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April 10-12, 2008

HIV/AIDS and its Significance for the Dental Profession

Essential reading for Canadian dentists
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This month, JCDA features 4 clinical articles on the epidemiology, oral manifestations and management of HIV-associated disease:

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Sitting at a departure gate in New York’s LaGuardia Airport on December 1, I was forcibly reminded that it was World AIDS Day as I watched a lengthy CNN report about the desperate plight of AIDS sufferers in Africa. HIV/AIDS is devastating sub-Saharan Africa, where early detection is almost unheard of and most cannot afford treatment. While Canada is affected much less dramatically, Health Canada has estimated that at the end of 2002, more than 56,000 Canadians were either infected by HIV or suffering from AIDS. Most shocking is the estimate that almost one-third of infected Canadians did not know it.

Early detection and treatment of HIV is transforming the quality of life and life expectancy of people afflicted by the virus. While there is still no cure and much ignorance surrounds the condition, you are more and more likely to see people with HIV/AIDS in your office. For this reason, Dr. Joel Epstein and colleagues at the University of Illinois at Chicago have 4 articles in this issue which update dentists on HIV/AIDS and its significance in dental practice.

When I began practising in 1980, I seldom wore gloves or facemasks and routine sterilization of handpieces was unknown. Suddenly, AIDS arrived on the scene and there was a lot of fear about this acute mystery disease. The dental profession, with CDA at the forefront, showed great leadership in adopting precautions designed to make all patients feel they could be treated safely in dental offices and to make dental care workers feel safe dealing with all patients.

Leadership in times of uncertainty can be a lonely furrow to plough; detractors said the likelihood of AIDS transmission in dental offices was very low and that universal precautions were unnecessary and too expensive. Over time, universal precautions became standard as a new generation of dentists came to naturally expect infection control practices.

HIV/AIDS is now considered a chronic condition. The profile of sufferers has changed over the past 25 years, with far more women and members of minority communities affected. The pattern of oral lesions associated with HIV infection — often the first signs of infection — is also changing. The overall messages in the HIV/AIDS articles are that dentists have a vital role to play in providing equitable health care to these patients, we must be well informed about the disease and be on the lookout for signs that could lead to early detection.

While in New York, I attended a very interesting lecture by Dr. Anthony Vernillo of New York University predicting that dentists may be at the forefront of early detection of HIV infection in the future. With the US Centers for Disease Control and Prevention (CDC) urging easier means of getting consent for HIV testing, with the emergence of rapid testing for HIV through swabbing oral exudates and with oral care providers being seen regularly by many patients, Dr. Vernillo believes the dental office is an ideal location for rapid detection of HIV infection, with follow-up referral to a physician for definitive diagnosis.

While there may be many hurdles to overcome before that becomes reality, Dr. John Molinari’s Point of Care article (p. 911) reminds us that serious infectious diseases can be transmitted from patient to patient in the oral health care setting. There is an old saying that “success breeds failure,” especially when we become complacent in our practices. Dr. Molinari’s article reinforces that there can be no grounds for complacency when it comes to the implementation of standard precautions in dental practice.

To coincide with World AIDS Day, I gave myself an early holiday gift. I became a member of the Organization for Safety and Asepsis Procedures (www.osap.org) for just $100 US. This non-profit organization with close links to CDC and other international leaders in infection control is the only organization truly dedicated to keeping the oral health community up-to-date on infection control. I felt good knowing I was doing a little bit to advance safety for dental patients and my colleagues in the oral care sector.
On behalf of the Canadian Dental Association, we extend to you and your family our sincere best wishes for a wonderful holiday season and a happy, healthy and prosperous New Year.

Darryl R. Smith, BSc, DDS
President

Joel Neal
Executive Director (Acting)
The Effect of the Rising Dollar on Dentistry

The rapid rise of the dollar has made most Canadians proud that our currency is now so strong against its American counterpart. However, economists and business analysts are portraying this as a catastrophe with dire consequences. With any change comes a period of adjustment, adaptation and new opportunities. I am no economist, but a look at the relationship between Canada and the United States tells me we are headed into a time of currency parity that is long overdue.

The pricing of many dental products in Canada is significantly higher than in the United States. This cannot be explained solely by differences in the exchange rate. While I recognize that we do have different regulatory environments, distribution cost structures and tax systems, it is difficult to believe that these issues, in combination with the exchange rate, can totally explain the significant price differences. Has free trade between Canada, the United States and Mexico actually brought its supposed advantages to Canadian dentists and, ultimately, the public we deliver care to?

Dr. Jim Armstrong, president-elect of the British Columbia Dental Association, who has significant postgraduate training in business administration, firmly believes that the differential pricing that has existed in the marketplace for so long is unjustified. The economic committees of the provincial dental associations need to examine the pricing issue and what can be done about it.

One advantage of our strong currency is that travel, particularly to the United States, has suddenly become much cheaper. At this time of year, as the first snowflakes fall, many of us already anticipate going south for a break from winter to recharge our batteries. Since dentists are required to obtain continuing education credits as part of licensure, there has been a growing trend of obtaining these requirements in the United States, which currency parity may accelerate.

Your local and provincial dental associations, universities and specialty organizations have a real stake in providing you with the programs you need to advance your career. And we have a personal responsibility to support our colleagues who provide continuing education programs and trade shows across Canada.

The myth that educational opportunities south of the border are better is false! Local organizers have found that many of the most sought after speakers have priced their services in US dollars. The financial barrier to getting these high-quality speakers has suddenly disappeared. Having travelled to meetings and continuing education programs from the smallest to the largest around the globe, I can tell you that bigger does not always mean better. If you want to hear a so-called “guru” in dentistry, you do not necessarily have to head to that next big meeting. The greatest learning experiences can occur at those small dental society and association meetings where presenters are integrated into the whole program and there is more opportunity for one-on-one interaction. Giant tradeshows can leave one’s head spinning and the more modest size of those in Canada let you see the same range of products, but in a friendlier setting.

Canada is the greatest country on earth, but you must see it throughout all its seasons to fully appreciate its beauty. Look at your travel plans for the next year, evaluate your continuing education needs and make an effort to attend some of these meetings brought to you by your colleagues. My 2008 calendar already has the dental association meetings of Manitoba in January and British Columbia in March pencilled in as part of my schedule as president of CDA, but I have also added Alberta in May and Prince Edward Island in June to my personal calendar as a start.

Please see the list of provincial and other dental association meetings on page 891. There is also a very special meeting in Toronto from April 10–12, where the Ontario Dental Association and CDA will partner to host a meeting that will showcase the best continuing education and products anywhere. I look forward to seeing you at these meetings!
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VELscope: The Debate Continues

I am dismayed at the article written by Dr. Balevi stating there is no evidence that routine use of the VELscope in general practice can save lives.1 His statistics on the prevalence of oral cancer are shockingly low. One person dies of oral cancer every hour of every day. Three times as many deaths are expected from oral cancer in 2008 than from cervical cancer.

Dr. Balevi’s article seems to minimize the importance of anything that would allow earlier detection of cancer and thus automatically save lives.

Dentists are the primary givers of oral care. As a general practitioner with a desire to do the best I can for my patients, it only makes sense that if I have a way to prevent even one death from oral cancer in my entire career, I should be willing to use any tool available to achieve this.

Does Dr. Balevi not believe in the use of radiographs as an adjunct to our visual exams? Should we not use adjunctive imaging tools to add to what we see — and in the case of radiographs and the VELscope, to detect what we cannot see? It is quite true the VELscope doesn’t have bells and whistles that go off when oral cancer is present, but beyond any doubt, it will alert me to a tissue change. After that, it’s up to me to use my knowledge, care, skill and judgment to determine what the next step should be. Yes, there will be false positives, but would we have made the tremendous strides in cervical cancers and pap smears without some false positives?

I would much rather be remembered as the dentist who sent my patient for further inspection of something that turned out to be not serious, than as the dentist who missed picking up a potentially cancerous lesion because it was not evident visually.

Clinical Research Associates (CRA) out of Provo, Utah, one of the most respected research organizations in the world, recently tested the VELscope and concluded: “Detection of oral cancer is the responsibility of the dental profession. CRA’s “First Look” indicates VELscope is an easy-to-use in-office oral cancer screening for precancerous and cancerous lesions, and is a significant adjunct to a normal soft tissue exam. Investigating suspicious lesions is potentially life saving and VELscope has been shown to fluoresce abnormalities not evident under white light examinations, helping identify pathology significantly earlier.”2

As a general practitioner, I would put my trust in the word of CRA rather than the personal opinions of Dr. Balevi. I am proud to let my patients know we care about them enough to embrace any new technology that can help them in any way.

Dr. Ken A. Neuman Vancouver, British Columbia

References

The Author Responds
I appreciate the opportunity to respond to Dr. Neuman’s letter as a forum to further the scientific debate on the VELscope. It is obvious that we both agree on the importance of the soft tissue examination as a routine part of our patients’ care. We simply disagree on the value of the VELscope in general practice to routinely screen and distinguish oral cancer from all other sorts of oral lesions. My claim that there is no evidence that the VELscope saves lives in general practice1 is supported by the British Columbia Oral Cancer Prevention Program2 as well as Lingen and others.3

Dr. Neuman, who I understand does promotional lectures on the VELscope on behalf of its manufacturer (LED Dental Inc.), did not address any of the issues and arguments I made, except to accuse me of citing “shockingly low statistics” on the prevalence of oral cancer. Interestingly Dr. Neuman states, without giving his source, that “one person dies of oral cancer every hour every day.” I am left to wonder which geographic context he is referring to (Canada, the United States or globally). I will speculate that he is probably referring to the United States.4 If so, Dr. Neuman may be surprised to learn that when you do the math, the mortality rate he reports is actually lower than the already “shockingly low” rate I cited in my article.

I reported a Canadian incidence rate of 12 new cases of oral cancer in 100,000 people, of which a third will die in 5 years.5 This comes to an estimated annual oral cancer mortality rate of about 4 deaths per 100,000 people.

Dr. Neuman essentially states that in a year there will be 8,760 deaths from oral cancer in the United States (i.e., 1 death/hr × 24hr/day × 365 days/year = 8,760 deaths). This annual mortality rate is significantly higher than the 5,370 deaths reported by the US National Cancer Institute.6 But even if we accept Dr. Neuman’s estimate, his mortality rate from oral cancer is only 2.92 in 100,000 (assuming a US population of 300 million). By either measure, oral cancer is “shockingly” rare.

Dr. Neuman makes another bold statement when he says that Clinical Research Associates (CRA) is “one of the most respected research organizations in the world.” According
to whom? Although many dentists may be familiar with CRA, it is a stretch, in my opinion, to put them in the same league as the many universities and health care research centres around the world who currently perform rigorous clinical research protocols. To further strengthen my argument, CRA is not indexed or cited on MEDLINE, which indexes over 5,000 scientific peer-reviewed publications.7

As dental professionals, our patients rely on us to critically appraise the VELscope and any other new dental technology that becomes available based on patients’ preferences and the merits of all the scientific and clinical evidence available instead of simply adopting it on the opinion of CRA or any self-proclaimed or perceived expert.

Dr. Ben Balevi
Vancouver, British Columbia

References

VELscope: The Math Behind the Numbers

Dr. Balevi, in your article on the VELscope,1 you estimate that the likelihood of a dentist encountering one case of squamous cell cancer will occur every 7–10 years. Would you be kind enough to show me the calculations which allowed you to arrive at this figure? I think that I have it right, but would like your input.

In any case, I really appreciated reading your article. As a profession we are so inundated at times with new technology that appears, on the surface, to be of value but which, on further investigation, might not live up to the promise in the advertisements. I think that you did a wonderful job and a great service to Canadian dentists who read the JCDA.

Dr. John F. Miner
Ottawa, Ontario

Reference

The Author Responds

You ask a very appropriate question that, in hindsight, I wish I had clarified in the article.1 The data:

• Population in Canada: 33 million2
• Number of dentists in Canada: 18,861 (as of January 2007)3
• Percent of population seen by a dentist (in last 12 months): 63.74
• Number of people per dentist per year = 12 new cases per 10 years, or 1.3 new cases per dentist per 10 years, or 1 new case in 7.7 years.

Again, thank you for your query. It is a good question that deserves an answer.

Dr. Ben Balevi
Vancouver, British Columbia

References

Quoting Canadian Sources

The authors of the peer-reviewed article on systemic antibiotic therapy appear to have forgotten that their paper was published in a Canadian journal. There were constant quotes and citations from US sources. Furthermore, no mention was made of spiramycin (Rovomycin), which is supposed to be secreted in curvicular fluid. I have been to a few periodontal courses in the United States, and when periodontists find out I am from Canada, they are envious because spiramycin isn’t available in their country.

Dr. Robert Letnick
Maple Ridge, British Columbia

Reference

The Authors Respond

It is true that our review of the literature dealt principally with studies conducted in the United States, which, by the way, is the principal source of recommendations in periodontology. This decision can be explained in particular by the fact that few studies aimed at assessing the effectiveness of antibiotics on
periodontal infections and that respect currently accepted methodological criteria (minimum number of subjects, confirmed operator expertise, blind testing required, etc.) have been carried out in Canada. Given that spiramycin is used more in Europe and that there have been few evaluations of its clinical efficacy in treating periodontitis, we chose not to include it in our review.

As spiramycin (Rovamycin) is a macrolide that demonstrates bacteriostatic action more specifically on Gram positive bacteria, it has the advantage of concentrating in tissues, saliva and crevicular fluid and is therefore of interest in the treatment of oral infections. A study conducted in Canada by Bain and others demonstrated that spiramycin, as a complement to scaling/planing, provides a statistically significant improvement in the probing depth of pockets compared with mechanical treatment alone. In addition, the combination of spiramycin and metronidazole (Rodogyl), due to the complementarity of the spectra of antibacterial activity and a synergic effect on parodontopathogenic bacteria, is the treatment of choice in France and is recommended by the French Health Products Safety Agency.

Dr. Philippe Bidault
Dr. Fatiha Chandad
Dr. Daniel Grenier
Laval University
Quebec City, Quebec

References

Dental Management of Cardiac Transplantation Patients

In the “Point of Care” article on the dental management of heart transplant patients published inJCDA, the authors state that, “Unless a patient develops cardiac valvulopathy, is immunosuppressed or has been directed by the cardiology team to have antibiotic coverage, prophylaxis is unnecessary.”

How can such patients not be immunosuppressed? They have to take immunosuppressants for their graft not to be rejected. But the authors’ statement above would imply that these patients should be given prophylaxis. This is a little misleading as they may be grouping the concept of immunocompromised (lowered absolute neutrophil count [ANC]) secondary to immunosuppressive therapy with immunosuppression.

Also, the authors fail to mention 3 potential problems with dental management of these patients:
1) Given that they are immunosuppressed, care must be taken by the dental practitioner not to spread any of the herpetoviridae family into these patients, as frequently their grafts can be compromised by cytomegalovirus (CMV) or herpes simplex virus (HSV) endocarditis.
2) Except for the table on the side effects of immunosuppressive medication, the authors make no mention that these patients can be pharmacologically anticoagulated or thrombocytopenic secondary to their medications, making them bleeding risk with the minor oral surgical procedures that the authors indicated can be performed on them.
3) Ultimately, the premise that conventional antibiotic prophylactic regimens (if indicated in the specific situation of cardiac transplantation) are effective is not mentioned. I fail to see how an immunosuppressed patient with an underlying complication of pancytopenia will respond to 2 g of amoxicillin, given that their risk of bacteremia (and type of infecting bacterial species) is different.

Dr. Amir H. Ajar
Vancouver, British Columbia

Reference

Response

We thank Dr. Ajar for his helpful and constructive feedback. We agree that the term “immunosuppressed” would be more appropriate to the clinical setting we described in the article, because heart transplant patients are immunosuppressed to prevent rejection. The “Point of Care” article focused on key issues for the general dental practitioner faced with the care of a heart transplant patient in the community. We agree with Dr. Ajar that the article did not cover all the issues. Dr. Ajar’s additional comments serve to emphasize the complexity of care of some patients, notably those in frail condition after a heart transplant, and the importance of cross-infection control. The article stressed the need for close liaison with the patient’s clinicians (e.g., family physician, cardiologist, cardiothoracic surgeon, infectious disease specialist) in their dental management. After such collaboration, the health status of some heart transplant recipients would clearly contraindicate routine dental care in the community, and such patients would be referred for specialist care or to a hospital dentistry clinic.

Dr. Krista Lee
Dr. Anthony Antoniazzi

Reference
Transient Binocular Vertical Diplopia Following Posterior Superior Alveolar Nerve Block

The article by Dr. Ngeow and others on transient loss of power of accommodation of the eye following inferior alveolar nerve block was interesting.1 We would like to report a case of transient binocular vertical diplopia.

A 35-year-old man was referred for extraction of decayed right upper second and third molars. His medical and dental history was unremarkable. He received 1.8 mL of 2% lidocaine (with 1:80000 adrenaline) for the posterior superior alveolar nerve block and 0.4 mL of 2% lidocaine for the greater palatine nerve block. These were administered using a needle measuring 0.55 mm in diameter and 25 mm in length. The extractions were uneventful. The patient complained of double vision as he was preparing to leave. On examination, he exhibited vertical binocular diplopia (in the downward and medial gaze) that lasted 30 minutes.

