effects of the lingual plate as a major connector in distally extended RPDs on tooth stabilization. The researchers also evaluated the effects of lingual plate type RPDs and lingual bar type RPDs on periodontal health. The participants were asked to attend regular periodontal maintenance visits. Baseline periodontal findings at insertion were compared to findings after

30 months. There were no statistically significant differences between treatment groups with respect to pocket depth, gingival index, or attachment loss ( $p > 0.05$ ). The most striking finding of the study was that, with the exception of gingival recession, periodontal conditions improved with both types of RPDs with regular periodontal maintenance.

A further study<sup>34</sup> involving the abutment teeth of RPDs shows that no significant changes ( $p > 0.05$ ) in tooth mobility were observed in the 6-month follow up after the placement of the RPD. Jorge et al.<sup>34</sup> investigated two clasp designs on 68 abutment teeth associated with unilateral and bilateral distal extension RPDs involving three different clasp designs including a T-clasp of roach retentive arm, a rigid reciprocal arm, and a mesial rest. For the abutments of tooth supported RPDs, a second clasp design—with a cast circumferential buccal retentive arm, a rigid reciprocal clasp arm, and a rest adjacent to the edentulous ridges—was selected. The clients were educated on self care and received regular periodontal maintenance therapy. The study results showed no significant difference in the probing depth and tooth mobility of abutment teeth at six month evaluation ( $p = 0.05$ ). However, as this was just a 6-month follow up study, long term effects were not evaluated.

The design of RPDs appears to play a role in preserving periodontal health. A case control study<sup>27</sup> ( $n = 250$  clients) conducted by the University of Zagreb, Croatia, in 2002 found that the design of RPD plays an important role in maintaining the health of the periodontal tissue. Participants had been wearing RPDs for a period of 1–10 years; there was no emphasis on periodontal maintenance during the study. A two part questionnaire was devised for

this study. In the first part, patients answered questions on gender, age, smoking habits, denture age, denture-wearing habits, mouth odour and problems with food accumulating under the denture base, on the outside surface of the denture, and on the outside surface of remaining teeth after eating. The Kennedy classification, material, denture support, denture base shape, and number of teeth in contact, number of existing clasps, and occlusal rests were categorized. The quality of denture construction was also evaluated. In the second part of the questionnaire, baseline recordings of plaque, gingival, and calculus indexes were made, as well as probing depth, gingival recession, and tooth mobility were measured both on abutment and non abutment teeth. An assessment of the clients showed statistically significant differences ( $p < 0.01$ ) for plaque index, calculus index, gingival index, probing depth, tooth mobility, and gingival recession between abutment and non abutment teeth, with abutment teeth showing more disease in poorly designed and faulty RPDs. Also wearing of RPD in the night was associated with increased occurrence of mucosal lesions and tooth mobility.

## DISCUSSION

Research shows that a well constructed RPD, supported by favourable abutments and accompanied by a regular recall program, offers a satisfactory treatment modality.<sup>27,29,31-34</sup> A few studies<sup>33,34</sup> have found that there was no significant difference between the periodontal conditions in RPD wearers and non RPD wearers if followed by regular periodontal maintenance. This reinforces the importance of regular periodontal maintenance after insertion of RPDs.

Some studies<sup>26-31</sup> have shown that there is an increase in the mobility of the supporting teeth, gingival inflammation, and formation of periodontal pocket after RPDs are used. These changes in periodontal health status are attributed to ineffective oral hygiene, increased plaque bacteria and calculus accumulation, and transmission of excessive forces to the periodontal structures from occlusal surfaces of the framework of RPDs.<sup>23,24,27,30</sup> Research has also shown positive correlation between periodontal disease progression and changes in plaque bacteria amount and composition.<sup>23,24,27,30,32</sup>

Current research also suggests that a removable partial denture of good design together with routine periodontal maintenance will significantly reduce effects on existing periodontal conditions.<sup>28,31,34,35</sup> Many partial denture framework designs contribute to increased or altered oral bacterial flora and formation of dental plaque.<sup>27,35</sup> Certain designs of RPD components like clasp designs and lingual plate designs pose more risk to the periodontal tissue.<sup>27,33-35</sup> Changes are seen in the periodontal status of abutment teeth due to defective RPDs which is understandable, as a defective RPD design would result in unbalanced forces to act on supporting teeth. These unbalanced forces can lead to increased bone loss and tooth mobility.<sup>21</sup> It is the clinician's responsibility to design the partial denture according to individual needs, and to recognize the client's ability to adequately conduct plaque control.

The main focus in prosthodontics has shifted from RPDs to fixed prostheses<sup>36</sup> and, often, RPDs are not the

first option for rehabilitation of missing teeth. Clinicians seek options that maximize stability, masticatory function as well as oral self care. However the cost of treatment is an important factor in client's choice of treatment, and RPDs are the least expensive option for oral rehabilitation.

Further research is necessary to test RPDs role in the progression of periodontal disease; well structured longitudinal studies could be particularly helpful.<sup>37</sup> It is important to collect and analyze data related to the progression of periodontal disease as its progression may lead to tooth loss and hence effect the quality of life for clients.<sup>38</sup> Clients with tooth loss have difficulty chewing which can lead to nutritional deficiencies. Also loss of teeth, especially anterior teeth, is a cause of concern in adults. RPDs provide an alternative to other expensive treatment modalities like implants, bridges and crowns for anterior teeth rehabilitation. A well constructed RPD can provide good aesthetic and functional rehabilitation. Longitudinal studies<sup>37,39</sup> indicate that most of the denture wearers are satisfied with their RPD. Vanzeveren et al.<sup>39</sup> found that 63.6 per cent of the participants indicated a high degree of satisfaction with their RPDs. Hence, the use of RPDs with regular periodontal maintenance and denture maintenance appears to be a safe and effective treatment option.

Dental hygienists play an important role in the overall treatment and maintenance of their clients' periodontal health. It is important that they examine the oral tissues for any signs of trauma that may be indicative of imbalanced forces due to defective RPDs. These signs can include increased mobility of abutment teeth, improper adaptation of clasps, space between denture base and oral tissue suggestive of improper adaptation of denture base. There is a period of adjustment once a new RPD is fitted in during which the client experiences slight tooth mobility especially of abutment teeth.<sup>21</sup> The client should be educated about this and be encouraged to wear the RPD, as this adjustment period does not normally last more than two weeks.<sup>21,34</sup> Durations beyond this time period need to be reassessed by the clinician who fabricated the prosthesis. As with all clients, detailed documentation is important.

Client self care is another important factor; clients need to be supported in caring for their RPD. It may also be helpful for clients to remove their RPD at night.<sup>27,40,41</sup> Options and methods for cleaning the RPD as well as the remaining teeth should be discussed. The periodontal maintenance schedule needs to be evaluated and adjusted to preserve the oral health of the supporting teeth.

## CONCLUSION

Current research points to these inferences:

- RPDs can lead to increased accumulation of plaque bacteria, which left undisturbed due to lack of oral self care or regular periodontal maintenance, can cause progression of periodontal disease.
- The accurate construction of RPDs and periodontal maintenance therapy play a role in preserving periodontal health of clients wearing RPDs.
- RPD wearers should be on a periodontal maintenance schedule to avoid occurrence and further progression of periodontal disease.

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## Highlights of the Board of Directors Meeting, 26–28 February 2009

CDHA's Board of Directors held its biannual meeting at the national headquarters in Ottawa, 26–28 February 2009. The Board reviewed the framework of policy governance and of its "Ends". These "Ends" or goals were modified to reflect a new direction and are as follows:

**Mission:** The Canadian Dental Hygienists Association is the collective voice and vision of dental hygienists in Canada advancing the profession, supporting its members and contributing to the oral health and general well being of the public.

CDHA exists so that its members are able to provide quality preventive and therapeutic oral health care for all members of the Canadian public.

1. Members are unified in their identity as a profession.
2. Members have a strong national voice.
- 2.1 Members practise in a supportive public policy environment.
- 2.1.1 Members practise independently. Members practise in environments that are appropriate to the needs of all members of the Canadian public.
- 2.2 Members are committed to national professional standards.
3. Members utilize and contribute to a growing body of professional knowledge.
- 3.1 Member's potential for leadership is developed.

- 3.2 Potential members and current members are mentored by experienced peers.
4. Members' value is recognized by the Canadian public.
5. Members have resources for safeguarding their well being in the workplace.
6. Members have resources to support business success.

**Other highlights:** The Board of Directors received provincial reports and reports from representatives of such organizations as National Dental Hygiene Certification Board. Final transactions are taking place for the transition of Dental Hygiene Educators Canada to CDHA's Education Advisory Committee.

The President of CDHA will be undertaking a President's tour to provide an opportunity to link with members across the country.

The Board is presently reviewing its composition, and will finalize its structure in the fall.

A candidate was chosen as this year's distinguished service award recipient, and the announcement will be made public in the upcoming months.

Anna Marie Cuzzolini resigned her position as President Elect owing to personal issues, but will retain her seat as a Board member from Quebec. The President Elect position left vacant by the resignation will be filled on 28 March through an election within the Board. Palmer Nelson from Newfoundland and Labrador was acclaimed President Elect, effective October 2009.

## CDHA Greetings Speech at CAPHD AGM March 2009

Shafik Dharamsi, PhD, Chair, CDHA Research Advisory Committee

As the new Chair of the CDHA Research Advisory Committee, I am privileged to have this opportunity to offer greetings on behalf of the CDHA.

The CDHA is both a proud member of the Canadian Association of Public Health Dentistry, and contributor to oral public health in Canada, believing strongly, that oral health is essential for overall wellness.

The CDHA is committed to social justice and the social responsibility of the Dental Hygiene profession to work tirelessly toward reducing oral health disparities, addressing the social determinants of oral health, and ensuring oral health care for vulnerable segments of the Canadian population.