We believe this was due to paresis of the superior oblique muscle (innervated by the trochlear nerve), which causes diplopia in a vertical direction below the horizontal plane. Previous articles report diplopia caused by paresis of the lateral rectus muscle (innervated by the abducent nerve) that causes horizontal diplopia.2-4 Diplopia caused by posterior superior alveolar nerve block occurs either by the arterial, venous or bony routes.5 We excluded the arterial route in our case, as the aspiration was negative. Bony pathway was excluded as the patient was seated in a semi-supine position for the procedure. (The supine position helps the anesthetic agent to track upwards into the pterygopalatine fossa, then to the inferior orbital fissure and around the apex of the orbit affecting the trochlear nerve.)

We consider the venous route to have caused the diplopia, as the thin vessel walls of the pterygoid venous plexus facilitate penetration of the anesthetic agent into the blood, which, via the emissary vein, reaches the cavernous sinus where the trochlear nerve in the lateral wall gets anesthetized — the only barrier being the thin endothelial lining of the cavernous sinus (similar for the abducent nerve).5

This letter is to emphasize the fact that the type of diplopia can provide insight into the particular nerve involved.

Dr. Joanna Baptist
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Department of oral and maxillofacial surgery
A.B. Shetty Memorial Institute of Dental Sciences
Mangalore, India

References

Considerations for Extraction in Thalassemic Patients

Recently, a patient with thalassemia major was referred to us by our hospital’s physician for dental extractions. We wish to highlight aspects of care unique to this hereditary hematological disease since any dentist affiliated with a hospital is likely, at some time in their practice, to treat such a patient.

Thalassemia causes a deficiency of hemoglobin and is not curable, so patients typically receive multiple and frequent transfusions of whole blood, which eventually result in iron overload. Excess iron may lead to liver cirrhosis and cardiac siderosis. The dentist is advised to avoid large volumes of local anesthetic in view of the metabolism of amides in the liver and the effect of epinephrine on a myocardium already prone to arrhythmias. Reduced body weight may further limit the safe dosage of local anesthesia.

Pediatric thalassemic patients may be at risk for cardiac failure, which necessitates anxiety reduction protocols before and during dental extraction. Massive splenomegaly might necessitate splenectomy, which lowers systemic immunity. Diabetes mellitus, which is usually considered to affect older age groups, may predispose thalassemic patients to postextraction infection. In addition, poor leukocyte function as a result of iron overload further supports consideration of antibiotic prophylaxis for extractions.

Lastly, the disease is common in African, Asian and Mediterranean regions where multiple blood transfusions would carry a higher risk of transmission of HIV or hepatitis B or C because of less-than-ideal health care infrastructure.

In conclusion, dental considerations in this disease go beyond the recognition of “chipmunk facies” and “hair-on-end” appearance of bone; thalassemic patients need to have regular intravenous iron-chelation therapy with deferseroxamine. Because patient compliance may be poor, serum ferritin assessment may help gauge the overall fitness of these patients. With systematic consideration of general medical health, the thalassemic patient may safely undergo oral surgery.

Dr. Nakul Uppal
Dr. Mohan Baliga
Manipal College of Dental Sciences
Mangalore, India
Pediatric Decay Rates Are Too High

I read and enjoyed Dr. Smith’s recent column on decay prevention in the pediatric dental population and would like to add my views.

I have been in practice for 25 years and have seen, first-hand, the reported increase in pediatric decay rates. I provide general anesthetic services and dentistry to this very population and am constantly amazed at both the number of decayed teeth and the extent of the decay I am seeing. I have decided that the education of our patients, especially parents, seems to be failing.

The consumption of bottled water as a perceived healthier choice is a good place to start if this population is to access the benefits of fluoride. The introduction of the new sports drinks has not helped in decreasing sugar intake. I would argue that the biggest cause of decay is diet and the advent of the so-called “healthy” snack foods, especially fruit products with a sticky consistency, that have increased in the last 10 years. Over the past 5 or 6 years, we have advised parents of the very high sugar content of these perceived healthy food groups. In every case, when the consumption habit has stopped and a modest attempt has been made to improve oral hygiene, the decay rates have dropped close to zero. We see no siblings with decay in these families. However, we eventually treat all the members of families who continue to provide these snacks.

Unless we do a better job educating the public, I believe we will continue to see needlessly high decay rates.

David G. Harper
Hamilton, Ontario

Reference

Errata

Applied Research Article

In the abridged version of Dr. Murray Arlin’s article on sandblasted, large-grit, acid-etched and titanium plasma-sprayed implants, the follow-up times for the SLA and TPS implants were inadvertently switched. The correct follow-up times should have read: “Maximum and median follow-up times were 7.2 and 0.8 years, respectively, for patients with SLA implants, and 9.7 and 4.6 years, respectively, for those with TPS implants.” Also, early failure rates for SLA implants were 2.1% and not 1.9%, as indicated.

Readers should note that these errors appeared in the abridged version only. The electronic version of the article contained the correct information.

Reference

Email Address

The email address provided at the end of Dr. Wayne Halstrom’s “Point of Care” article was incorrect. Dr. Halstrom’s email address is: lwh1@telus.net. JCDA regrets the error.

Reference
Fraudsters Posing as Representatives from Insurance Carriers

On November 1, 2007, CDA notified its members of fraudulent incidents where individuals claiming to be representatives of insurance carriers called dental offices asking for all patient claims submitted during a particular period to be resubmitted. The callers alleged the information was needed because of a system failure. The dental offices were told either to fax the information or that a courier would pick it up.

These calls were not legitimate and CDA is asking members to be aware of potential fraud involving people claiming to be representatives of insurance carriers. This type of incident is not new and is very similar to incidents involving credit card companies and banks.

Should you receive any calls asking for patient or personal information and you are unsure if it is legitimate, do not provide any information and report the incident to the company in question immediately.

New Guarantor Policy for Passports

In the same alert, CDA also informed its members that the federal government implemented a new policy, effective October 1, 2007, that allows most Canadian adults to act as guarantors for passport applications. This will likely reduce the amount of requests to dentists to act as professional guarantors. However, the new policy does require guarantors to provide their Canadian passport numbers and dates of issue and expiry as part of the application process. It is your right to choose not to provide this additional information and to not act as a guarantor.

For more information, visit Passport Canada at www.ppt.gc.ca.

For more information on this alert, or past CDAlerts, visit the News and Publications section of CDA’s members’ website.

CDAlerts are sent as a special service to keep CDA members informed of urgent or time-sensitive information. To ensure you don’t miss out on these important email bulletins, please contact CDA at reception@cda-adc.ca, or phone 1-800-267-6354 to provide us with an updated email address.

CDA Store Off to a Successful Start

Within 2 weeks of its launch in mid-October, CDA’s online store had received more than 1,000 orders for CDA’s new Patient Information Brochures (PIBs). Marketing efforts have focused on the value of the brochures as an information resource for patients, and the ease with which the brochures can be ordered online have made them a popular item in dental offices. Orders are filled within 2–3 days with a 100% customer satisfaction policy. The most popular brochures so far are Your Child’s Oral Health, Dental Implants – Replacing Missing Teeth, Root Canal Treatment, Gum Disease – Preventing Tooth Loss and the Patient Information Brochure Sample Pack.

CDA members can use a discount code found on the members’ side of CDA’s website for 25% off merchandise.

Visit the store at http://store.cda-adc.ca.
CDA Helps Shape Media Attention on Dental Issues

CDA works year-round to keep on top of the issues of importance to dentistry. It closely monitors what is being said about dentistry and what is not said, but should be. Dr. Darryl Smith, president of CDA, recently sent 2 letters to editors of a national and a provincial newspaper in response to issues concerning dentistry.

One letter was in response to a news article in the National Post which reported that Dr. Brian Day, president of the Canadian Medical Association, called for universal coverage and access to medical and dental care as part of Canada’s health policy. The title of the article, “Extend dental coverage, doctors urge,” was misleading because the article itself did not touch on the issue of dental coverage. Dr. Day had made reference to this issue in a speech in which he discussed access to care and coverage for all members of society, and suggested that prescription drugs and dental care be included in universal coverage. CDA’s response outlines dentistry’s preferred option for addressing unmet dental needs, that is, a needs-based approach aimed at providing oral care services to socioeconomically disadvantaged Canadians.

The second issue that came to CDA’s attention was a letter to the editor of the Hamilton Spectator in response to an article about the VELscope, a new diagnostic tool for dentists to examine patients for oral cancer. The writer suggested that charging for this diagnostic test was simply a way for dentists and CDA to make a profit. In his response, Dr. Smith clarified that although the systems of payment are different, all medical and dental diagnostic services provide value for money spent.

References

Dr. Smith’s letters to the National Post and the Hamilton Spectator are posted on CDA’s website at www.cda-adc.ca/en/cda/news_events/media/submissions_2007.asp.

DAT Program Grows Online

The Dental Aptitude Test (DAT) program reached a new peak in 2006–2007, with 2,375 registrants applying to the program.

“In the last four years, the number of students applying to the DAT program has gone up 40%,” says Fatna Moussali, coordinator of the DAT program at CDA. “Medical students are applying, and many are telling me they think being a dentist is one of the best careers.”

This past September’s registration session saw the DAT program move entirely online for the first time, where 1,791 prospective students registered. The popularity of online applications is growing; 93% of November 2006 and February 2007 applicants registering electronically.

For more information on the DAT program, visit www.cda-adc.ca/en/dental_profession/dat/DAT_news.asp.
Dentistry Gets Seats on 3 Electronic Health Standards Groups

Alex Hoffer, manager of practice services at CDA, has been elected chair of the Standards Collaborative Working Group (SCWG) #3: Managing the Health System. The SCWG is part of a strategic committee formed by Canada Health Infoway.

Canada Health Infoway is a not-for-profit organization established in 2001 and made up of members from Canada’s 14 federal, provincial and territorial deputy ministers of health. Its mission is to accelerate the incorporation of electronic health information systems and electronic health records (EHRs) across the country. The group collaborates with health ministries, regional authorities, health care organizations and information system vendors to provide strategic direction for EHR implementation.

As chair, Mr. Hoffer will ensure his working group makes progress in establishing the feasibility of an electronic claims environment and in finalizing a new standard for electronic claims.

In addition to the seat on the SCWG, the Standards Collaborative Strategic Committee (SCCC) recently approved the extension of SCCC and the clinical subcommittee (CSC) memberships by one member each to include a seat for a dentist.

The SCCC is responsible for the coordination of health information standards across Canada and provides guidance on the processes and services provided by the Standards Collaborative. The CSC supports clinical alignment and harmonization across pan-Canadian health information standards and provides cross-clinical guidance on Standards Collaborative services and activities.

Dr. Tony Gill, past president of the British Columbia Dental Association, played a large role in lobbying for the inclusion of a dental representative in the Standards Collaborative governance structure. Participation in these groups ensures that dentistry is involved during the entire standards development process and that CDA can influence electronic standards that will affect the way dentists communicate with other health care providers, patients, insurers and other parties.

National Guidelines for the Disclosure of Adverse Events Proposed

The Canadian Patient Safety Institute (CPSI) held its annual general meeting in Ottawa on October 10, 2007. Established in 2003, CPSI is an independent not-for-profit corporation, operating collaboratively with health professionals and organizations, regulatory bodies and governments to build and advance a safer health care system for Canadians.

CDA, one of over 50 national organizations that are voting members of CPSI, was in attendance to receive an update on the development of National Guidelines for the Disclosure of Adverse Events. The guidelines are intended to assist and support health care providers, interdisciplinary teams, organizations and regulators in developing and implementing adverse event disclosure policies, practices and training methods across Canada.

There are legal considerations associated with disclosure of adverse events. It has been found that the frequency of litigation and/or claims against health professionals increases with non-disclosure and ineffective disclosure. Overall, disclosure does not appear to prompt litigation.

The draft guidelines can be found on the CPSI website www.patientsafetyinstitute.ca. The national guidelines are expected to be released in early 2008.
Why do we need standards? Many people probably think they are developed simply to make our lives difficult, but few realize their importance. In business or healthcare, international standards define aspects of safety, quality and reliability. Standards deliver market credibility and integrity by demonstrating a manufacturer’s commitment to its products and customer service excellence. Clearly standardization makes sense, especially since we now live in a global environment.

Did you know that an international standard specifies dimensions of a driver’s licence or credit card? Or that there are international standards for paper sizes? Apart from Canada and the United States, every other industrialized country uses European A4-size paper complying with International Organization for Standardization (ISO) 216, in which paper sizes have a height-to-width ratio of the square root of two (1.4142). If you cut one of these pieces of paper in half, it will still have the same height-to-width ratio. Perhaps the best example of why we need standards is ISO 8601, which specifies the numeric representations of date and time. No one can get mixed up if we all use the system YYYY-MM-DD to depict the date. For example, writing 2007-09-10 for September 10, 2007, not October 9, 2007.

Each of the approximately 15,600 international standards developed and published by ISO has a unique identifying number. When a product’s packaging indicates that it complies with an ISO standard, the date of the standard version being referenced should follow the number. A product may have been tested to comply with a standard published in 2002, but may not comply with an updated version published in 2007.

ISO international standards are not legally enforceable; however, they may be adopted by a country as national standards and thus become enforceable in that country, as is the case in the European Union.

ISO’s Central Secretariat office is in Geneva, Switzerland. Its funding is provided by contributions from member bodies (national standards organizations) who participate in the development of voluntary standards, as well as from the sale of published standards. In Canada, the member body is the Standards Council of Canada (SCC).

Consensus standards are developed by committees that are open to representatives from all interested parties. National standards organizations and the corporate sector provide funding to support expert delegates, who must be nominated by their respective member bodies, to attend national and ISO meetings. The majority of experts and delegates involved with developing international standards are volunteers. The Canadian Advisory Committee to ISO/TC 106 is comprised of experts appointed by SCC. Canadian experts participate in writing and developing standards, and the chair of the advisory committee votes on Canada’s behalf during the stages leading up to final publication. Dr. Benoit Soucy, CDA’s director of membership and professional services, is the current chair. Canada is recognized by the international community for its leadership in the development of dental standards and for its high quality of dentistry. It is clearly an advantage for Canada to participate in writing and developing international dental standards that also reflect the needs of Canadian dentistry.
2007 marks the 60th anniversary of ISO’s creation. The FDI World Dental Federation produced the first 9 international standards. In 1963, the newly formed ISO/TC 106 took on the responsibility for developing international dental standards, and since then Canada has been actively involved with international dental standards development. In 2004, CDA took over the responsibility for the secretariat of ISO/TC 106 from the British Standards Institute, who had held the secretariat for the first 41 years of its existence. Canada has held the secretariat of Subcommittee 1 – Filling & restorative materials, since its inception in 1963. In 2004, Canada assumed responsibility for the entire secretariat of ISO/TC 106, which is housed at CDA.

The ISO/TC 106 committee has 46 member bodies; 25 are active participants and 21 have observing status. In addition to ISO/TC 106, there are 7 subcommittees and 44 working groups who have input and participation from close to 300 international dental experts from the member countries. ISO’s dental standards committee works closely with the European Union, FDI and the World Health Organization.

With 13.4 billion in dental products and some 11.5 billion in dental consumer products sold worldwide annually, the development of international dental standards is vital to assure product safety and quality. ISO/TC 106 has developed 156 dental standards for products used by dental health care professionals and oral hygiene products used by the public.

During the course of a work day — seated on an operating stool, leaning over the patient in the dental chair, illuminated by a dental light and surrounded by the sound of various drills and suction equipment — no doubt the dentist’s thoughts are far away from routine dental procedures.

ISO standards specify everything from the maximum permitted amount of soluble arsenic or lead in a zinc oxide cement to the amount of ultraviolet irradiance emitted by a dental operating light, and an ISO designated system is used to record the location of each tooth for a patient’s dental chart. It may be surprising to many dentists just how many ISO standards are involved in routine dental procedures.

For example, there are numerous standards involved in placing an amalgam restoration and more than 12 standards for materials and equipment for cleaning, shaping and sealing a routine root canal. There are more than 20 ISO dental standards involving definitions, codes and designations, materials, devices and equipment used for the production and placement of an anterior jacket crown. Shaping the preparation for a crown requires a variety of instruments conforming to ISO standards.

In addition to performance standards, extensive coding systems are used to classify rotary instruments with limits for bore sizes and dimensions for discs, wheels and cutting burs. ISO standards have been developed for impression materials, die materials, casting alloys for copings and ceramic materials. Dental materials are also covered by ISO biocompatibility tests.

If the product you are using has a statement on the package that it meets the relevant ISO standard, it is your guarantee that the company’s product was evaluated to comply with the various international standard specifications.

Dr. Jones is professor emeritus of biomaterials, Dalhousie University. He is chair of ISO/TC 106 for the term of 2005–2010.