The CDHA is dedicated to working collaboratively with all those who share similar concerns, particularly the communities we serve. It is essential also that community voices be heard. Community engagement is imperative if greater oral health care access for the underserved is to be part of the national debate on issues around equitable access to oral health. We need community representation at our meetings...after all, we're talking about the oral health of the *public*. We must collectively seek better ways to engage our communities.

I would like to share with you some of the highlights of our work on disease prevention and oral health promotion:


- We published Infection Control Practice Guidelines, which can be used by dental hygienists in all practice settings, including public oral health.
- The Oral health database provides more than 390 credible and timely articles for the public as well as oral health professionals.
- Through collaboration with the media, we raise awareness on a range of topics related to oral health, and conduct public awareness campaigns.
- During the *Gift from the Heart* campaign, CDHA members provided services at no cost to vulnerable segments of the population who cannot access oral health care.

Pro-bono oral health care plays an important role in our professions. Charity is about giving to needy people who have no other options, and it has an important place in society. However, relying exclusively on charity approach-


es results in band-aid solutions that do not address the root problem of health disparities. A social justice approach, on the other hand, requires professionals to focus their efforts on understanding and working to change the structural or institutional factors that contribute to inequitable conditions.

We must, therefore, work harder to move from charity to social justice approaches to addressing issues affecting oral health disparities.

We must collectively advocate for positive changes in health care policies and programs, and call for national leadership to improve the oral health of the nation, particularly those who are most vulnerable and who do not have equitable access to oral health care.

We look forward to working collaboratively to improve public oral health. On behalf of the CDHA, I thank you for this opportunity to address you this morning. I leave with you a quote from philosopher and theologian, St. Augustine, "Charity is no substitute for justice withheld." 

## Thank you, Niagara College, for CFDHRE donation

CDHA's Research Advisory Committee met in Vancouver on 28 March 2009. At this meeting, Marilyn Goulding of the Dental Hygiene faculty of Niagara College, Ontario, presented the President of the Canadian Foundation of Dental Hygiene Research and Education with a cheque of \$1,000 in support of the Foundation. The amount was collected through a fundraiser from the Canadian Cochrane Network workshop, *Unravelling the Literature*, hosted by Niagara College, Ontario, on 25 October 2008. CDHA wishes to thank Niagara College for its fundraising efforts. 



▲ Salme Lavigne (left) received the cheque from Marilyn Goulding.

# Guidelines for authors

The *Canadian Journal of Dental Hygiene (CJDH)* provides a forum for the dissemination of dental hygiene research to enrich the body of knowledge within the profession. *CJDH* is a peer reviewed journal. Manuscripts should deal with current issues, make a significant contribution to the body of knowledge of dental hygiene, and advance the scientific basis of practice. Manuscripts may be submitted in English or French. All accepted submissions will be edited for consistency, style, grammar, redundancies, verbosity, and to facilitate overall organization of the manuscript.

**Criteria for submission:** A manuscript submitted to *CJDH* for consideration should be an original work of author(s), and should not have been submitted or published elsewhere in any written or electronic form. It should not be currently under review by another body.

**Pre submission enquires to:** Ms. Linda Roth, Acquisitions Editor, *CJDH* 96 Centrepointe Drive, Ottawa, ON K2G 6B1; t: 613-224-5515 x 136; f: 613-224-7283; e: [acquisitions@cdha.ca](mailto:acquisitions@cdha.ca) or [lroth@cdha.ca](mailto:lroth@cdha.ca); toll free: 1-800-267-5235 x136

*CJDH* welcomes your original submissions on:

- Professionalism:** manuscripts dealing with issues such as ethics, social responsibility, legal issues, entrepreneurship, business aspects, continuing competence, quality assurance, and other topics within the general parameters of professional practice.
- Health promotion:** manuscripts dealing with public policy and a variety of elements integral to building the capacity of individuals, groups and society at large. Based on the key elements described in the Ottawa Charter, this may include health public policy, creating supportive learning environments, developing abilities, strengthening community action, and reorienting oral health services.
- Education:** manuscripts related to teaching and learning at individual, group, and community levels. It includes education related to clients, other professionals, as well as entry to practice programs.
- Clinical practice:** manuscripts dealing with interceptive, therapeutic, preventive, and ongoing care procedures to support oral health.
- Community practice:** manuscripts dealing with oral health programs including topics related to program assessment, planning, implementation, and evaluation.
- Oral health sciences:** manuscripts dealing with knowledge related to the sciences that underpin dental hygiene practice.
- Theory:** manuscripts dealing with dental hygiene concepts or processes.

## Word count in manuscripts:

- Studies/Research paper – no longer than 6000 words, and a maximum of 150 references. Abstract within 300 words.
- Literature review – no longer than 4000 words and as many references as required. Abstract within 250 words.
- Position paper – no longer than 4000 words and a maximum of 100 references. Abstract within 250 words.
- Case report – between 1000 and 1200 words, and a maximum of 25 references, and 3 authors. Abstract of 100 words.
- Editorial – by invitation only, and may be between 1000 and 1500 words, using as many references as required. No Abstract.
- Letter to editor is limited to 500 words, a maximum of 5 references, and 3 authors. No Abstract.

**Peer Review:** All papers undergo initial screening for suitability by the Scientific Editor. Suitable papers are then peer reviewed by 2 or more referees. Additional specialist advice may be sought if necessary, for example from a statistician.

**Revision:** When a manuscript is returned to the corresponding author for revision, the revised version should be submitted within 6 weeks of receipt of the referee reports. The author(s) should address the revisions asked in the cover letter, either accepting the revisions or providing a rebuttal. Additional time for revision can be granted upon

request, at the Managing Editor's discretion.

**Appeal** for re-review may be addressed to the Scientific Editor by e-mail ([journal@cdha.ca](mailto:journal@cdha.ca)) who will take it forward to the Editorial Board. The committee members may decide to seek a further review or reject the submission. There are no opportunities for a second appeal.

## Submission checklist

Check	Elements
1	Used standardized fonts such as Arial, New Times Roman, Verdana in 10–12 points.
2	Double spaced text in body of manuscript.
3	Manuscript has standard margins of 1 inch (2.5 cm) at the top, bottom, left and right.
4	Pages are numbered consecutively, starting with title page.
5	Cover letter accompanies manuscript with your declaration of originality, any conflict of interests, your contact information.
6	Placed figures, tables, graphs, photos at the end of the manuscript.
7	Provided signed permissions for any text or pictures of client/patient.
8	Are all previously published illustrations appropriately credited? Have you checked their publisher's website for restricted use or permissions?
9	Included corresponding author's contact information in the title page.
10	Included all the authors' academic titles, and their current affiliation(s).
11	Cover letter contains names and contact information of two possible and willing reviewers for your submission.
12	Key words are terms found in MeSH database in Search "MeSH": <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>
13	Used only the Vancouver style of referencing in the manuscript: <a href="http://www.nlm.nih.gov/bsd/uniform_requirements.html">http://www.nlm.nih.gov/bsd/uniform_requirements.html</a>
14	Used abbreviated titles of journals from PubMed database, in Search "Journals": <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>

## Manuscript components:

- Title page:** The title must provide a clear description of the content of the submission in 12 words. It should be followed by each author's name (first name, middle initial and last name) with respective degrees and any institutional affiliation(s), corresponding author's name, address and e-mail address. All authors should have participated sufficiently in the work to be accountable for its contents.
- Abstract** should not contain references or section headings. Typical formats are outlined below.
  - Study and Research paper:** Background (including study question, problem being addressed and why); Methods (how the study was performed); Results (the primary statistical data); Discussion, and Conclusion (what the authors have derived from these results).
  - Literature Review:** Objective (including subject or procedure reviewed); Method (strategy for review including databases selected); Results and Discussion (findings from and analysis of the literature), and Conclusion (what the authors have derived from the analysis).
  - Position paper:** Same format as in Literature Review.
  - Case Report:** Introduction (to general condition or program);



- Description of case (case data); Discussion (of case grounded in literature), and Conclusion.
3. **Key words:** Provide a maximum of 10 key words or short phrases from the text for indexing purposes. Terms from the Medical Subject Headings (MeSH) list of *Index Medicus* are preferred. Use the drop down menu in Search to choose MeSH <http://www.ncbi.nlm.nih.gov/sites/entrez>
  4. Main body of **Text:** Logically organize information. All facts purported to be facts, must indeed be true at the time of writing.
  5. **Acknowledgement:** Acknowledge any assistance or support given by individuals, organizations, institutions, or companies. Those identified here must have provided informed consent for you to cite their names as this may imply endorsement of the data and/or the conclusions.
  6. **Artwork** includes any illustrations, figures, photos, graphs, and any other graphics that clearly support and enhance the text in their original file formats (source files).
    - Acceptable file formats include .eps, .pdf, .tif, .jpg, .ai, .cdr in high resolution, suited for print reproduction:
      - i. minimum of 300 dpi for greyscale or colour halftones,
      - ii. 600 dpi for line art, and
      - iii. 1000 dpi minimum for bitmap (b/w) artwork.
    - All colour artwork submitted in CMYK (not RGB) colour mode.
    - Should be numbered sequentially and cited in the text.
    - The author(s) must acknowledge the source of previously produced artwork in the caption.
  - The editorial office reserves the right to reschedule publication of an accepted manuscript should there be delays to obtaining artwork with questionable print quality.
  7. **Data or Tables** may be submitted in Excel or Word formats. These tables or data may also be included at the end of the Word document.
  8. **Abbreviations and units** must conform to the *Système Internationale d'Unités (SI)*. SI symbols and symbols of chemical elements may be used without definition in the body of the paper. Abbreviations should be defined in brackets after their first mention in the text, not in a list of abbreviations.
  9. **Supplementary information:** Any supplementary information supplied should be in its final format because it is not subedited and will appear online exactly as originally submitted. Please seek advice from the Editorial Office before sending files larger than 1 MB.
  10. **Referencing Style and Citations:** The reference style is based on Vancouver style/Index Medicus at [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html) References should be numbered consecutively in the order in which they are first mentioned in the text. Use the previously assigned number for subsequent references to a previously named citation (i.e. no "op cit" or "ibid"). Use superscript arabic numerals to identify the reference within the text (e.g.<sup>1,2</sup> or <sup>3-6</sup>). The Reference section lists these in numerical order as they appear in the text.