Highlights of ISO/TC 106 Meeting Held in Germany

The 43rd meeting of the International Standards Organization Technical Committee on Dentistry (ISO/TC 106) was held in Berlin, Germany, from October 15–20, 2007. Over 325 experts and delegates from 18 countries participated in 50 working groups and plenary meetings. Also in attendance were representatives from the FDI Dental World Federation, the European Committee for Standardization (CEN) and the World Health Organization’s Global Oral Health Program.

The Canadian delegation included Dr. Kathy Russell, Dalhousie University, Drs. Paul Santerre and Laura Tam, University of Toronto, and Dr. Benoit Soucy, CDA’s director of membership and promotional services. The 3 newest members to ISO/TC 106 are Dr. Asbjorn Jokstad, University of Toronto, Dr. Lex MacNeil, University of British Columbia, Dr. Lise Payant, Laval University. Dr. Jokstad joined Subcommittee 8 — Dental implants, Dr. MacNeil joined Subcommittee 6 — Dental equipment, and Dr. Payant joined Subcommittee 2 — Prosthodontic materials.

Dr. Peter Williams from the University of Manitoba has retired from the Canadian Advisory Committee to ISO/TC 106, where he was an expert for Subcommittee 2 — Prosthodontic materials. Many thanks to Dr. Williams for his important contribution to the development of dentistry standards.

Some highlights of the meeting include the creation of a working group to develop standards dealing with CAD/CAM systems for indirect dental restorations and a joint working group with the International Electrotechnical Commission to develop standards relating to dental electrical requirements. A new committee scope was developed and will be submitted to ISO’s Technical Management Board for approval. Two new chairs were nominated: Professor John McCabe from the University of Newcastle, United Kingdom, was appointed to Subcommittee 1 — Filling & restorative materials and Mr. Axel Pieper of the German delegation was appointed to Subcommittee 4 — Dental instruments.


A delegation from Canada will attend the next meeting of ISO/TC 106 in Göteborg, Sweden, from September 29 to October 4, 2008.
The question at the heart of the evolving public policy debate about the cost of health care for an aging Canadian population is: are Canadians prepared or adequately covered for the cost of health care during their retirement years? The answer has serious implications for dentistry.

According to CDA’s own national poll conducted this autumn, 73% of Canadians do not have a plan for how they will pay for dental care after retirement. Of those who do have a plan, 62% are relying on post-retirement benefits offered by their employer.

As a record number of Canadians are reaching retirement age, employer-sponsored health benefits are in sharp decline. According to a 2006 report, 57% of organizations surveyed plan to reduce post-retirement health care benefits over the next 3 years. Several of Canada’s large corporations have already made announcements to do just that, including Nortel, Sun Life, Bell, Sears and Manulife Financial.

Other companies are investigating options to deal with the rising demand for extended health benefits. Some are examining eligibility requirements — establishing stricter screening or a minimum number of years of service. About 1 in 3 companies said they plan to add or increase retiree contributions to their retirement health care programs to offset the rising costs of an aging workforce. Some plan to cap the amount paid out for certain medical services or eliminate services altogether. Regardless of the chosen path, the outcome is not likely to benefit dentistry in the long term. Additionally, none of these options have any impact on the rising cost of health care plans for wage workers and the self-employed.

References
In 2006, CDA developed a federal policy proposal to address funding gaps for the oral health care of retired Canadians. In our view, the federal government can play an important role in ensuring that retired Canadians have access to quality oral health care by creating financial incentives to health savings.

CDA supports the creation of Personal Wellness Investment Funds (PWIF), which can be used to fund medical expenses, including oral health expenses that are not currently covered under provincial health plans. Individuals would contribute funds incrementally to the account and draw upon the balance as required for medical services. The PWIF would be taxed similar to an RRSP or an RESP, providing preferential tax treatment to the extent that funds are used to pay for medical costs incurred by individuals age 65 and over.

The PWIF proposal was a top priority for the CDA government relations at the 2006 Days on the Hill and during a series of focused political meetings this fall. CDA is currently working with party leaders, cabinet ministers, opposition critics, supporting members of Parliament and the federal department of finance to strengthen the PWIF proposal and to discuss all policy solutions to increase access to oral health for Canadians in their retirement years.
Patient Information Brochures I
P/U Oct p 672
E/F
4/C
The British Columbia Dental Association recently released its final report related to the fourth Adult Dental Health Survey completed in December 2001. This latest report comprises results from Part I of the survey, which was completed by dentists and focused on the oral health status of their patients, and Part II, which asked patients to evaluate their own oral health and home health care.

The frequency of dental visits was used as an indicator of the importance patients place on oral health care. The report found a link between the frequency of dental visits and rates of decayed, missing and filled teeth (DMFT) and the frequency of visits and periodontal status. The highest DMFT score occurred in patients who visit their dentist every 6 months. The lowest score was for patients who visit the dentist once every 3 to 5 years. Interestingly, the group with the healthiest gingiva are those who see the dentist every 3 to 5 years. It appears from these data that those experiencing dental problems seem to seek care more frequently than those who are not.

In home care, tooth-brushing remained the same as the previous survey, with 97% of respondents indicating they brushed daily, and flossing was up slightly, from 36% to 40%. Twenty-two per cent reported using a daily mouth rinse. Results indicated that those seeking frequent care did so because of oral health problems, and were more likely to be conscientious of home care. Among the other major findings, patients with private insurance coverage were 17% more likely to have visited a dentist in the preceding 12 months than patients without coverage. Seventy-four per cent of patients with insurance, and 57% without, had visited a dentist in that time frame. This represented little change since the previous survey in 1996. Although patients were increasingly basing their decision on whether to attend the dentist on self-diagnosis and affordability, almost half of those without insurance indicated they see the dentist at least annually.

Insurance figured in the percentages for preventive treatments as well, with those insured receiving 20% more preventive treatments than those without insurance. A small decline in the overall number of treatments for the insured, however, indicated that preventive procedures may have reached a saturation point, or be limited by insurers. Still, findings indicated that patients with insurance have overall stronger oral health.

Seventy-five per cent of patients expressed happiness with the general appearance of their teeth. Patients receiving annual regular care reported the highest level of satisfaction. These patients also reported fewer biting, chewing or bleeding problems. Of those who did, the highest proportion was from those who visited the dentist more than every 6 months because they felt they had an ongoing oral health problem. Problems with biting and chewing were also found to increase with age, as well as with longer times between dental visits.

The percentage of patients restricting their intake of sugar declined slightly, dropping from 45% to 41%, with the percentage increasing significantly with age.

The average patient received 3.1 procedures per visit. The largest increase in numbers of procedures was among the 56–65 age group.

Ivey MBA Health Sector Program Aimed at Dentists

The Richard Ivey School of Business at the University of Western Ontario has launched a new MBA Health Sector Program aimed at dental professionals.

The purpose of the 12-month program is to help dentists balance the clinical and business sides of their profession by covering such day-to-day health care administration issues as finance, management, health care politics, intellectual property and pharmacoconomics, to create a stronger environment for patient care.

Information on the program can be found at www.ivey.ca/healthsector.
Shortage of Dentists in Saskatchewan

A combination of dental school graduates leaving the province and an aging practitioner population is resulting in a lack of practising dentists in Saskatchewan.

“The retention rates of our graduates is not stellar,” says Dr. Gerry Uswak, acting dean of the Saskatchewan College of Dentistry. “And given that the baby boom population makes up the greatest percentage of dentists across the country, we’re going to see a huge retirement over the next 5 to 10 years. Are there the numbers to fill those places?”

“A large part of it is, what are we doing to engender a feeling amongst our graduates that they want to stay here?” he asks. “What has to be done by the province, the schools, the communities to get them to say, people invested in me, I want to invest back in the province?”

Two-thirds of dental students now leave the province upon graduation. This is a problem, as Saskatchewan already has the second lowest number of dental professionals per capita in Canada. Rural Saskatchewan would be especially hard hit by the lack of dental services. Dr. Uswak believes additional incentives would help solve the problem. “If you look at other health care professions, the government provides bursaries or return-of-service agreements, or other incentives to set up practices in underserviced areas,” says Dr. Uswak. “If I spend my career as a dentist in the province, think of the money I’m putting back into the public coffers. The government is paid back tenfold or more, plus, you retain someone to care for the oral health needs of the population.”

Dr. Uswak also believes the time for a national discussion on dental manpower planning is long overdue. “We don’t have any concept in Canada of what an underserved area is,” he says. “In America, the government has thresholds. We don’t do that here. We don’t do oral health surveys (to) calculate treatment needs and have our manpower needs based on the oral health of our population. It points out the problem in this country that, until now, we didn’t have a national or provincial oral health surveillance system. We were not collecting the baseline information to make educated decisions and informed choices.”

Dr. Uswak would like to see a coordinated effort to achieve these goals. “Manpower and training and succession planning...it’s the responsibility of all of us as members of the profession working together, and sometimes I think we don’t,” he says. “We need a strong line between practice, education and our advocacy bodies, including CDA. Everyone working together for the same goals. That’s important.”

There are some big pluses to practising in Saskatchewan, adds Dr. Uswak. “Once you’re here, you see the beauty and the value of it. It’s a well kept secret. The myth that you don’t do well financially in Saskatchewan? Actually, you will do very well in terms of retained income. You’ll be in demand.”

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DIAC’s 12th Annual Future of Dentistry Survey in Next JCDA

JCDA will carry the Dental Industry Association of Canada’s (DIAC) 12th Annual Future of Dentistry questionnaire in the February 2008 edition.

Once again, your input is valuable in helping DIAC’s member companies, which include manufacturers, dealers, laboratories and service providers, develop products and services to satisfy the changing needs of Canada’s dentists. For more information, contact Eric Jones, president, Eric P. Jones & Associates Inc., 90 Welland Avenue, St. Catharines, ON L2R 2N1; tel.: (905) 684-2771; fax: (905) 684-4601; email: ejones@vaxxine.com.
New President of Canadian Association of Orthodontists

Dr. Gordie Organ of Mississauga, Ontario, has been elected president of the Canadian Association of Orthodontists (CAO). Dr. Organ was elected at the CAO’s 2007–2008 annual general meeting in St. John’s, Newfoundland.

Dr. Organ has practised orthodontics in Mississauga since 1979. He has also been an associate in dentistry and a clinical instructor at the University of Toronto departments of undergraduate and graduate orthodontics for over 25 years. He is a past president of the Ontario Association of Orthodontists and a recipient of their Distinguished Service Award.

New Executives for CARDP

The Canadian Academy of Restorative Dentistry and Prosthodontics (CARDP) held its annual general meeting in Winnipeg, Manitoba, from September 13 to 15, 2007. In addition to attending the scientific program, the group elected its 2007–2008 executive officers. The 2008 CARDP meeting will be held in Vancouver, British Columbia, from September 11 to 13.

CAE Names New Officers and President

The Canadian Academy of Endodontics (CAE) elected its officers for 2007–2008 at the Academy’s annual general meeting in Vancouver this past summer, and Dr. Wayne Maillet was named president.

Dr. Maillet received his BSc from Mount Allison University and his dental degree from Dalhousie University. He obtained his Certificate in Endodontics at the University of Toronto. Dr. Maillet maintains a private practice in Halifax and Truro, Nova Scotia, and is a part-time dental faculty member at Dalhousie University, where he has been a clinical instructor and lecturer for the past 20 years. He is a past president of the Nova Scotia Dental Association and the Nova Scotia Dental Specialists Society.

Officers named alongside Dr. Maillet were president-elect Dr. Ian D. Watson, treasurer Dr. Michael Hepworth, constitution and bylaws officer Dr. Majinder Lalh, executive secretary Dr. Wayne Acheson, and past president Dr. Jeff M. Coil.

CAP Names New President

Dr. Dan Price is the new president of the Canadian Academy of Periodontology (CAP). He received his certificate of periodontics from Dalhousie University after graduating with his dental diploma from University of Manitoba.

Dr. Price is a fellow of the Royal College of Dentists of Canada and a diplomate of the American Academy of Periodontics. He served as an instructor in the surgical periodontics course for the Canadian Armed Forces and is currently a periodontal examiner at the Royal College of Dentists of Canada.
New Dentist-in-Chief at Hospital for Sick Children

Following an international search, Dr. Peter Judd has been named dentist-in-chief at Toronto’s Hospital for Sick Children. Dr. Judd will also continue his duties as associate professor of dentistry at the University of Toronto.

Dr. Judd is an alumnus of distinction of the University of Western Ontario School of Dentistry and received his diploma in pediatric dentistry and master’s of science degree from the University of Toronto. He has been a fellow of the Royal College of Dentists of Canada since 2003.

Members in the News

Dr. Alastair E. MacLeod of Point Edward, Nova Scotia, was inducted into the Cape Breton Business Hall of Fame in September for his distinguished accomplishments in business and the community. In 1983, Dr. MacLeod founded the Mayflower Dental Centre in Sydney, Nova Scotia, which today employs 34 people, making it one of the largest dental practices in Canada.

If you are a member of CDA and have news that you think might be of interest to JCDA readers, please send your information to publications@cda-adc.ca for our consideration.

OBITUARIES

Bookhalter, Paul: Dr. Bookhalter of Regina, Saskatchewan, passed away on July 28. He was a 1949 graduate of the University of Manitoba and a graduate of the University of Oregon.

Bourgeault, Roger Edward Michael: Dr. Bourgeault of West Vancouver, British Columbia, passed away on October 16, 2007. A 1965 graduate of the University of Manitoba, Dr. Bourgeault practised in West Vancouver for 42 years.

Boyko, William: A 1950 graduate of the University of Toronto, Dr. Boyko of Oshawa, Ontario, passed away on December 12, 2006.

Burgess, Elizabeth Ann: Dr. Burgess of Edmonton, Alberta, passed away on October 17, 2007. She was a 1979 graduate of the University of Alberta.

Ferland, Ronald: A 1968 graduate of the University of Montreal, Dr. Ferland of Saint-Constant, Quebec, passed away on August 1.

Kazemi, Narges: Dr. Kazemi of Saint-Bruno, Quebec, passed away in September. She was a 1997 graduate of McGill University.

Kreutzer, Jakob (Jack): Dr. Kreutzer of Toronto, Ontario, passed away on September 30, 2007, at the age of 98.

Mombourquette, Terry J.: Dr. Mombourquette of Sydney, Nova Scotia, passed away on August 26. He was a 1981 graduate of Dalhousie University.

Turcotte, Jean-Yves: A 1958 graduate of the University of Montreal, Dr. Turcotte of Quebec City, Quebec, passed away on August 12. An oral and maxillofacial surgeon, Dr. Turcotte was a past director of the faculty of dental medicine at Laval University.

Watts, Dr. Gordon C.: Dr. Watts of Simcoe, Ontario, passed away in July. He was a 1973 graduate of the University of Toronto.

Wintermans, Thomas: Dr. Wintermans of Thunder Bay, Ontario, passed away on July 26. He graduated from Dalhousie University in 1973.
# Provincial and Other Dental Association Meetings

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<tr>
<th>Dental Association of PEI Annual Meeting</th>
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<tr>
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<td>Woodstock, Prince Edward Island</td>
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<td>June 12–14, 2008</td>
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<td>Email: <a href="mailto:dapei@pei.sympatico.ca">dapei@pei.sympatico.ca</a></td>
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<tr>
<td>College of Dental Surgeons of Saskatchewan-2008 Annual Scientific Session</td>
<td>TCU Place</td>
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<td>Saskatoon, Saskatchewan</td>
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<td>September 11–13, 2008</td>
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<td><a href="http://www.saskdentists.com">www.saskdentists.com</a></td>
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<td>Association of Canadian Faculties of Dentistry Annual General Meeting in conjunction with the ADEA 85th Annual Session and Exposition</td>
<td>Hilton Anatole</td>
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<td>Dallas, Texas</td>
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<td>March 31–April 1, 2008</td>
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<td><a href="http://www.adea.org">www.adea.org</a></td>
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<tr>
<td>2008 Canadian Association of Oral and Maxillofacial Surgeons Annual Conference</td>
<td>Fairmont Newfoundland</td>
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<td>St. John’s, Newfoundland</td>
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<td><a href="http://www.caoms.com">www.caoms.com</a></td>
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<td>Canadian Academy of Periodontology Annual Meeting 2008</td>
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<td>Edmonton, Alberta</td>
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<td>June 26–28, 2008</td>
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<td><a href="http://www.cap-acp.ca">www.cap-acp.ca</a></td>
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<tr>
<td>86th General Session &amp; Exhibition of the International Association for Dental Research, concurrently with the 32nd Annual Meeting of the Canadian Association for Dental Research</td>
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<td><a href="http://www.dentalresearch.org">www.dentalresearch.org</a> or <a href="http://www.cadr-acrd.ca">www.cadr-acrd.ca</a></td>
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<td>45th Canadian Academy of Endodontics Annual General Meeting</td>
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<td><a href="http://www.caendo.ca">www.caendo.ca</a></td>
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<tr>
<td>Canadian Association of Orthodontists</td>
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<tr>
<td>2008 Canadian Academy of Pediatric Dentists Annual General Meeting</td>
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### Manitoba Dental Association 124th Annual Meeting and Convention
- **Location**: Winnipeg Convention Centre
- **Dates**: January 24–26, 2008
- **Website**: www.manitobadentist.ca

### Northwest Territories & Nunavut Dental Association and Yukon Dental Association
- **Location**: TBD
- **Dates**: Tentatively scheduled for February 2008
- **Email**: nwtnudentalassoc@theedge.ca

### Pacific Dental Conference 2008
- **Location**: Vancouver Trade and Convention Centre
- **Dates**: March 6–8, 2008
- **Website**: www.pdconf.com

### Ontario Dental Association Annual Spring Meeting, in conjunction with the Canadian Dental Association
- **Location**: Metro Toronto Convention Centre - South Building
- **Dates**: April 10–12, 2008
- **Website**: www.oda.on.ca

### 2008 Jasper Dental Congress
- **Location**: Fairmont Jasper Park Lodge
- **Dates**: May 22–25, 2008
- **Website**: www.abda.ab.ca

### 37th Annual Convention, Ordre des dentistes du Québec
- **Location**: Palais des congrès de Montréal
- **Dates**: May 24–27, 2008
- **Website**: www.ordredesdentistesduquebec.qc.ca

### New Brunswick Dental Society Annual Meeting
- **Location**: Fairmont Algonquin
- **Dates**: May 30–31, 2008
- **Website**: www.nbdental.com

### Newfoundland and Labrador Dental Association AGM and Convention
- **Location**: Fairmont Newfoundland
- **Dates**: June 5–7, 2008
- **Website**: www.nlda.net

### Nova Scotia Dental Association Annual Meeting
- **Location**: Rodd Grand Hotel
- **Dates**: June 6–8, 2008
- **Website**: www.nsdental.org
2007 FDI Annual World Dental Congress

The beautiful city of Dubai, United Arab Emirates, a juxtaposition of dazzling modernity and Middle Eastern tradition, was the site of the 95th Annual World Dental Congress. This is the second time an FDI Congress has taken place in a Middle Eastern country. The first was in Tel Aviv, Israel, in 1966.