(Condensed version, April 2009) 

## 2009 DENTAL HYGIENE PROGRAMS RECOGNITION AWARD

### PRIX DE RECONNAISSANCE 2009 POUR LES PROGRAMMES EN HYGIÈNE DENTAIRE

The Canadian Dental Hygienists Association is proud to announce the recipients of the Dental Hygiene Programs Recognition Award. This award officially recognizes dental hygiene programs whose faculty achieves 100% membership in CDHA. CDHA congratulates these faculties for demonstrating outstanding commitment to the dental hygiene profession to support and promote their national professional association, and for being exceptional role models to their students.

Camosun College, Victoria, BC  
 Canadore College, North Bay, ON  
 College of New Caledonia, Prince George, BC  
 University of Alberta, Edmonton, AB

L'Association canadienne des hygiénistes dentaires est heureuse de présenter les récipiendaires du Prix de reconnaissance pour les programmes en hygiène dentaire. Ce prix récompense officiellement les programmes en hygiène dentaire dont 100 % des membres du corps professoral à temps plein et à temps partiel font partie de l'ACHD. L'ACHD félicite ces corps professoraux de montrer de façon exemplaire, par leur appui à leur association professionnelle nationale et la promotion qu'ils en font, que la profession d'hygiéniste dentaire leur tient à cœur. Elle les félicite aussi de servir de modèles exceptionnels auprès de leurs étudiants et étudiantes.



THE CANADIAN DENTAL  
HYGIENISTS ASSOCIATION  
L'ASSOCIATION CANADIENNE  
DES HYGIÉNISTES DENTAIRE

## Knowledge transfer

CDHA staff

Critical thinking is an important, core ability for dental hygienists. One of the skills embedded in this competency is *information literacy*, the expertise necessary to synthesize and apply scientific literature in order to make the best clinical decisions.

Picture the following scenario:

A dental hygienist begins employment in a new dental practice. Accustomed to providing individualized care based on a client's needs, the dental hygienist discovers that in this office a one minute professional fluoride gel application is routinely provided to all clients. The rationale offered for this practice is that the procedure will not do any harm and will "probably offer some benefit". Recognizing that both serious ethical, and professional/clinical dilemmas exist, the dental hygienist decides to gather scientific evidence about the efficacy of topical fluorides.

### SCIENTIFIC EVIDENCE

#### CDHA

The first source consulted is CDHA's document *The Fluoride Dialogue: CDHA Position Statements* available from: <http://www.cdha.ca/content/newsroom/pdf/ProbeFluoride.pdf>. The question of fluoride effectiveness is explored primarily by reviewing meta-analysis of research data. Professionally applied topical fluoride has significant positive impact on the oral health of individuals *who are at high risk* for dental caries. Professionally applied topical fluorides may be used *following an individualized caries and oral health risk assessment*. In addition, the document states that there is not enough clinical research to support a one-minute over a four-minute exposure time.

#### CDA

The next source checked is the Canadian Dental Association's (CDA) position on the *Use of Fluorides in Caries Prevention* available from: [http://www.cda-adc.ca/\\_files/position\\_statements/fluorides.pdf](http://www.cda-adc.ca/_files/position_statements/fluorides.pdf). CDA recognizes and supports the professional topical applications of fluoride gels, foams, and varnishes in the prevention of dental caries *for individuals at risk*.

#### CAPHD

The dental hygienist then locates an evidence based resource for determining caries risk and outlining appropriate fluoride protocols at: <http://www.caphd-csdp.org/News/Fluoride.pdf>. The Canadian Association of Public Health Dentistry has adapted this Fluoride Decision Tool from the ADA Council on Scientific affairs in order to answer the following questions:

- Who might benefit from topical fluoride in the dental office?
- How often should topical fluoride be applied?
- If clients regularly have fluoridated water and fluoride dentifrice, do they need professionally applied topical fluoride?

Two relevant points are:

- For low risk children and adolescents, access to fluoridated water and toothpaste may provide adequate caries prevention.
- Application time for all fluoride gels and foam should be four minutes.

#### JADA

The complete article on evidence based clinical recommendations for professionally applied topical fluoride can be accessed at: <http://jada.ada.org/cgi/reprint/137/8/1151>

#### Cochrane Collaboration

The next resource located is a Cochrane Collaboration Review investigating the efficacy of topical fluoride (toothpastes, mouth rinses, gels or varnishes) for preventing dental caries in children and adolescents <http://mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD002782/toc.html>. The plain language summary of this intervention review presents the following information.

- Children aged 5–16 years who applied fluoride in the form of toothpastes, mouth rinses, gels or varnishes had fewer decayed, missing and filled teeth, regardless of whether their drinking water was fluoridated.
- Fluoride varnishes may have a greater effect but more high quality research is needed to be sure of how big a difference these treatments make, and whether they have adverse effects.

The full article can be accessed at: <http://www.jdentaled.org/cgi/reprint/67/4/448.pdf>

#### CDC


Concerned about the mention of possible adverse effects, the dental hygienist next consults the Centers for Disease Control and Prevention (CDC), Division of Oral Health, as well as the Health Canada websites. CDC website, <http://www.cdc.gov/fluoridation/other.htm>, provides a convenient chart which includes recommendations for topical fluoride use. The conclusion presented is that the routine use of fluoride gels and foams likely provides little benefit to persons *not at risk for tooth decay*—especially those who drink fluoridated water and brush with fluoride dentifrice.

#### Health Canada

Health Canada's website contains the following report, *Fluoride and Human Health*, accessed at: <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/environ/fluor-eng.php>. This site primarily deals with water fluoridation but does offer some helpful links and suggestions for keeping fluoride intake within the optimal range.

In summation, it is a professional responsibility for dental hygienists to use the best available information to provide care that meets a client's individual needs. The ethical principle of professionalism is described as the commitment to use and advance professional knowledge and skills to serve the client and the public good.<sup>1</sup>

#### REFERENCE

1. The Canadian Dental Hygienists Association. *Code of Ethics*. 2002. 

CDHA is pleased to announce the 2009 Dental Hygiene Recognition Program. This program, made possible through the contributions of CDHA's Corporate Partners, is designed to recognize distinctive accomplishments of CDHA members, including both practising and student dental hygienists. Entry details are available on the CDHA members' web site, in the "Networking and Recognition" section.

## Prize Categories

### CDHA dental hygiene baccalaureate student prize in participation with Crest Oral-B

One \$1,500 prize to be awarded to a dental hygiene student for contributing to the advancement of the profession in the context of educational and volunteer activities, and to be used towards education expenses.



### CDHA dental hygiene diploma student prize in participation with Crest Oral-B

One \$1,000 prize to be awarded to a dental hygiene student for contributing to the advancement of the profession in the context of educational and volunteer activities, and to be used towards education expenses.



### CDHA oral health promotion prize in participation with Crest Oral-B

These three prizes\* are awarded for the creative promotion of dental hygiene, including community impact, education, and innovative partnerships and include: Individual prize of \$1,000; Clinic Team prize of \$2,000; Dental Hygiene Schools prize of \$2,000. \* Half of each prize will be shared with the local dental hygiene society.

### CDHA leadership prize in participation with Dentsply

One \$2,500 prize to be awarded in recognition of a significant contribution to the local, academic or professional dental hygiene community through involvement and leadership.

For better dentistry



### CDHA achievement prize in participation with Sunstar G·U·M

One \$2,000 prize to be awarded to a student enrolled in the final year of a dental hygiene program who has overcome a major personal challenge during his/her dental hygiene education.

SUNSTAR



### CDHA global health initiative prize in participation with Sunstar G·U·M

One \$3,000 prize in recognition of a registered dental hygienist who has committed to volunteering as part of an initiative to provide oral health related services to persons in a disadvantaged community or country.

### CDHA visionary prize in participation with TD Insurance Meloche Monnex

One \$2,000 prize awarded to a student in a masters or doctoral program in dental hygiene in recognition of a vision for advancing the dental hygiene profession.



## Get involved and you could win!

Application deadline is **4 December 2009**. CDHA will make a public announcement of the prize winners in April 2010 during National Oral Health Month.

L'ACHD est heureuse de présenter le programme de reconnaissance en hygiène dentaire pour l'année 2009. Ce programme, rendu possible grâce aux dons des entreprises partenaires de l'ACHD, est conçu pour reconnaître les réalisations distinctives des hygiénistes dentaires et des étudiantes et étudiants en hygiène dentaire membres de l'ACHD. Les détails concernant les procédures d'inscription sont affichés sur le site Web réservé aux membres de l'ACHD, à la section "Networking and Recognition". La date butoir pour soumettre les demandes d'inscription aux différents prix est le **4 décembre 2009**.

## Catégories de prix

### Prix de l'ACHD destiné aux étudiantes et étudiants au baccalauréat en hygiène dentaire, décerné avec la participation de Crest Oral-B

Un prix de 1 500 \$ offert à une étudiante ou un étudiant en hygiène dentaire au niveau du baccalauréat pour sa contribution à l'avancement de la profession dans le cadre d'activités éducatives et d'activités de bénévolat.



### Prix de l'ACHD destiné aux étudiantes et étudiants au diplôme en hygiène dentaire, décerné avec la participation de Crest Oral-B

Un prix de 1 000 \$ offert à un étudiant ou une étudiante, inscrit(e) dans un programme en hygiène dentaire menant à un diplôme, pour sa contribution à l'avancement de la profession dans le cadre d'activités éducatives et d'activités de bénévolat.