Members of the official Canadian delegation were Dr. Wayne Halstrom, leader of the delegation and CDA immediate past president, Dr. Darryl Smith, CDA president, and Dr. Deborah Stymiest, CDA president-elect. Drs. Jack Cottrell, CDA past president, and John O’Keefe, editor-in-chief and CDA’s National Liaison Officer to FDI, were official alternate delegates.

Thousands of visitors attended the conference at the Dubai International Convention and Exhibition Centre, a state-of-the-art venue for the FDI World Parliament’s business meetings, scientific program and exhibitions. The scientific program, titled “Dental Diversity in the Land of Tomorrow,” boasted an impressive line-up featuring more than 130 invited international speakers. Two Canadians presented during the scientific program: Dr. Debora Matthews was part of a panel discussion on “Oral Health and Diabetes,” and Dr. David Isen presented “Pain Management in Dentistry.” The program also featured specialty workshops and forums on oral health promotion. Dr. Peter Cooney, chief dental officer of Canada, discussed the process Canada is currently using to revise its fluoride policies in a presentation to the Science Committee Forum of the FDI Joint World Dental Development and Health Promotion Committee, Public Health Section.

This year’s World Dental Exhibition was one of the largest in FDI history, with more than 340 companies showcasing advanced dental technology and current trends and product development in dentistry.

The 2007 Welcome Ceremony featured a spectacular light show with dance, music and local folklore presentations. Attendees also witnessed the symbolic installation of Dr. Burton Conrod of Sydney, Nova Scotia, as the first Canadian president of FDI. Dr. Conrod officially assumed duties as president for a two-year term from Dr. Michèle Aerden at the end of the congress.

Dr. Burton Conrod Becomes FDI President

CDA hosted a private reception in Dr. Conrod’s honour to celebrate his installation as FDI president. More than 100 people gathered to mark this significant achievement for Canadian dentistry. In addition, CDA’s annual Canadian Reception, always a popular event with official delegates, was held at the Jumeirah Beach Hotel and attended by 350 guests from over 50 FDI member associations and international organizations.

CDA would like to thank Procter & Gamble for its generous sponsorship of the CDA Canadian Reception. CDA is also grateful to GlaxoSmithKline for its sponsorship of the private CDA reception for Dr. Conrod.

Bilateral Relationships

While at the congress, the Canadian delegation strived to create new links and reinforce existing ones with national associations who face similar professional and political issues to those of CDA. There is great benefit to sharing information and resources related to common issues such as access to care, accreditation and dental workforce shortages. This endeavour began at the American Dental Association meetings in San Francisco in the fall, and the delegation had
very good meetings with representatives of Australia, Germany, Great Britain, New Zealand and the United States. The intention is to forge and strengthen more of these relationships at future international venues.

**Partnerships with Industry Leaders**

The Canadian delegation also sought to establish or strengthen relationships with dental industry leaders in order to discuss their vision of the future of the profession. Meetings were held with 5 companies and the International Dental Manufacturers Association. These meetings provided valuable insights into how the dental profession and the dental industry can work together as key strategic partners.

**Education Committee**

This year, the Canadian delegation threw its support behind Dr. Denis Forest of Montreal, Quebec, in his bid for a seat on FDI’s Education Committee. Dr. Forest is editor of the Journal of the Order of Dentists of Quebec (ODQ) and the director of the Journées Dentaires of ODQ. He is professor emeritus at the faculty of dentistry of the University of Montreal. No stranger to working with FDI, Dr. Forest was chair of the local organizing committee for the 2005 FDI Congress in Montreal. The Education Committee’s main role is organizing the scientific program of the Annual World Dental Congress and other continuing educational activities of FDI, as well as to address dental education issues.

There were 11 candidates for 4 positions, 2 positions voted on by the General Assembly and 2 by the Council. Unfortunately, although support for Dr. Forest was strong throughout the election, he did not win a seat.

**Oral Health Policy Strategy**

The FDI World Dental Parliament brings together representatives from FDI member associations to establish the organization’s strategic direction and adopt policy statements that influence the world of dentistry. During the FDI General Assembly, delegates from member countries, invited guests and organization representatives discuss and review global policy statements on oral health. This year, CDA lobbied extensively for changes to the policy development process at FDI that would see policies written at a more global level. Individual countries would then fill in the details appropriate to their own jurisdictions, ensuring the resulting policies would be relevant and not in conflict with those of their countries.

**University of Sharjah Joint Dental Education Project**

Dr. Johann DeVries took Dr. Darryl Smith and a small group of international delegates, including leaders from the Canadian, Australian and American Dental Associations on a tour of the facilities at the University of Sharjah.
University of Sharjah, located in one of the 7 emirates of the United Arab Emirates. Dr. DeVries is dean of the faculty of dentistry at the University of Adelaide, Australia, and former dean of the faculty of dentistry at the University of Manitoba. In 2005, the University of Adelaide and Sharjah University reached an agreement that saw the University of Adelaide provide the curriculum for the bachelor of dental surgery degree at Sharjah’s new college of dentistry. Visitors were very impressed with the extremely modern and technologically advanced dental facilities at Sharjah University.

Resources Launched in Dubai

The congress was the site of unveiling for FDI’s first Dental Ethics Manual. Intended as a resource guide for dental professionals, the manual is divided into 6 chapters: principal features of dental ethics, dentists and patients, dentists and society, dentists and colleagues, ethics and research, and responsibilities of dentists and the future of dental ethics. Dr. John R. Williams, an adjunct professor in the faculty of medicine at the University of Ottawa and former director of ethics at the Canadian Medical Association and the World Medical Association, wrote the manual with the support of the FDI Working Group on Ethics and Legislation and an advisory panel. The manual can be downloaded from FDI’s website.

In addition, with the assistance of the French Dental Association, the “Tobacco or Oral Health” advocacy guide, produced jointly by FDI and the World Health Organization, was released in French. The Chinese version of the guide was released last year at FDI’s Annual Congress in Shenzen, China.

Bridging A Gap That Probably Wasn’t There

By Dr. David Isen

I was fortunate enough to receive an invitation to speak at this year’s FDI World Dental Congress in Dubai. Although honoured to be asked, I have to admit that since I am Jewish, I had some reservations about travelling into an Arab country, as did some of my family and friends. However, upon discussion with people who had been there and a little research regarding the political climate, it appeared that it would be quite safe. So off I went, confident I would be okay, but still unsure about what I would experience.

It became clear to me very quickly that Dubai is a city made up of many different faces. People from the Philippines, Pakistan, India and throughout the Middle East live among impossibly modern skyscrapers that overlook squalid neighbourhoods. The streets are filled with people clad in different national and religious dresses and the latest European fashions. At first, Dubai’s seeming lack of identity because of all this contradiction made it seem a little cold. And then I started to get to know the people.

My first social encounter occurred the night I arrived, when I was invited to dinner with a number of FDI delegates. I broke bread with 9 others from Jordan, Lebanon, Saudi Arabia, Kuwait, Oman and Egypt and, boy, did we have a great time! They knew I was Jewish because we discussed politics a little, yet still they treated me with open arms and camaraderie. During the evening, many of them gave me their business cards and invited me to their countries. The fellow from Oman offered to take me on a tour of his country the next morning!

My next beautiful experience was with a Syrian man who works for a dental company in Dubai that was exhibiting at the show, who took it upon himself to act as my host. He drove me here and there, took me on a desert safari and, best of all, invited me into his home and introduced me to his wife and children. His family was so warm, hospitable and engaging. I don’t think they could have fed me enough chocolate and Syrian coffee. I was very touched by their generosity and gestures of friendship. That encounter is the best memory of my adventure.

This trip reinforced for me that politics do not have to influence relationships. It should be only the inherent good in each of us that draws us together. This is possible for everyone should they choose this path. I think that the vast majority of people in the world are inherently good, despite the political climate in which they live. However, this is hard to see when we are inundated daily with sad news stories based on the hate, greed and killing that politics can breed. What amazes me about my experience in Dubai is that it took a dental convention to bring these thoughts forward in my mind. The community of dentistry is alive and well and FDI offers us a great opportunity to travel around the world and experience this unity. If we can, we should all take advantage of it. As Depeche Mode sings, “People are people. . . .”
Canadian Professor Wins Prize at International Poster Contest

Dr. Kunio Komiyama, professor emeritus at the University of Saskatchewan, stands before his winning poster at the FDI/Unilever Poster contest.

Dr. Kunio Komiyama, professor emeritus at the University of Saskatchewan College of Dentistry, was the winner of the 2007 FDI/Unilever Poster Award. Dr. Komiyama’s project was on the antibacterial effects of solar-powered TiO2 semiconductors on *porphyromonas gingivalis* and *prevotella intermedia*. Of the 170 posters presented, 12 were chosen as finalists and 6 were selected as winners. Each winner received free registration to a future FDI congress and a monetary prize toward their participation.

Future FDI Congresses

The 2008 Congress will be held in Stockholm, Sweden, from September 24 to 27. The 2009 congress will take place in Singapore and the 2010 congress will be held in Salvador da Bahia, Brazil.

For more information about FDI World Dental Federation, visit www.fdiworldental.org.

International Audience for Canada’s Fluoride Policy

The appointment of Dr. Peter Cooney as chief dental officer has provided Canada with a voice in a variety of international dental fora, namely the FDI World Dental Federation (FDI) and the World Health Organization (WHO). In 2006, Dr. Cooney was appointed chair of the International Chief Dental Officers Public Health Section of FDI. It was in this role that he was asked to speak to the Science Committee Forum of the Joint World Dental Development and Health Promotion Committee, Public Health Section in Dubai about the process Canada is undertaking to revise its fluoride policies. Dr. Cooney’s presentation was very well received by forum attendees.

In spring 2006 Health Canada initiated a review of exposure to fluorides from drinking water and its potential health effects. Three scientific reviews were provided to Health Canada in 5 specific areas: the total daily intake of fluoride, dental fluorosis, other health effects, risk assessment, and the risks and benefits of water fluoridation. Specialists in fluoride research and policy experts were brought together for a 2-day consultation to discuss evidence-based recommendations. The meeting participants reached a consensus and Health Canada’s federal, provincial and territorial stakeholders are now vetting the resulting recommendations.

The Office of the Chief Dental Officer has used the results from the scientific research and resulting recommendations to help facilitate the formation of consistent national fluoride guidelines between Health Canada and CDA. The 2 organizations have already reached an informal agreement to release uniform fluoride statements in early 2008.

At the same time that Canada initiated its review of fluoride, a global review of fluoride and oral health was also taking place. This global consultation, held in Geneva, Switzerland, in November 2006, was jointly organized by FDI, the International Association for Dental Research (IADR) and WHO. The goal was to discuss the development of effective legislation, necessary directives and programs to ensure access to fluoride for oral health in all countries. The consultation reaffirmed the efficacy, cost-effectiveness and safety of the daily use of fluoride and that universal access to fluoride is part of the basic right to health. These results not only support the use of fluoride internationally to improve oral health, but also reinforce Canada’s fluoride policy work.
Partnering to Reverse the Trend: Early Childhood Caries Conference Report
September 28–29, 2007, Calgary, Alberta

More than 250 allied professionals and community stakeholders gathered in Calgary to learn about the latest research on early childhood caries and explore how they can work together in new ways to reduce the rates of this increasingly common disease.

Early childhood caries has become one of the most prevalent childhood diseases worldwide. After decades of decline, it has begun to increase in children. This preventable disease profoundly affects the quality of life for thousands of Canadian children and their families, and increases the burden on the health care system.

Calgary’s oral health programs and pediatric dentists formed the Early Childhood Caries Taskforce to address the issue, which led to this seminal conference. The aim was to provide the dental community and non-dental stakeholders with an opportunity to focus on the current science behind early childhood caries, the roles of family and community, and to explore collaborative new pathways to prevent the disease.

Forum for Active Participation

Partnersing to Reverse the Trend: Early Childhood Caries Conference was hosted by the Calgary Health Region and the Canadian Academy of Pediatric Dentistry. The conference provided a forum for participation by a wide range of delegates, including dental professionals from private practice and public health, academics, pediatricians, child development professionals and representatives of dental professional bodies, government and community organizations serving families with young children and disadvantaged populations.

The models for early childhood caries prevention that have been used in the past seem inadequate, and initiatives need to expand beyond dentistry to involve other professions and community interests. This diverse group of delegates learned that some segments of the population are experiencing the worst level of childhood caries ever. They were challenged to look at the problem from their perspectives and bring that view to a new understanding of the disease. As the conference closed, everyone was encouraged to make a personal commitment to taking action.

In particular, the conference sought to:

- Explore the knowledge base of early childhood caries with a focus on new research.
- Review early childhood caries risk factors and behaviours and include the perspectives of caregivers and interdisciplinary professionals.
- Review, discuss and generate interdisciplinary strategies to minimize early childhood caries (biological, psychosocial, public health, prevention, policy change and access to care).
- Collect information for presentation in formal documentation.

The inclusion of two dozen community stakeholders who work with young children...
and at risk families brought an exciting and motivational flavour to the event. The stakeholders represented various health and social concerns:
- Aboriginal health
- community health
- education
- government health benefits
- immigrant and refugee health
- nutrition
- pediatrics
- poverty reduction
- primary health care
- social work

Different Perspectives
The first half of the conference focused on joint discovery and discussion. Delegates heard presentations from these speakers:

Overview of early childhood caries as viewed by a pediatric dentist
Dr. Ross Anderson, head, division of pediatric dentistry, faculty of dentistry, Dalhousie University, and chief of dentistry, IWK Health Centre, Halifax, Nova Scotia

Local, provincial and national data about the extent of early childhood caries, cost of care, issues around access
Dr. Luke Shwart, manager for community oral health services for the Calgary Health Region and Dr. Peter Cooney, chief dental officer for Health Canada

The medical perspective of early childhood caries: contributing factors and consequences
Dr. Glenn Berall, gastroenterologist and nutrition specialist, chief of pediatrics at North York General Hospital and assistant professor, department of pediatrics, University of Toronto

The scientific background of early childhood caries prevention: what works and what doesn’t
Dr. Jacques Véronneau, assistant professor in the faculty of dentistry at McGill University and a specialist in dental public health for the Cree Nation, James Bay, Quebec

The broader context of early childhood caries: impact on the family and diverse communities, the social determinants of health, upstream and downstream strategies
Dr. Rosamund Harrison, professor and chair of pediatric dentistry, University of British Columbia

Stimulating discussion followed the presentations and included dialogue about infectivity of dental caries, fluoridation, use of products to reduce caries risk, infant feeding practices, healthy school guidelines, impact of stress, genetic component, high-risk populations, parental responsibility, public policy, cross-disciplinary action and leadership.

Collaborative Strategies
The second half of the conference focused on collaborative brainstorming and action planning. To begin, the 6 presenters were asked: “If you had a question, the answer to which would make the most difference in reversing early childhood caries, what would that question be?” The questions proposed by the presenters were:

1. How can we create a national awareness of early childhood caries as a health issue for politicians, caregivers and families?
2. What is the most effective way to change the determinants of early childhood caries in Canada?
3. How can we work together to decrease the number of families living in poverty in Canada?
4. How can we get the public to understand that oral disease in general among kids is the number one chronic disease in Canada. How then do we impart the idea that there are the same risk factors related to oral health as there are for other chronic diseases?
5. When will we have a vaccine against tooth decay?
6. How can we open the medical model to a community model to reach caregivers and make everyone responsible for those children to take it on?