### Prix de l'ACHD pour la promotion de la santé buccodentaire destiné à un programme d'hygiène dentaire, décerné avec la participation de Crest Oral-B

Les trois prix\* suivants sont offerts pour la promotion créative de la profession de l'hygiène dentaire. Les inscriptions seront jugées selon les critères suivants : créativité, planification, recrutement de bénévoles, éléments éducatifs, impressions et impact sur la collectivité, ainsi que sur la dimension innovatrice des partenariats : Prix individuel de 1 000 \$, Prix d'équipe clinique de 2 000 \$, Prix d'école d'hygiène dentaire de 2 000 \$. \* La moitié de chaque prix sera partagée avec le chapitre local de l'association d'hygiène dentaire des gagnantes et gagnants.

Pour une dentisterie de qualité



### Prix de l'ACHD pour le leadership, décerné avec la participation de Dentsply

Un prix de 2 500 \$ offert à un étudiant ou une étudiante, inscrit(e) dans un programme en hygiène dentaire, en reconnaissance d'une contribution significative à la communauté locale académique ou professionnelle de l'hygiène dentaire par son engagement et son leadership.

### Prix de l'ACHD pour une réalisation, décerné avec la participation de Sunstar G-U-M

Un prix de 2 000 \$ offert à un étudiant ou une étudiante, inscrit(e) en dernière année d'un programme en hygiène dentaire, qui a surmonté un défi personnel important durant sa formation en hygiène dentaire.



### Prix de l'ACHD pour un programme de santé mondial, décerné avec la participation de Sunstar G-U-M

Un prix de 3 000 \$ offert à un ou une hygiéniste dentaire autorisé(e) qui s'est engagé(e) comme bénévole dans un programme visant à offrir des services liés à la santé buccodentaire à des personnes faisant partie d'une communauté ou d'un pays défavorisé.



### Prix de l'ACHD pour l'esprit visionnaire destiné à un étudiant ou une étudiante de 2<sup>e</sup> ou 3<sup>e</sup> cycle dans un programme relatif à l'hygiène dentaire, décerné avec la participation de TD Assurance Meloche Monnex

Un prix de 2 000 \$ offert à un étudiant ou une étudiante, actuellement inscrit(e) dans un programme de maîtrise ou de doctorat lié à l'hygiène dentaire, en reconnaissance de sa vision de l'avenir pour l'avancement de la profession de l'hygiène dentaire.

## Online continuing education for dental hygienists

CDHA staff

The Internet is an increasingly valuable resource for finding quality continuing education (CE) that you can participate in from the comfort and convenience of your own home. Benefit from complimentary tutorials and courses that some organizations provide, as and when such freebies are offered. Check with regulatory authorities on course compliance with standards of practice, and if you are eligible for CE credits.

[http://www.cdha.ca/content/continuing\\_education/ce\\_home.asp](http://www.cdha.ca/content/continuing_education/ce_home.asp)

The Canadian Dental Hygienists Association (CDHA) offers continuing education online courses that have been assessed by dental hygiene regulatory authorities across Canada. Credits are assigned to each in order to simplify the process of submission for registrants. Non members are welcome to register for complimentary courses.

<http://www.continuedstudies.com/main/home.php>

This site boasts of a stash of webcasts, and gives you the most competitive prices you'll be able to find. Discounts are offered with additional purchases.

[www.Dentrek.com](http://www.Dentrek.com)

There are a variety of webcasts to choose from with a preview before purchase. Member rates start at \$25 USD per course. Also offered are free clinical tutorials on oral and dental products by the manufacturing companies. The home page is filled with sponsors' logos, and the key link is not clearly positioned. The specialty link to dental hygiene leads you to seven webcasts. [http://www.dentrek.com/webcasts/cewebcasts\\_searchresults.asp?x\\_Specialty=19](http://www.dentrek.com/webcasts/cewebcasts_searchresults.asp?x_Specialty=19)

<http://www.cescourses.com/cescourses/index.html>

Creative Educational Courses specializes in Dental Hygiene Board Review Courses. The package of courses stands at a discounted price of \$375 USD, and individual courses begin from \$25.

<http://en-ca.dentalcare.com/soap/conteduc/index.htm>

Operated by Procter & Gamble, the company behind Oral B products, this is another site with interesting and diversified courses that are free of charge. Use a login ID and password to register. You have the benefit of bilingual sites. <http://fr-ca.dentalcare.com/drn.htm>

[http://www.rdhu.ca/dental\\_hygiene\\_continuing\\_education\\_course\\_catalogue.php](http://www.rdhu.ca/dental_hygiene_continuing_education_course_catalogue.php)

rdhu presents complimentary as well as fee based webcasts. Course fees range from \$79 to \$159.

CDHA welcomes your feedback: [journal@cdha.ca](mailto:journal@cdha.ca)



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<http://www.friendsofhu-friedy.com>

Hu-Friedy offers free online continuing education courses on its new website.

[http://www.adha.org/CE\\_courses/index.html](http://www.adha.org/CE_courses/index.html)

The courses from American Dental Hygienists Association consist of self paced modules, each followed by a test. This site has 15 fee based courses, and a few complimentary ones consisting of a supplement and an online test.

<http://www.collegeathome.com/open-courseware/health-medical/dental-hygiene/>

This collection includes classes offered from the Tufts University School of Dental Medicine. Classes like Basic human pathology, Oral public health and community service program, Implant dentistry, and Preclinical complete denture prosthodontics cover topics in the public health care system, water fluoridation, cancer, treating patients with dentures, and treating elderly patients.

<http://www.dentalinstituteofamerica.com/dental-ce-courses.asp>

Courses for purchase range \$20–65 USD per course that you add to your shopping cart. There are no discounts for multiple purchases. You will be tested at the end of each course to receive a certificate of completion.

None of the websites lists the time to allocate for course completion in their brief about the individual course or webcast. 🐞



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## CLASSIFIED ADVERTISING

CDHA and CJDH are not responsible for classified advertising, including compliance with any applicable federal and provincial or territorial legislation.

### ALBERTA

**SPIRIT RIVER** Practice: Spirit River Dental Office. Position available: General practice dental hygienist. Term: 1 year maternity leave; full-time. Position description: Dental hygienist required 3 days per week for a 1-year maternity leave vacancy at a busy, well established family dental practice in Spirit River, Alberta. Spirit River is situated 80 km from Grande Prairie. No evenings or weekends. Substantial startup bonus provided. New grads welcome. Employment opportunity for two additional days/week at another practice. Contact: Dr. David Lahoda at home 780-864-4274 on weekends or evenings between 8:30 p.m. and 10:00 p.m. Mailing address: 5021-45 Ave Box 3000, Spirit River, AB T0H 3G0. Or e-mail [resumé@dslcorp@telus.net](mailto:resumé@dslcorp@telus.net). Fax: 780-864-4255.

**WHITECOURT** Practice: Family dental health. Position available: Full time dental hygienist. Position description: Seeking full time dental hygienist for well established dental practice in Whitecourt, Alberta. Contact: Dr. Buduroi. Please send résumé either by fax 780-779-2609, or e-mail [danabuduroi@hotmail.com](mailto:danabuduroi@hotmail.com). Mailing address: Box 1049, Whitecourt, AB T7S 1N9. Tel: 780-778-4646.

**CDHA CLASSIFIEDS** CDHA classified advertisements are listed on [www.cdha.ca](http://www.cdha.ca)>Members Only>Career Centre>Employment Opportunities>All/by province. Online advertisers can post their advertising in the *Canadian Journal of Dental Hygiene* for an additional fee. For pricing details, visit [http://www.cdha.ca/content/corporate\\_opportunities/hire\\_a\\_hygienist.asp](http://www.cdha.ca/content/corporate_opportunities/hire_a_hygienist.asp)

CDHA classified advertising reaches more than 14,000 members across Canada, ensuring that your message gets to a target audience of dental hygienists in a prompt and an effective manner. Contact CDHA at [info@cdha.ca](mailto:info@cdha.ca) or 1-800-267-5235 for more information.

**Executive Director's message, Rites of passage and progress**  
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societal stresses are sometimes overwhelming, they also provide a climate for incremental change and innovation. We are thankful for the national dental hygiene community's ability and interest in embracing an exciting future.

### REFERENCE

1. Aristotle. *Politics: The Complete Works of Aristotle*. Barnes J, editor. Princeton University Press. 1985;1.1:1252a:1-6.

**Message de la directrice générale, Rites de passage et progrès**  
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nous guideront dans le choix définitif des scénarios. Si la tension de la société nous semble extrêmement frustrant parfois, vos réponses procurent un climat favorisant une plus grande évolution et l'innovation. Nous vous remercions de la capacité et de l'intérêt de la communauté des hygiénistes dentaires de saisir à l'échelle nationale un avenir palpitant.

### RÉFÉRENCE

1. Notre traduction de Aristote. *Politics: The Complete Works of Aristotle*. Barnes J. Editor, Princeton University Press. 1985;1.1:1252a:1-6.



CDHA wishes to thank its  
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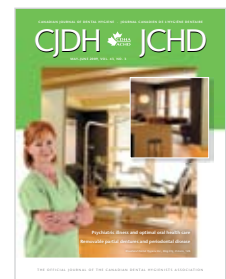


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### ABOUT THE COVER

The outer front covers in issues of volume 43 in 2009 feature "Independent Practices", supporting the spirit of entrepreneurship in dental hygienists who have broken ground to establish their own practices in Canada. This picture was one among the entries selected for the competition advertised between October and December 2008. Volume 43.3, May-June 2009. Photo credit: ©CDHA. Reproduced with the permission of Kathleen Bernardi.



Kathleen Bernardi, RDH, owns *Woodland Dental Hygiene Inc.*, and is committed to holistic health and well being of her clients that she extends to her office space and environment. Nestled in the woods of Oak Ridges Moraine, her clinic is being evaluated as the first dental hygiene office in Canada for certification by the Eco-Dentistry Association ([www.ecodentistry.org](http://www.ecodentistry.org)) of which Kathleen is a member. e-mail: [kathleen@woodlanddental.ca](mailto:kathleen@woodlanddental.ca) [www.woodlanddental.ca](http://www.woodlanddental.ca)