Thought-provoking discussion included challenges in the Aboriginal population; health promotion messages and risk behaviours; opportunities for collaboration; understanding of disease transmission and screening; payment for anticipatory guidance; terminology; coordinated prenatal screening and early childhood screening; educating other health professionals; reporting early childhood caries; dental neglect and ensuring equal access to dental care; coping with increased demand on the dental profession; and enlisting corporate support to cover costs of screening.

The conference facilitator led delegates through a brainstorming process using the 5 key methodologies found in the Ottawa Charter for Health Promotion. Discussion and a voting process selected these 5 key strategies as a place to start.

Creating supportive environments (establishing policies that support healthy physical, social and economic environments)

Strategy: Use agency structures and existing tools to encourage a healthy environment for children’s oral and general health, e.g., Canada’s Food Guide, multidisciplinary workforce, well-baby clinics, health care professional curricula and dental coverage for children under 4 years of age.

Reorienting health services (identifying opportunities in health care for addressing the determinants of health, counteracting inequalities from how health services are organized)

Strategy: National policy with joint responsibility of health care system and caregivers (medical assessments in infancy, consistent messaging among dentists, allied health groups and child care professionals) to take action on early childhood caries to promote health care, address “damage control,” prevent dental neglect and ensure availability of prevention and treatment dollars.

Building healthy public policy (developing health-enhancing policies, supporting healthy choices and promoting healthy living and working conditions)

Strategy: Ensure governments include oral health in overall health programs, with the goal of improving childhood health for Canadian children. Policies need to address the barriers to good oral health from the perspective of communities and include the clients and providers.

Developing personal skills (improving individual’s behaviour that will enable that individual to deal effectively with the demands and challenges of everyday life)

Strategy: Piggyback skill development, relationship building and follow-up with other community health/health promotion programs, e.g., link to well-baby clinics and other places where child is seen on a regular basis.

Strengthening community action (collective efforts by a community to increase control over the factors that influence health)

Strategy: Social marketing targeted at public and health professionals.

Some presenters and delegates noted that, if new strategies are undertaken, the group must ensure there is evidence before selecting initiatives, build on learnings from other health issues, not overlook the determinants of health, involve other health disciplines, coordinate local and national efforts, measure the effectiveness of initiatives that are undertaken and be prepared to address access to care issues if more families seek dental care for their children before they reach age 1.

Many disciplines can play important roles in the effort to reduce early childhood caries. These common themes emerged:

- Terminology should change to ‘early childhood dental disease’ (instead of early childhood caries) to more accurately reflect the seriousness of the situation (see Debate article on p. 929).
Observations

The planning committee was struck by the delegates’ passionate concern for the topic and for the children affected. One presenter remarked, “Before coming here I thought I was alone. And now I see another 250 of you who care.” Delegates engaged vigorously in the strategizing process. Some ideas targeted all socioeconomic groups and others focused more directly on those living in poverty. The common understanding is that early childhood caries is a general health issue, not just a dental issue.

It is time for multidisciplinary groups to work collaboratively on a national level to combat early childhood caries. The next step is to explore leadership possibilities for such collaboration. Funding must be secured to support communication between groups and to develop initiatives. In the meantime, delegates are starting to follow through on the personal commitments they made at the conference.

Conclusion

Early childhood caries is a complex and common disease. Although it affects families from all facets of society, it stalks the disadvantaged, and despite treatment, recurs too often. Evidence-informed strategies for preventing and minimizing the disease exist, but require more research and action at a young age before most children ever see a dental professional. Dental professionals should spearhead efforts to involve health and allied professionals working with young families to help prevent the disease.

Future Action

The conference demonstrated how multidisciplinary planning generates collaborative willingness to address early childhood caries. Representatives from a number of organizations indicated an interest in participating in a national initiative (pediatrics, pediatric dentistry, general dentistry, dental hygienists, immigration services, refugee health, Aboriginal health, public health, child welfare, community health services, nutrition services, child and women’s health, breastfeeding groups, government and professional organizations). Much work needs to be done.

Logistical considerations must be addressed before a national task force can be established. Decisions need to be made about terms of reference, membership, funding, administrative support, level of operation and methods of communicating between members. Health Canada may be able to provide leadership but is unable to fund the group or its initiatives. Efforts need to focus on promising and best practices.

The conference planning committee expresses its appreciation to the Calgary Health Region and the Canadian Academy of Pediatric Dentistry for hosting the conference, and to the Alberta Dental Association and College, Health Canada, GC America Inc., RBC Royal Bank, Henry Schein Ash Arcona, Patterson Dental, Oral B, Sunstar, Calgary and District Dental Society and the College of Registered Dental Hygienists of Alberta for their generous sponsorship.

Early Childhood Caries Conference Planning Committee
Dr. Allan Narvey (co-chair), Dr. Luke Shwart (co-chair), Vickie McKinnon, Linda Lathrop (facilitator), Dr. Krista Baier, Dr. Robert Barsky, Andrea Blakie, Dr. Warren Loepky and Pauline White.
English: Toothbooth

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English: New
French: CDA Seal of Recognition Ad
Once again, the RRSP season is upon us. For many people, that simply involves pulling together as much money as possible to put into their plans for tax relief — often after having a brief conversation with their advisors about choosing funds.

Fortunately, participants in the Canadian Dentists’ Investment Program’s RRSP — the CDA RSP — can expect a much higher level of investment service. Here are just some examples of the ways we can assist you in making the most of your RRSP this season.

**Potentially Increase Your Returns**

By contributing the maximum amount to your CDA RSP (which is the lesser of $19,000 or 18% of your earned income for the 2007 tax year) before the contribution deadline, you’ll not only minimize your tax payable to the greatest extent possible, you’ll also build up more savings for retirement.

To help you accomplish this for the coming 2008 tax year, consider making your maximum contribution in regular (e.g. monthly) instalments instead of making a lump-sum contribution. In the industry, investing smaller amounts on a regular basis like this is called “dollar cost averaging”. Buying CDA investment funds in this fashion can allow you to purchase more units in a fund when markets are low — making your investments perform better.

To set up automatic contributions to your CDA RSP, simply use our no-cost Pre-Authorized Chequing (PAC) service. With PAC, your contributions are regularly deducted from your bank account at specified intervals.

**Show You if Your Plan Is Properly Funded**

If you’re like many dentists, you hope to achieve a specific income level from your RRSP when you reach retirement to obtain the lifestyle you want. But how can you be certain you’ll achieve that goal?

Fortunately, the Investment Program offers a no-cost service that can help you. It’s called Retirement Insight™. It’s a written retirement savings progress report, which shows you how much annual income you can expect to achieve in retirement. If the report shows you’ll have less retirement income than you’re hoping to achieve, you can speak to a certified financial planner at Professional Guide Line Inc. to discuss strategies that may help you achieve your goals. For example, you may learn that your savings need to be invested more aggressively, or that you’ll need a pool of savings on top of your RRSP.

(For a more detailed analysis of your finances — including your registered and non-registered investments, as well as your insurance and estate planning needs — call to learn about the Investment Program’s ClearView Financial Plan™. A valuable planning tool, it provides dentists with a comprehensive financial plan at no cost.)

**Help You Avoid Having a Portfolio that’s Too Safe or Overly Aggressive**

To help you achieve your retirement savings goals, we can assist you in establishing (and maintaining) an asset allocation model for your RRSP investments, based on your tolerance for risk and the time remaining until retirement.

For example, suppose you’re a 40-year-old dentist with a relatively high tolerance for risk. You’ve positioned your portfolio so that 60% of your assets are invested in equity funds, while 40% are invested in cash and income funds.

Consider what happens if your cash and income funds performed better than your equity funds. As a result, your portfolio becomes weighted 40% in equities and 60% in cash and income funds. Because your asset allocation is out of alignment, your portfolio has become too conservative to allow you to reach your retirement savings goals. To get back on track, you need to rebalance your portfolio by selling some of your cash and income funds in favour of buying more equity funds. This helps ensure that your portfolio adheres to your tolerance for risk. Conversely, if your equities outperform, rebalancing can bring your risk down to where you are comfortable.

To make portfolio rebalancing effortless, use the Investment Program’s Portfolio Rebalancing Service. Available at no-cost, the service automatically rebalances your portfolio every 6 months (or annually) to ensure it conforms to your personally approved asset allocation model.

**Help Ensure You’re Investing Tax-Efficiently**

Having the wrong types of investment funds in your RRSP could result in significant dollars being lost to the tax man. It’s usually a good strategy to place interest-bearing investments (e.g. bond funds) inside your registered plan and to hold investments that enjoy preferential
tax treatment (e.g. dividend funds) outside your RRSP, in a non-registered portfolio. We can help ensure your RRSP investments are best structured for tax-efficiency, and advise you about other tax-saving strategies — including establishing a spousal RRSP and our distinctive “Mini RIF” technique.

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Decisions you make today about your RRSP investments can have a profound impact on your financial well-being at retirement. To maximize your retirement savings, you need the information and sound advice that a financial professional can provide. For no-cost, non-commissioned planning advice from licensed advisors who work exclusively for dental professionals and their families, call us at Professional Guide Line Inc.

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**THE AUTHOR**

*Michael Holmes* is vice-president, Investment Services, Professional Guide Line Inc. — A CDSPI Affiliate.

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You ask  WE ANSWER

When I search the web for clinical information, how can I avoid getting too many results, many of which are not relevant?

One answer is the specialized search engine Google Scholar, which searches the web but limits the search to more academic websites. It is as easy to use as Google, the web’s most popular search engine, but you will notice a difference in your search results.

Google Scholar indexes and searches articles, theses, books, conference abstracts, technical reports and other literature not included in many other databases (e.g., PubMed/MEDLINE), such as unpublished papers and conference proceedings. It also includes PubMed references. It covers peer-reviewed journals in a variety of disciplines, with better coverage of science and technology than the humanities.

How do I get started?

Go to http://scholar.google.ca/ to access the basic Google Scholar search screen. Although this service has been available for more than 3 years, it is still in beta testing, so improvements and changes may happen at any time. Enter search terms on the basic screen or do a more detailed search from the Advanced search screen (link to the right of the search box).

A Google Scholar search can lead you to references that are available in full-text, or to documents for which only an abstract or an extract is available. Many references will lead you to a publisher’s website, where you can usually download a copy of a full-text article for $35–$40 US. Members can order article copies from CDA’s Resource Centre at a significantly reduced price.

You may find references marked with “[citation]” that are not hyperlinked. These are articles which other scholarly articles have referred to, but are not available online. This serves as a reminder that there is still a body of scholarly literature that exists only in print. Even if an article is available online, it’s not often available for free.

You may also note “Cited by” below each of your resulting references. This link lists sources that have cited the document originally retrieved in the search and may help to locate other subject-related documents. Google Scholar only includes articles that are indexed within its database, so it cannot be relied upon as a comprehensive citation analysis. Likewise, clicking “Related Articles” will help to identify other references on your topic of interest within the Google Scholar database.

Some references may be marked with a reference to other versions. This is helpful for locating preprints, abstracts, conference papers or other adaptations that may be more easily accessible.

What’s the downside to Google Scholar?

While Google Scholar is a very easy to use search tool with many helpful features, you should also be aware of its limitations.
Many questions about how Google Scholar functions remain unanswered. The selection process for sources indexed is not completely clear. How does Google determine whether or not something is scholarly? Moreover, what is missing? How many databases, journal titles and other websites are included? Webcrawler software takes care of Google Scholar indexing, so it can take some time for new items to be indexed. How current is the information?

Dealing with results can be problematic. Google uses a complex algorithm to rank relevance. Unlike many other databases, current articles are not displayed first, which means that you may miss the most up-to-date articles. Results cannot be sorted by author, title, date or publication. Always be prepared to look beyond the first and maybe even the tenth page! At the top of your results page, there is a link to “Recent articles.” When you click this, results are re-sorted, but not by a strict date sort. According to Google Scholar Help, “The new ordering considers factors like the prominence of the author’s and journal’s previous papers, as well as the full-text of each article and how often it has been cited.”

Unless you are quite specific in your search or are researching an obscure topic, you may get several hundred or thousand results, just like you would with a regular Google search. When faced with an overwhelming number of references, it is hard to believe that Google Scholar searches only some of the scholarly literature. And you are still not getting everything!

Google Scholar offers an advanced search page, which allows you to get more specific with your search terms, search by author, publication or date, or limit to selected subject areas. Google Scholar gathers data from many sources, and sometimes information may be incomplete or even incorrect. A date-restricted search will not return articles for which Google Scholar was unable to determine a date of publication. Likewise, different sources may use different name formats, so it may be necessary to search a number of variations (e.g. [author: "J Doe"], [author: "JD Doe"], or [author: "John D Doe"]). The bottom line is to use limits with caution.

What’s the verdict?

For clinical information, Google Scholar provides superior results compared to a regular Google search. Because of its limitations, Google Scholar should be a supplement to, rather than a replacement for, sources such as PubMed/MEDLINE and the Cochrane Library. Google Scholar is not a definitive source in your search for the best evidence, but it can be a helpful starting point.

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Renée de Gannes-Marshall is the information specialist at the Canadian Dental Association.
When crowns are made with poor marginal fit, an adverse gingival response, particularly inflammation and edema, is sure to follow. However, if poorly fitting crowns are later replaced with properly fitted crowns, the gingival tissue can heal and the damage can be reversed. Dentists can now select from a wide variety of nonmetallic restorations. The restorations that are suitable for cases with demanding esthetic requirements include all-porcelain crowns and porcelain veneers, which are associated with clinical success and long service when used in the anterior region of the mouth.1-3 They offer life-like esthetic results that can be highly satisfying for both the patient and the dentist. In the following clinical case, such restorations were used to address an adverse gingival response combined with a severe esthetic problem caused by improper use of porcelain-bonded-to-metal crowns.

Clinical Case

A 25-year-old otherwise healthy man presented with unsightly and failing porcelain-fused-to-metal crowns on his maxillary central incisors and asked the practitioner to improve their appearance (Fig. 1).

The gingival length of the crowns was mismatched by 2 mm, and 1 crown looked wider in mesiodistal dimension than the other. From the facial perspective, metal was evident at the incisal edges, perhaps because of wear. The crown margins were poorly fitted, and there was extensive hyperplasia and inflammation of the gingival tissues. The colour of the porcelain veneer was too yellow and did not match that of adjacent teeth, and the glaze layer was partially lost.

Assessment of the periodontal pocket depth on the buccal aspects of the central incisors revealed that gingivectomy to bring the margins of the gingival tissues of both teeth to the same level would leave sufficient depth for adequate biologic width.

The maxillary lateral incisors were too small relative to the central incisors, which resulted in lack of harmony in the set-up of the anterior teeth. Radiographic examination revealed that 1 of the 2 central incisors had previously undergone endodontic treatment.

Treatment: Plan and Execution

Following removal of the old crowns, tooth 11 was to undergo post and core build-up. Gingivectomy was to be carried out to optimize clinical crown length for...
teeth 11 and 21. Both of these teeth were to be re-prepared to receive all-porcelain crowns. Teeth 12 and 22 were to be prepared to receive porcelain veneers that would increase their size (for better harmony with the central incisors).

Scaling and polishing was carried out to remove calculus and stain. When the 2 old crowns were removed, the core material on tooth 11 was also dislodged (Fig. 2). Gingivectomy was performed to increase the clinical crown length of tooth 21 to match that of tooth 11. Tooth 11 was restored with a nonmetallic post and a composite core build-up and was then re-prepared to receive an all-porcelain crown with a wrap-around shoulder finish line. Tooth 21 underwent the same re-preparation. Teeth 12 and 22 were prepared to receive porcelain veneers.

Figure 2: The 2 old crowns were sectioned and removed. When the crown was removed from tooth 11, the core became dislodged, so it was also removed.

Figure 3: After scaling, gingivectomy was carried out to increase the clinical crown length of tooth 21 to match that of tooth 11. Tooth 11 was restored with a nonmetallic post and a composite core build-up and was then re-prepared to receive an all-porcelain crown with a wrap-around shoulder finish line. Tooth 21 underwent the same re-preparation. Teeth 12 and 22 were prepared to receive porcelain veneers.

Figure 4: The 2 all-porcelain crowns and the 2 porcelain veneers as received from the laboratory.

Figure 5: The fitted surfaces of the 2 porcelain crowns. The core was made of an aluminum oxide-based porcelain.

Figure 6: Immediate postoperative view following cementation of the 2 porcelain crowns and the 2 porcelain veneers. Although there is significant improvement in tooth esthetics at this point, the gingival tissue has not completely recovered, and there is evidence of gingival hyperplasia.

Figure 7: Postoperative view 3 years after placement of the crowns and the porcelain veneers. There is better healing of the gingival tissues and proper shaping of the interdental papilla between teeth 11 and 12.

Although there is significant improvement in tooth esthetics at this point, the gingival tissue has not completely recovered, and there is evidence of gingival hyperplasia.

Porcelain crowns with aluminum oxide core were made for teeth 11 and 21, with matching feldspathic porcelain veneers for teeth 12 and 22 (Figs. 4 and 5). The 2 crowns were first secured with a resin cement that had performed well under laboratory testing conditions. The try-in paste of the resin cement was tested with the 2 veneers to determine the optimum color match, and the 2 veneers were then cemented with the appropriately shaded cement. Although some manufacturers of all-porcelain crowns are highly confident
of the strength of their products, to the point that they do not recommend the use of resin cement for cementation, research has shown that microleakage occurs when resin cement is not used, and this may cause recurrent caries over the long term. Facial photography of the restored teeth (Fig. 6) immediately after the procedure showed significant improvement in the esthetics of the teeth relative to the preoperative view, but the gingival tissues had not yet completely recovered and there was evidence of some remaining gingival hyperplasia. A facial view obtained 3 years after placement of the crowns and the porcelain veneers (Figs. 7–9) provided evidence of proper healing of the gingival tissue between teeth 11 and 21 and proper shaping of the interdental papilla. A lingual view obtained at the same time showed ideal shaping of the interdental papilla between teeth 11 and 21 (Fig. 10).

This clinical case demonstrates the consequences of poor-quality crown restorations with badly fitting margins and for which there was no attempt to control dimensional matching. Although the age of the porcelain-fused-to-metal crowns was unknown, over the years they had broken down and become extremely unsightly. When the replacement crowns were planned, provision was made to ensure that the crowns would be matched in size (by gingivectomy to increase the length of the clinical crown of tooth 21). The original preparations were refined to ensure definitive finish lines that would be easy for the technician to follow. The impression-taking procedure was carried out carefully, with proper gingival retraction to ensure that all important details of the margins were captured by the impression material. The margins of the new crowns were ideally fitted to the finish lines of the preparations. This aspect is important because it eliminates the causes of gingival irritation and promotes proper healing of the gingival tissues.

This case provides clear evidence that if the interproximal gingival spaces are not violated by overextension of the crown margins, proper healing of the gingival tissues can occur.

Conclusion

The preparation of crown restorations with proper marginal fit and appropriate dimensions results in healthy gingival tissues and satisfactory esthetic results.

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References

What is the significance for dental professionals of the recently documented case of patient-to-patient transmission of hepatitis B?

While speaking with dental professionals in recent years, I have found an increasing concern on their part with the potential occupational risk of hepatitis C virus (HCV) and HIV infections, even though clinical and scientific evidence has overwhelmingly shown hepatitis B virus (HBV) to be the most infectious bloodborne pathogen. The success of dental infection control practices over the past 20 to 30 years, especially vaccination of health care workers, safer handling of contaminated sharps, and routine use of gloves, masks and eyewear, has changed how some health care workers perceive HBV. As a result, many health care providers have turned their attention to other infection control issues, such as contamination of the water in dental units and environmental asepsis. This shift in thinking is not surprising, given that the last instance of dentist-to-patient transmission of HBV was reported by the Centers for Disease Control and Prevention (CDC) in 1987. In contrast to the situation for medicine, where sporadic HBV outbreaks continue to occur, dentistry has a good record for safety with regard to transmission of HBV and other infectious diseases. Unfortunately, a recent report by Redd and others has brought HBV back to the forefront of attention among dental practitioners. The following discussion highlights the major aspects of this unusual case and considers its implications for dental professionals.

**Frequency of HBV Transmission in the Dental Setting**

The recently reported case, summarized below, is the only proven instance of patient-to-patient transmission of a bloodborne pathogen in a dental setting and the first documented transmission of HBV to dental patients since 1987. Earlier investigations of HBV transmission in dental practice settings, carried out in the 1970s and 1980s, demonstrated that some dentists had unknowingly infected patients with this resistant virus, which is able to remain viable for up to 7 days in blood outside the body (Table 1). Since then, adherence to infection control practices, including vaccination of health care workers, has been extremely successful in preventing dental transmission of HBV; in contrast, sporadic reports of viral transmission in medical facilities continue to appear.

The Case

A 60-year-old woman had 7 teeth extracted in a single visit to an oral surgery office in October 2001. She had no risk factors for HBV infection, and had not been vaccinated against HBV. She began to exhibit symptoms of HBV infection in February 2002, but subsequently recovered. This acute case of HBV infection was reported to the New Mexico Department of Public Health in April 2002. Subsequent investigation determined that the source patient was a 36-year-old woman who had undergone extractions by the same oral surgeon and clinical staff in a procedure that ended 161 minutes before the second one began. The younger woman, who had been an HBV carrier (positive for hepatitis B surface antigen and hepatitis B e antigen) since at least 1999, had had a high viral load at the time of the oral surgery. However,

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**Table 1** Reports of patients infected by dentist carriers of hepatitis B (United States only)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of patients infected</th>
<th>Type of practitioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>13</td>
<td>General dentist</td>
</tr>
<tr>
<td>1975</td>
<td>13</td>
<td>General dentist</td>
</tr>
<tr>
<td>1976</td>
<td>37</td>
<td>Oral surgeon</td>
</tr>
<tr>
<td>1976</td>
<td>15</td>
<td>Oral surgeon</td>
</tr>
<tr>
<td>1977</td>
<td>55</td>
<td>Oral surgeon</td>
</tr>
<tr>
<td>1981</td>
<td>3</td>
<td>Oral surgeon</td>
</tr>
<tr>
<td>1981</td>
<td>6</td>
<td>General dentist</td>
</tr>
<tr>
<td>1982</td>
<td>12</td>
<td>Oral surgeon</td>
</tr>
<tr>
<td>1983</td>
<td>4</td>
<td>General dentist</td>
</tr>
<tr>
<td>1986</td>
<td>26</td>
<td>General dentist</td>
</tr>
<tr>
<td>1987</td>
<td>4</td>
<td>Oral surgeon</td>
</tr>
</tbody>
</table>

*No overt symptomatic infection.*
she did not self-identify as an HBV carrier to the oral surgeon or staff in the oral surgery office. The 15 practice employees were tested for HBV, and 14 of them had evidence of HBV vaccination. None of the 15 employees demonstrated serologic evidence of prior HBV infection. Using molecular epidemiologic techniques, the public health department determined that this was the first instance of HBV transmission from one patient to another in a dental setting.

**Infection Control in the Oral Surgery Office**

CDC investigators visited the office on September 26, 2002, and observed several regularly scheduled procedures. The investigators reported that the facility was modern and clean, with appropriate anesthesia and infection control practices in place. Standard infection control practices were followed during the observed procedures, including appropriate hand asepsis, anesthesia, and operation and monitoring of the autoclave. Gloves, masks and gowns were changed between appointments. Plastic barriers were used on high-touch surfaces and were changed between appointments. After removal of these barriers, the surfaces were sprayed with an intermediate-level disinfectant. For all of the patients treated in a single morning, fresh, sterile instruments were used; no instruments were used in common among procedures. In addition, there was no evidence of viral transmission related to the use of multidose vials during oral surgical procedures.

**Presumed Mechanism of Transmission**

In the absence of definitive evidence of cross-infection, the CDC investigators could only speculate on the mechanism of transmission. HBV is a hardy virus that can persist in dried blood for up to 7 days, and infectious virions can remain on surfaces even in the absence of visible blood. One possibility expressed by the investigators was that cross-contamination might have occurred by means of an environmental surface. For example, a lapse in environmental aseptic procedures following treatment of the source patient or contamination of non-operative surfaces by the source patient might have set the stage for subsequent cross-infection.

Written discussion of the case also mentioned the role of vaccination against HBV in preventing disease. Susceptibility to viral infection is necessary for transmission. HBV vaccination programs in place since 1982 have effectively reduced the numbers of susceptible health care workers and therefore the numbers of HBV infectious personnel. If the source individual and the index patient had been vaccinated, this incident would probably have been avoided. In fact, the confirmed HBV immunity of the office staff and other patients treated on the day of the transmission event was probably an important factor in preventing further viral transmission in that dental facility.

**Conclusions**

The unfortunate transmission of a life-threatening disease, HBV infection, was recently reported to have occurred in a dental practice. The rarity of the event attests to the overall success of infection control practices in place today. Its occurrence, however, is a reminder of the necessity to perform everyday cleaning, disinfection and sterilization consistently and correctly. This case reinforces the principle that standard infection control precautions may be effective at minimizing the potential for cross-infection, but they do not necessarily eliminate all risks. Redd and others speculated that contaminated environmental surfaces might have been the mechanism of transmission of HBV in this case. They also suggested that universal HBV vaccination should be extended to cover presumed “low-risk” individuals, in addition to children, health care workers and those in other high-risk categories.

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**References**


The references associated with Table 1 are listed in the electronic version of this article at www.cda-adc.ca/jcda/vol-73/issue-9/911.html.

Dr. Molinari’s presentations at the joint ODA/CDA meeting, titled “Fighting the flu: respiratory infections and protection” (morning session) and “Update on vaccine recommendations” (afternoon session), will be presented on Thursday, April 10.
ODA 1

4/C
E/F
ODA 3

4/C
E/F
ODA 4

4/C
E/F
What part of the patient record from a general dental practice is most useful for identifying the victims of disaster through forensic odontology?

The clinical diagnostic and treatment records of dentists have many uses in a wide variety of legal contexts, but few such situations are more important than those in which we are asked to supply antemortem data for missing persons who might be our patients. When people participate in high-risk activities that result in death or are caught in natural or human-caused disasters, dental records can be an important source of comparative data to establish the identity of recovered bodies. The release of antemortem data by dentists goes far beyond the scope of routine practice and emphasizes the significant societal role that practitioners can play on behalf of Canadian citizens. Increasingly, as dentists learn about the role of forensic odontology in mass casualty incidents, questions arise about the aspect or aspects of a patient’s record that are most useful for the purposes of identification and thus the records that should be released to authorities in these circumstances. This article aims to provide insights about how clinicians can determine which records to release so as to provide the most up-to-date and useful data for forensic identification.

Human Identification Based on Dental Features

Human identification by means of the teeth is based on the premise that each person’s dentition contains a collection of unique characteristics, either because of custom-made restorations or because of the numerous anatomic traits that collectively represent the person’s unique data set. In some people, especially those who have experienced minimal or no restorative intervention, a combination of these 2 data sets may be needed for comparison at autopsy.

Restorative treatments are considered to provide the best basis for comparative identification. That is because dentists extend cavity preparations, the margins of fixed prostheses and other hard-tissue interventions to encompass decay, fractures or other clinical problems that are specific to the particular patient. These unique extensions are visible on radiographs. If you imagine the shapes of these restorative treatments as 3-dimensional objects separate from the tooth, and then consider the projection of these shapes onto 2-dimensional radiographic film, the resulting radiographic image of the object provides a unique 2-dimensional shadow for forensic comparison. Figure 1 illustrates the use of the shapes of dental restorative treatments for identification purposes. In the case of a partial or complete removable prosthesis or appliance, the most important way a clinician can assist in any future forensic investigation is to instruct the laboratory to insert the patient’s name in the acrylic of the device.

Normal variants in the shape and size of anatomic structures and various presentations of

Figure 1: Comparison of antemortem and postmortem bitewing radiographs to establish identification. The film on the left was exposed during the patient’s recall exam on January 16, 2007. The film on the right was exposed at autopsy on October 3, 2007, on a body found in a lake.
common morphological traits, taken in combination, also produce a unique collection of identifiers for each individual. Traits such as curved or dilacerated roots, pulp stones, accessory root canals, supernumerary teeth, patterns of alveolar bone trabeculae, periapical inflammatory lesions, periodontal defects and osteomas are not uncommon in the general population. However, when a number of these traits appear together in one person’s mouth, the combination of identifiers is usually sufficient for the purposes of forensic comparison.

The “Best” Forensic Dental Record

Thorough, detailed and comprehensive dental treatment records that document all aspects of the treatment modality provide the best data for comparative purposes. Details of the restorative materials used; the type, location and length of the retentive pin or post; the shades and moulds of prosthetic teeth; and notes about unusual findings or treatments are but a few examples of traits that have been crucial to successful identifications.

The “best” aspect of the dental record to release for comparison with postmortem data recovered from an unidentified body depends on what part of the dental complex is recovered after death. For example, if only part of the victim’s jaw is found, then only data from that aspect of the antemortem clinical record is needed. However, at the time a person is reported missing and the authorities arrive at the dental office requesting antemortem data, the type of postmortem data that will eventually become available is not usually known. Thus, there is no way to predict which aspect of the missing person’s dental record will be most useful. In fact, all aspects of the dental record are potentially invaluable; therefore, all clinical records in the dentist’s possession (including working casts, laboratory set-ups, appliances, spare prostheses, but excluding accounting and financial details) should be released to authorities.

Most importantly, only original dental records should be provided for forensic use. This recommendation runs contrary to the belief of most clinicians that they should never release original data to parties outside the practice. The forensic identification of human remains is an acceptable reason for such release. The original records should be duplicated before their release, and these duplicates should be kept on file in the dental office. The clinician should obtain a signed and dated receipt from the authority collecting the original records, which will be returned to the dentist on completion of the identification process.

The importance of original records in a legal context cannot be overstated. For example, the right-left laterality marker (dimple) that appears on intraoral radiographic films is not visible on duplicate films, so this orientation information is lost when films are copied. Similarly, photocopied charts do not contain the often-critical multicoloured notations appearing on original documents. These issues are of considerable concern and underscore the potential value of any and all data and the impossibility of predicting what dental information will be recovered and available after a person’s death.

In the final analysis, all original documents, radiographs, photographs, appliances and casts, along with any associated material that records the dental status of a missing person during their lifetime, are crucial to successful identification of human remains.

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Further Reading

Dr. Sweet’s full-day session at the joint ODA/CDA meeting, titled “One dentist’s role in helping to solve murders in Canada!” will be presented on Friday, April 11.
How can I protect my practice from complaints and malpractice claims?

Risk management is not new to dentists or other health care professionals. The principle of "do no harm" has been entrenched in medical practice since the times of the Hippocratic oath. That is why, over the years, dentists have adopted risk management principles such as infection control, informed consent, and accurate and complete documentation. To ensure to the extent possible that patients are satisfied with the dental services they receive and that these services are provided in a safe, competent and ethical manner, dentists can implement the following 6 key principles, which will go a long way toward preventing complaints and potential legal action.

1. Keep Good Records

Bad things can happen to good dentists because of poor records. In fact, a problem with record-keeping is often the primary reason why a dentist cannot be defended in a malpractice claim.

Make sure your records are detailed and accurate, and are maintained for the required retention period in your jurisdiction. In Ontario, for example, records must be maintained for at least 10 years after the last entry; for children, the retention period is 10 years after the child reaches the age of 18.

The following guidelines cover most types of dental records:

- Entries should be dated, written in ink, and signed or initialled.
- Radiographs should be labelled and dated, and the radiographic findings documented in the patient’s dental record.
- Medical histories should be complete and up to date.
- Each patient’s record should contain a diagnosis and treatment plan.
- Progress notes should be detailed and accurate.

The importance of recording a diagnosis for every patient and every procedure cannot be overemphasized. In Ontario, dentistry is one of a handful of regulated health professions and the only regulated dental profession that, by virtue of practitioners’ educational background and professional training, has been given the privilege and legal right of diagnosing and communicating a diagnosis to our patients. As dentists, we need to take this responsibility seriously and ensure that each and every patient record contains a diagnosis and a well-thought-out treatment plan based upon that diagnosis.

Diagnosis is also a key element of the informed consent process, which is discussed in the next section.

2. Always Obtain Informed Consent

Take the time to provide your patients with sufficient information to allow them to make an informed treatment choice. Six key elements must be covered in the informed consent process:

- diagnosis
- nature and purpose of the recommended treatment
- benefits and risks of the recommended treatment
- treatment alternatives, including their risks and benefits
- consequences of no treatment
- cost of the recommended treatment

It is also important to document details of the informed consent dialogue. Consent is usually obtained verbally, but the fact that it was obtained should be documented in writing. Many dentists like to use consent forms, and these can be helpful. If a form is used, it should include a paragraph, to be signed off by the patient, stating that she or he has read and understood the form and has had an opportunity to ask questions. If these 3 things have occurred, then informed consent is typically deemed to have been obtained.

Practitioners should be aware, however, that a signed consent form on its own is not evidence that informed consent was obtained. The best evidence is documentation in the daily record of the discussion of the key elements (e.g., “I.C. discussion as per consent form for extraction of wisdom tooth”).

3. Make Excellent Communication a Priority

Most patient complaints and lawsuits incorporate some element of poor communication. Despite your best efforts, communication lapses can and will occur; therefore, make an extra effort to ensure that checks are in place to minimize
problems in your dialogue with patients, in your discussions with staff and when speaking to colleagues as part of the patient referral process.

**Develop Strategies for Preventing Mishaps**

Procedural mishaps that can happen in dental practices include treatment of the wrong tooth, ingestion or inhalation of instruments or materials, and burns, cuts or abrasions to the soft tissues. Although such mishaps are not usually considered to represent negligence, they may lead to patient injuries. Various strategies are available to minimize such incidents in your practice:

- Make sure the patient’s current radiographs and records are available at each appointment.
- Ensure that the treatment being contemplated is appropriate for the problem.
- Use a rubber dam whenever possible.
- When it is not possible to use a rubber dam, consider protecting the throat with gauze.
- Ensure that patients wear safety glasses.
- Ensure that office staff are aware of safety-related information for the various materials used in the practice.

Even with preventive strategies in place, mishaps may still occur, and it is important to remember that what a dentist does after the occurrence of such an incident is often as important as the incident itself in determining what happens next. It is crucial that patients be informed when untoward mishaps occur and the appropriate corrective action or referral takes place.

**Recognize Your Limitations and Treat within Your Comfort Level**

When patients seek dental services, they have a right to expect that they will receive appropriate, competent and up-to-date dental care. Even if you do not realize it from the outset of a difficult procedure, you will soon find out if you are “in over your head” when treating a patient whose needs are beyond your competencies. When this occurs, you must take appropriate action to resolve the issue, such as referring the patient to a more experienced colleague or a dental specialist. However, it is preferable to be able to recognize your limitations before undertaking any procedure.

When a treatment outcome is unfavourable, one of the most common allegations made by the patient is that the treatment was beyond the dentist’s scope of practice and that the patient should have been referred to a specialist. Therefore, you should develop relationships with the specialists in your area, and you should not hesitate to refer difficult cases for a second opinion or for treatment. Again, communication is key.

**Personally Review Records from Your Practice before Transferring Them or Sending Accounts to Collection**

Dentists are legally required to comply with a patient’s request to transfer records, but such records may include personal information that the patient would not want revealed to anyone else. For example, a teenager who confided that she was taking birth control pills or was being treated for a sexually transmitted disease may have asked that this information not be shared with others, especially her parents. In such a case, and in light of the fact that most dentists prefer to obtain a new medical history themselves, you may choose not to provide the medical history to the new dentist.

Before sending a patient’s account to collection, it is advisable to review the file to find out if the results of treatment were less than desirable or if the patient has already expressed dissatisfaction. Many patients who are unhappy with their treatment are initially reluctant to file a complaint or a claim against a health care provider. However, when the patient leaves the practice, sending the account to collection or instituting an action in small claims court to collect the outstanding balance may be the last straw for the patient, who may file a counterclaim.

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**Suggested Reading**

RCDSO’s Dispatch Magazine (www.rcdso.org/pubs_resources/publications/dispatch.html)
The Risk Management Guide of the Professional Liability Program (www.rcdso.org/prof_liability/risk_management.html)

On Thursday, April 10, senior RCDSO staff will be presenting the seminar “Staying safe in your dental practice” at the joint ODA/CDA meeting.
Cone beam computed tomography (CT) is a novel digital imaging modality that uses a rotating x-ray source and a single-panel detector (Fig. 1). Cone beam CT is unlike the CT found in most hospitals, in that the patient remains stationary during image acquisition. However, the result of the 2 modalities is similar: acquisition of a 3-dimensional volumetric set of image data for the region of interest. These data can be reconstructed and viewed as thin-slice images in multiple planes or rendered 3-dimensionally (Fig. 2).

The first application of cone beam CT in oral and maxillofacial radiology was described in 1998, and since that time, a number of systems have become available worldwide. Each is unique, differing in size (including diameter) of the imaging volume, resolution and radiation dose. Imaging volumes range from small cylindrical-shaped volumes measuring 3 cm (diameter) by 4 cm (depth) to large spherical volumes measuring 30.5 cm in diameter, with smaller-field-of-view systems producing higher-quality images. Radiation doses also vary between systems, ranging from 59 microsievert (µSv) to 599 µSv (3 to 28 times the dose associated with a panoramic radiograph).2,3

The Uses of Cone Beam CT

Many believe that new technologies supersede older ones, with the older technologies becoming obsolete. This is not the case for cone beam CT. This modality should be viewed as an addition to the diagnostic imaging armamentarium of dentistry. Image quality and the higher radiation doses associated with cone beam CT are 2 of the factors that may ultimately limit its use in dentistry. However, when advanced imaging is required, it may be the modality of choice for evaluating osseous temporomandibular joint anatomy (Fig. 3), localizing impacted teeth (Fig. 4), performing the investigations needed to plan dental implants (Fig. 5), and diagnosing and monitoring oral and maxillofacial diseases (Fig. 6). As a result of its unique capabilities for multidimensional reformatting, other potential applications of cone beam CT include investigations of the paranasal sinuses, assessment of palatal clefts and investigation of oral and maxillofacial trauma.

The Limitations of Cone Beam CT

In addition to issues of image quality and radiation dose, a third major limitation of cone beam CT relates to management of the image data. In medicine, radiographic images are reported by radiologists, who accept liability for the findings. For the most part, however, dentists act as their own radiologists. As such, they are responsible for interpreting normal anatomy, anatomic variants and pathoses depicted on images of their own patients, unless the images are interpreted and reported by a second party, such as an oral and maxillofacial surgeon.

**Where does cone beam computed tomography fit into modern dental practice?**

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**Question 4**

Where does cone beam computed tomography fit into modern dental practice?
maxillofacial or medical radiologist. Although the anatomic region depicted is limited with small-field-of-view cone beam CT systems, systems with larger fields of view encompass radiographic anatomy that may be unfamiliar to many dentists, for example, the paranasal sinuses, the skull base, the tympanic cavity, the craniovertebral junction and the cervical spine.

In response to recent interest in cone beam CT systems in orthodontics, the editor-in-chief of the American Journal of Orthodontics and Dentofacial Orthopedics has commented that “It only makes sense that, as specialists in orthodontics, we understand when to refer our patients’ [cone beam CT] scans to specialists in radiology — for the best possible care.” Fortress Insurance, a company that provides professional liability insurance for dentists in the United States, states that “the dentist has a responsibility to read the entire film, or have it read by a radiologist.” Moreover, for...
jurisdictions where patients are given the option of absolving the dentist of liability for failing to interpret abnormalities outside of a specified area of primary interest, Fortress opines that “[the dentist] cannot have the patient sign away liability.”

Presumably, patients undergoing diagnostic testing, including cone beam CT, do so because of a specific finding in the medical or dental history or because of a clinical sign or symptom that requires investigation. Recently, Cha and others reviewed the findings of 500 mainly orthodontic and implant patients who underwent cone beam CT. Incidental findings, mainly airway or sinus-related abnormalities, were identified in 24.6% of patients. Of the 252 orthodontic patients, only 8 had reported a previous medical history of allergy, asthma or sinusitis, and only 4 had reported a previous history of temporomandibular joint symptoms. Thus, although the frequency of abnormal findings may be small and most of the abnormalities benign, the results of this study indicate a clear and timely need to develop ordering guidelines for cone beam CT, such that the burden of radiation dosing to patients is kept as low as reasonably achievable, particularly for children and adolescents.

Cone beam CT has revolutionized imaging in oral and maxillofacial radiology, and oral and maxillofacial radiologists are excited about offering our expertise in multidimensional imaging to the dental community.

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References


Dr. Lam will be presenting 2 sessions at the joint ODA/CDA meeting on Friday, April 11: “Risk vs. benefit: the ins and outs of radiologic decision making” (morning session) and “Principles of image interpretation” (afternoon session).

The responses in the “Point of Care” section reflect the opinions of the contributors and do not purport to set forth standards of care or clinical practice guidelines. Readers are encouraged to do more reading on the topics covered.
The Canadian Dental Association (CDA) has persistently reminded us that it provides Canadian dentists with leadership in all of the essential areas of dentistry. In August 2004, CDA restructured its committees to achieve its stated strategic objectives: to ensure that CDA is recognized as the national leader and advocate in oral health and to encourage an environment in which the profession can achieve viable practice. Maintaining an ethics committee — to guide the profession through ever changing and challenging ethical issues — was not part of that restructuring.

Is this an indication of the lack of importance that ethics has in our profession and the current direction in which CDA is moving? There are now CDA committees to deal with the business of dentistry, dental academia, and clinical and scientific affairs, to name just 3, which all have ethical implications regarding both policy and practice. These diverse committees all make decisions and recommendations based on input from their various members, who most likely have distinctly different perspectives, as well as different levels of training and expertise in ethics. It is the ethical implications of those decisions, which could provide inconsistent direction within the organization and for dentists across the nation, that troubles me.

An ethics committee at CDA would offer consistency and direction regarding dental ethics and could be valuable to other committees in an advisory capacity. Organized dentistry needs committees to tackle complex issues that affect the practice of dentistry, as well as the operational policies of organizations like CDA. If ethics is important to our profession, CDA still has the opportunity to demonstrate leadership by implementing an organizational ethics committee.

We should be concerned about ethical issues that focus on answers to the question: “What ought dentists and our organizations do?” when faced with challenges such as fairness, integrity, conflicts of interest, accountability, mutual trust and respect for cultural diversity, all of which have direct implications for patients, organizations, insurance companies and dentists. Ethical behaviour should be central to how individuals and organizations govern themselves while they pursue success.

Because dentistry is a business as well as a health profession, it should not ignore the business community’s response to ethical challenges. Business has already incorporated ethics committees proactively to advise company policy and avoid scandals that could affect public trust. In terms of dentistry, reports in the media since 1991 have included Second Opinion on Dental Ethics (a discussion of the ethics of cosmetic dentistry and access to care), Dental Boot Kamp (which suggested that dentists are pushing unnecessary treatment on patients for their own monetary gain) and Dentists’ Fraud Growing (exploring the rising number of fraudulent insurance claims). The National Post recently carried a story about a Saskatoon dentist who carried out $16,000 worth of unnecessary procedures. All of these reports have increased patient awareness of ethical issues, with implications for the level of trust that patients place in their dentist. As more patients become aware of innovative marketing strategies that are finding their way
into dental practice, caveat emptor (buyer beware) will potentially influence the entire trust-based relationship and erode the position of dentistry as one of the most respected professions. The latest Gallup poll has dentistry already slipping to fifth place on a list of the most respected professions/occupations. Patients are more often openly questioning the honesty and integrity of their dentists. Who shall Canadian dentists turn to for guidance on patient trust issues?

A national ethics committee could also provide guidance on patient and third-party relationships on an ongoing basis. CDA is an advocate of better government services for the working poor, which was recently an election issue in Ontario. However, dentists in large numbers refuse to participate in existing plans because many feel that their financial sacrifice is too great. Quite possibly with leadership from a CDA ethics advisory committee, more dentists might shoulder their social contract responsibilities.

Back in 1991, a CDA ethics committee developed the code of ethics. Over the last 16 years, the code has remained basically unchanged while new conflict-of-interest as well as other challenging ethical issues have confounded dentists. The CDA code currently “serves as a basis for self-evaluation” for dentists, whereas the American Dental Association (ADA) has an active ethics committee (the Council on Ethics, Bylaws and Judicial Affairs), a constantly evolving code of ethics and requires its members to voluntarily agree to abide by the ADA code as a condition of membership in the association. They recognize that continued public trust in the dental profession is based on the commitment of individual dentists to high ethical standards of conduct. ADA does not simply put out a code of principles, it offers a code of professional conduct and detailed advisory opinions as well.

Ethics committees are currently being struck in both large corporations and smaller businesses, which are now also hiring ethics managers to deal with ethical issues more proactively. This has become a business necessity as ethical issues that arise in the workplace may result in lawsuits that can drain operating budgets or incur government penalties. In terms of public relations, it is also good for businesses to show that they are taking steps to raise their level of transparency and accountability to a savvier public who demands solutions to the ethical quagmires of the past.

Medicine has long seen the value of ethics committees; consequently, those committees play an integral role in policy recommendations and guidelines, education and case review at the treatment and organizational levels. CDA, on the other hand, disbanded its ethics committee years ago. The reasons given by CDA revolve around the fact that regulations, as well as their enforcement, are provincially controlled. CDA has, therefore, deferred guidance on ethics to provincial colleges and associations. Thus, in Canada, levels of guidance on dental ethics are inconsistent from province to province because enforcement of regulations has been integrated with the provincial codes of ethics.

Consider the following: there is no guidance on a national ethics educational curriculum, standardization of codes of ethics or ongoing leadership for CDA’s own committees on ethical issues. There is no formal interactive mechanism in place to deal with day-to-day issues that have both ethical and professional implications. The present system does allow for ad hoc committees to be formed whenever pressing issues need to be discussed. This results in committees that are hastily formed and comprise people who have no experience working with one another, which compromises their effectiveness. Ad hoc committees only continue the reactive damage control approach that has proven to be ineffective in maintaining public trust. An ethics committee could be proactive in advising members on breaking issues that affect the profession.

In my estimation, our leaders should be taking a more proactive position on issues that the public, CDA and individual dentists continually confront. An ethics committee that meets regularly can develop policies and educational strategies to prevent foreseeable problems. A national ethics committee could offer recommendations to dental schools regarding establishing an effective ethics curriculum.

It is incumbent on dental organizations to build enabling environments that will ensure that consistent ethical principles and values are part of the underpinnings of the guidelines and bylaws of the organization. Guidance can be given to members on what is acceptable conduct in a manner that is adaptable to changing moral values and legislation. For our national leaders to defer those ethical challenges to their provincial counterparts and the licensing bodies is not the exemplar function that I envision for CDA. If CDA’s mandate is to provide leadership to our profession based on the advice of its standing committees, a committee providing guidance on dental ethics issues that impact on the organizational structure and the policies of that organization must be a part of the process.

CDA is currently undergoing another governance review, which will likely entail re-examining its committee structures. If you, as readers of JCDA, share my opinion, I encourage you to write to the president and directors of CDA to voice your disapproval of the status quo. Possibly, in that way, we can get the leadership on ethics that we deserve. Furthermore, I would like to propose terms of reference for an organizational ethics committee that could serve as a guiding framework for the creation of such a committee. The terms of reference are described in Appendix 1, which is available at www.cda-adc.ca/jcda/vol-73/issue-10/925.html.
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The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

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Notice of Meetings

MEETING OF THE GENERAL ASSEMBLY
INCLUDING
THE ANNUAL GENERAL MEETING

Friday, April 18, 2008 and
Saturday, April 19, 2008

TAKE NOTICE that a meeting of the Canadian Dental Association’s General Assembly, including Annual General Meeting and Interactive Session, will be held on Friday, April 18, 2008, at 09.00 hrs through to Saturday, April 19, 2008, at the Fairmont Château Laurier Hotel, 1 Rideau Street, Ottawa, Ontario.

Joel Neal
Executive Director & Secretary (Acting)
Canadian Dental Association
Early Childhood Dental Disease — What’s in a Name?

Allan Narvey, DDS, Cert Pedo, FRCD(C), Luke Shwart, DMD, MBA

“What’s in a name? That which we call a rose, by any other name would smell as sweet.”
William Shakespeare, Romeo and Juliet, Act II, Scene ii

Shakespeare knew that a name is more than the title we assign to a person or thing — it can include the qualities of a subject so that it can easily be identified and put in context. The expanded promotion of health information means that non-dental professionals and the public are exposed to dental terminology, so it behooves dentists to take care with names. One that has evolved over time is the label applied to tooth decay in very young children. It has been known as bottle mouth, baby bottle tooth decay, nursing caries, labial caries and, most recently, early childhood caries (ECC). At a workshop on ECC in 1999, participants defined the disease and set the parameters for its most rampant version: severe early childhood caries.

Can you see the trend? Many of these labels presumed an etiology. We now find that the most recent term, ECC, leaves something to be desired. At a conference on ECC in Calgary in September (see page 897), the collective wisdom of delegates representing diverse areas of interest, from medicine, nursing, social work, immigrant and refugee aid, poverty reduction and teaching, told us that ECC is a misnomer that perpetuates the unfortunate concept that the mouth is separate from the body. Worse yet, the term may delay recognition and access to treatment.

Over the last 3 decades we fought hard for recognition of the importance of a healthy oral environment for everyone, not only cardiac, cancer, diabetic, transplant and special needs patients. Those of us currently engaged in the battle know how much work it takes to change a paradigm. The idea that good oral health is linked to good general health is gaining recognition in many areas of society. Just as people no longer shrug about smoking or drinking and driving, we no longer ignore the health risks related to dental diseases. The battle’s tide is turning in our favour, but we still have work to do.

Young patients, the next generation of Canadians, must be our priority. Children are the most vulnerable members of society, yet they are being ravaged by some of the worst levels of dental disease many pediatric dentists have ever seen. This disease, which is mostly preventable, affects all strata of the socioeconomic scale, although it is concentrated in immigrant and refugee groups, First Nations residents and those trapped in rising poverty levels. If society is judged by how it treats our most vulnerable, we have some
serious questions to ask ourselves as those responsible for the oral health of our nation. The suffering among those affected is endless and better prevention is needed, otherwise we will never have enough pediatric dentists to care for all those needing treatment.

The delegates at the Calgary conference came to understand that what we have labelled ECC is linked not only to the pain of children who often are too young to tell us what the problem is, but also to infection and future sequelae. The effects of preschooler tooth decay may have an impact on the child’s family, schooling, personality, social relationships, mind, restful sleep, physical growth and development. In Canada, tens of millions of health care dollars are spent annually on this disease that usually begins before a parent ever thinks of taking the child in for a dental checkup or considers the general health consequences of not doing so.

Parents often don’t understand the word “caries.” To them, it sounds like a strange dental term that only dentists use. Delegates at the Calgary conference, including those non-dental professionals who work on the front lines with young families, recognized that people need a term that reflects the seriousness of the disease and its consequences. We need to put the disease back into early childhood caries. We need to call it “early childhood dental disease.”

At the conference, this surprising proposal was met by an immediate and audible approval in the room. It struck us at once that renaming the condition is the right thing to do. The expression “early childhood dental disease” adds context; people understand disease as something that can be prevented and has general health effects. It very simply replaces a confounding name with a straightforward one.

Because the risk factors of decay also contribute to childhood obesity and malnutrition, we have an opportunity to collaborate with organizations fighting those problems. By renaming ECC a disease, we bring it to the forefront and make it a target for all of our colleagues who care for children and young families.

Although we submit this proposal to change the name of this infectious disease so that it can be more universally understood and recognized, it is you, the dental professionals of Canada, who can lead the way and make this change happen. Now that you are following the Canadian Dental Association’s position statement for checking children by their first birthday, you can call early childhood caries a disease when you see it. Among colleagues, you can refer to it as ECDD, a slightly longer acronym, but a refreshing and current one. In your clinic you can continue to use fluoride varnish, a well-researched and evidence-based strategy for halting and reversing early decalcification and an effective treatment for limiting this disease in high risk groups.

Our universities, the Canadian Dental Association, the Canadian Academy of Pediatric Dentistry, the Canadian Association of Public Health Dentistry, Health Canada and other organizations with a stake in childhood health should be among the early adopters of the new name. We can ask our colleagues in medical schools, the Canadian Pediatric Society (which is forming an Oral Health section) and the Canadian Public Health Association to start using this new terminology. We can reach across borders and encourage the change among our colleagues in the United States and abroad. With some help, it won’t be long before the tipping point is reached and the term ECC will seem quite archaic, used only by those no longer in the know.

Be a part of the change you envision. Let’s call this serious health issue a disease and begin treating it like one.

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References

Vident
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Resin-Bonded Fixed Partial Dentures: What’s New?

Chris C.L. Wyatt, DMD, MSc, FRCD(C)

ABSTRACT

Background and Objective: Dentists often question the use of resin-bonded fixed partial dentures (RBFPDs) for reliable restoration of tooth-bound edentulous spaces. Initial attempts at bonding fixed partial dentures on teeth resulted in early failure due to debonding. In the 1980s and 1990s, improvements in preparation methods, metal alloys and bonding techniques made the RBFPD a more predictable option. In this paper, we summarize recent information concerning its success and failure.

Methods: A MEDLINE search using key words describing RBFPDs was carried out to identify pertinent English articles appearing in peer-reviewed journals since 2000.

Results: The principle reason for failure of RBFPDs remains debonding of the framework from the abutment teeth. Selection of nonmobile abutment teeth, preparation to enhance retention and resistance form, choice of the appropriate alloy and metal, and tooth bonding technique are the keys to success. The use of cantilever and nonrigid attachments may decrease interabutment forces and reduce debonding of retainers.

Conclusions: The survival rate of RBFPDs is still considerably lower than that of conventional fixed partial dentures. Although RBFPDs can be used in both the anterior and posterior regions of the mouth to replace 1 or 2 missing teeth, careful abutment selection, tooth preparation, alloy selection and bonding technique are critical for clinical success.

The prosthetic restoration of small edentulous spans poses a dilemma when the adjacent teeth do not require crowns. It is difficult to justify extensive reduction of the adjacent teeth to support a conventional fixed partial denture. A single-tooth implant is an alternative for patients with adequate bone dimensions and who are willing to undergo a minor surgical procedure. However, oral implants are not the treatment of choice for many patients and the resin-bonded fixed partial denture (RBFPD) offers a possible solution.

In the 1970s, Howe and Denehy adapted the Rochette bonded cast-metal periodontal splint concept to create the first RBFPD. The early procedures were conservative, but problems with debonding resulted in a survival rate of only 28% at 7.5 years. To enhance retention and resistance form of posterior RBFPDs, Livaditis recommended preparation of parallel guide surfaces on the interproximal and lingual aspects of the adjacent teeth along with rests on the occlusal aspect to counteract dislodging forces. Resin bonding was further
enhanced by using solid electrolytically etched base-metal-alloy casting. The result was a doubling of the survival rate to 64% at 7.5 years. In the 1980s and 1990s, significant advances in metal surface treatment, dentin bonding and resin cements potentially improved the clinical success rate of RBFPDs. A meta-analysis identified 60 papers published in the 1980s reporting success rates for various designs; Kaplan-Meier statistical analysis determined an overall survival of 74% ± 2% at 4 years for 1,598 RBFPDs compared with 74% ± 2% at 15 years for 4,118 conventional fixed partial dentures.

In this paper, we summarize outcomes of RBFPDs published in English-language, peer-reviewed journals since 2000. In addition, new information concerning preparation, material selection and bonding of RBFPDs is explored. Articles were identified by a MEDLINE search using key words describing RBFPDs.

Patient Selection

Patients with small edentulous spans bounded by sound teeth are good candidates for RBFPDs (Fig. 1). The potential abutment teeth should be healthy, unrestored or minimally restored, free of caries and periodontal disease, and have an adequate crown height and width. A nonmobile tooth with an adequate surface area of enamel provides an ideal abutment. Although the young are more likely to have sound teeth, debond rates are higher among people under 30 years of age.

Although the RBFPD is considered a definitive solution for single-unit edentulous spaces bounded by healthy teeth, case reports on the use of this procedure as a provisional treatment continue to be published. Poyser and others recommend the Rochette bridge as an alternative to an acrylic resin removable partial denture. Al-Wahadni and Al-Omari calculated a 90.5% success rate over the short term (35 months) for 21 RBFPDs used as provisional prostheses immediately following tooth extraction. Two mandibular posterior devices failed after 3 and 4 months due to trauma, but were successfully rebonded.

Tooth Preparation

Since 2000, modification of the tooth preparation process has been advocated to enhance retention and resistance form of RBFPDs. The goal is to create a defined path of insertion for the framework while minimizing the display of metal. Frameworks have been extended maximally on the lingual aspect of teeth to improve resistance form and prevent dislodgment of the restoration. The use of defined rest preparations (cingulum and occlusal) has been advocated to provide support or prevent dislodgement to ward the gingival aspect. The use of proximal grooves on molars in preparation for RBFPDs has resulted in significant improvements in retention and resistance as measured by dislodgement forces on maxillary ivorine teeth; however, no significant improvement has been noted for mandibular molars. Although tooth preparation is required, less than half the amount of coronal tooth structure by weight is removed compared with that removed for complete coverage crowns. According to studies of debonding, the mean debonding rate for RBFPDs placed
without retentive tooth preparation was 47% compared with only 11% for those with retentive preparation.\textsuperscript{7}

El-Mowafy and Rubo\textsuperscript{12} recommend an anterior design involving a 0.5-mm lingual reduction of enamel and a 1-mm supragingival reduction extending to the centre of the interproximal contact, with an incisal finish line 2 mm short of the incisal edge for optimal esthetics (\textbf{Fig. 2}). Adequate and parallel axial reduction of the proximal surface adjacent to the edentulous area and extending lingual to the planned interproximal contact is required for a path of insertion and retention. Maximum extension onto the proximal surfaces with proximal grooves will enhance resistance for the RBFPD and prevent mesiodistal and faciolingual dislodgement. A cingulum rest with a flat floor will provide support, preventing movement toward the gingival aspect.

A posterior design that creates parallelism between the proximal surfaces of the teeth adjacent to the edentulous space creates an optimal insertion path.\textsuperscript{12,13} The supragingival preparation, 0.5 mm within enamel, should extend from the facial line angle lingual to just short of the interproximal contact area on each of the adjacent teeth. Occlusal rests and the base of the lingual grooves provide support, preventing movement toward the gingival aspect (\textbf{Fig. 3}). Alternatively, slot or box preparations replacing existing restorations may be used for framework support. Creating a box with a slight convergence toward the occlusal aspect to lock in the composite resin cement can enhance retention.\textsuperscript{12} A similar posterior design has been recommended by Chow and others\textsuperscript{14} with the addition of a palatal groove and an occlusal strut (mesial-distal groove) to enhance resistance form. Shimizu and Takahashi\textsuperscript{15} describe a posterior design that involves preparation extending from a mid-buccal to a mid-lingual groove and incorporating an occlusal rest on each abutment tooth. However, this display of metal on the buccal surface may not be acceptable where esthetics are a concern.

**Alternative Designs**

The use of a single abutment to support a single pontic may be a viable alternative RBFPD design, at least for anterior regions. The design principles are the same as for the conventional RBFPD, with conservative tooth preparation, but optimizing resistance form.\textsuperscript{16} The preparation should be confined to enamel as much as possible and maximize the surface area to enhance bonding of a rigid framework. Occlusion on the pontic should be kept to a minimum and molar-sized pontics should be avoided.

A review\textsuperscript{17} of 11 clinical studies using cantilevered RBFPDs concluded that this prosthetic design was reliable and predictable and had greater longevity than conventional RBFPDs with 2 abutments. Compared with conventional RBFPDs, this restoration is claimed to have better esthetics, to involve less tissue damage, to be easier to clean, to be less expensive and to have no chance of undetected debond due to its single retainer.\textsuperscript{17} When 269 2-unit cantilevered RBFPDs were followed for at least 2 years, debonding occurred in 14 (94.8% success rate); no changes in occlusion occurred in relation to drifting of abutment teeth.\textsuperscript{18}

The integration of a nonrigid connector between the abutment and the pontics of long-span, RBFPDs with 2 or more pontics may reduce debond failure by allowing independent movement of the abutment teeth.\textsuperscript{19} This design reduces the interabutment stresses that tend to cause debonding. The nonrigid connector is designed to allow movement in the vertical and horizontal planes, such that the least mobile retainer contains the matrix.\textsuperscript{19} A clinical success rate of 92.2% was noted for 43 RBFPDs with 2 or more pontics that were followed up to 87 months.\textsuperscript{20} All failed prostheses replaced posterior teeth, and adverse occlusal contacts on the abutment teeth were speculated to be the cause of this failure.
Bonding

The preparation of abutment teeth for RBFPDs using the previously described 0.5-mm axial reduction with further reduction for grooves, boxes and rest seats likely exposes dentin. An in vitro study of 20 extracted premolars after RBFPD preparation noted dentin exposure on all specimens; the mean area of exposure was 11.06 mm² (16.15%). Preparation of 1-mm deep interproximal grooves exposed dentin in all teeth. Axial reduction resulted in variable dentin exposure at the gingival margin. Reliance on dentin bonding in modern RBFPD preparation designs seems a reality.

Base metal alloys, typically nickel–chromium–beryllium, are preferred over gold alloys due to their enhanced bond to resin cements. In vitro testing using aqueous aging and cyclic loading of Panavia-F (Kuraray Co., Ltd., Osaka, Japan) cemented RBFPDs determined that debonding was a result of cohesive failure within the cement at the filler–resin interface. No difference in debond rates over 6 and 12 months was noted between nickel–chromium based RBFPDs cemented with Panavia 21 Opaque (Kuraray Co., Ltd.) and Scotchbond Multi-Purpose with Scotchbond Resin Cement (3M Dental Products, St. Paul, Minn.); however, the latter (a clear cement) was associated with graying of the abutment teeth.

In vitro testing of combinations of chrome–cobalt metal surface treatments and resin cements found the use of Unifix (Cavex Holland BV, Haarlem, Holland) and airborne-particle abrasion (50 micron aluminium oxide) provided the firmest physical bond. Similar research using nickel–chromium alloy also resulted in good bond strengths. Airborne-particle abrasion of the alloy significantly improved bond strength; further enhancement was achieved by using 96% isopropanol for 3 minutes in an ultrasonic cleaner-than-air dryer for an additional 3 minutes.

Use of tin-plating gold alloys to enhance bonding has not been predictable and led researchers to explore other surface treatments. The use of a metal primer (Alloy Primer, Kuraray Co., Ltd.) significantly improved the tensile bond strength between gold–palladium alloys and human enamel compared with airborne-particle abrading and tin plating. This primer is based on acetonitrile, 10-methacryloyloxydecyl dihydrogen phosphate and 6-vinylbenzyl-n-propyl amino triazine dithione. The use of a vinyl-thiol primer (a solution of acetone containing 0.5% 6-[4-vinylbenzyl-n-propyl] amino-1,3,5-triazine-2,4-dithiol) to bond gold alloy based RBFPDs resulted in a clinical success rate (76.9% at 10 years) similar to that for conventional base-metal alloys. The use of silica coating to enhance bonding of RBFPD frameworks resulted in a similar survival rate.

El-Mowafy and Rubo recommended rubber dam isolation to enhance bonding of the RBFPD to tooth structure. A retrospective study of 100 RBFPDs placed between 1993 and 2003 found that various preparation designs, metal alloys, metal preparations, number of abutments and pontics were not predictive of debonding. However, the use of rubber dam during cementation significantly reduced the risk of debonding.

Esthetics

Multiple questionnaires completed by 358 patients during regular recalls revealed that the degree of satisfaction with RBFPDs was high and did not seem to be influenced by the occurrence of failure. However, satisfaction was correlated with complaints about colour and shape of the pontics. The metal framework of resin-bonded bridges may also darken thin or translucent abutment teeth; 5 studies identified this problem, with an overall occurrence of 18%. The fracture of porcelain on the pontics is an esthetic complication that was identified in 15 studies with a mean incidence of 3%.

Clinical Success and Failure

An extensive literature review to identify the incidence of complications in fixed prosthodontics included RBFPDs. This study reviewed 56 publications, although when multiple reports on the same patient groups were eliminated, only 8 papers published between 1984 and 1998 remained. A total of 1,823 complications occurred in 7,029 RBFPDs in service for 1 month to 15 years. The overall debond rate of 21% affected 1,481 prostheses. The debond rate during the first 2 years was 10%, between 2–5 years the rate was 20%, and at > 5 years the rate was 24%. The debond rate for RBFPDs with more than 1 pontic (52%) was double that for frameworks supporting a single pontic.

Individual studies reporting on success of current design principles and bonding techniques show promise. The mean survival rate, based on bond retention, was 85% after 5 years for 100 RBFPDs placed between 1993 and 2003 at the University of Turin. The annual debond rate over 3 years was 4.6% for 59 RBFPDs placed by predoctoral dental students. The debond rate was 3 times higher in the mandible than the maxilla, with the poorest survival (debond rate 13.4%) in the anterior mandible. No differences in periodontal health (bleeding on probing and pocket depth) were noted between abutment teeth and controls.

Using Kaplan-Meier analysis, Zalkind and others determined that 51 conventional base-metal alloy RBFPDs placed under controlled clinical conditions and followed over 13 years had a mean life expectancy of 85 months (7 years) ± 13%. Cox’s proportional hazard analysis revealed that abutment teeth that were periodontally involved (relative risk [RR] 9.40) and were treated following orthodontics (RR 7.88) were significantly
associated with failure of RBFPDs. Tooth mobility was the likely cause of failure in both these situations.

The use of supragingival margins should allow for adequate oral hygiene to control dental plaque and prevent gingivitis, periodontitis and dental caries. A lack of clinical impact on gingival and periodontal conditions has been reported; however, 22 studies of RBFPDs reporting on caries revealed a mean occurrence of 7%. The complicating factor may be debonded frameworks; 7 studies reported on caries in conjunction with debonded retainers.

The use of cantilevered RBFPDs may be a viable alternative to 2 abutment RBFPDs. Kaplan-Meier survival estimates showed no significant difference between the survival rate for 77 RBFPDs (63%) and 25 cantilevered RBFPDs (81%) after 4 years. A review of 2-unit cantilevered RBFPDs at the Prince Philip Dental Hospital (Hong Kong) revealed that 82 prostheses had a survival rate of 95.1% over the short term (mean service life 36.7 ± 15.4 months; range 4.3–95.4 months). This high success rate may be due to minimal function or occlusal load.

Patient Satisfaction

Mandibular bilateral distal extension cantilevered RBFPDs were found to be equivalent or superior to removable partial dentures for 60 patients who completed satisfaction questionnaires. No difference in quality of life was noted between patients provided with implant crowns and those receiving RBFPDs. This study compared 11 patients with implant crowns and 33 with RBFPDs; the 2 groups were matched for gender, age, edentulous span and location of prostheses within the mouth. The self-administered quality-of-life questionnaire contained 2 subscales related to oral condition (mastication, pronunciation, swallowing, oral cleaning and esthetics) and general condition (physical function and psychological state). No differences were noted between treatment types. Patient satisfaction with cantilevered RBFPDs was also high; however, 10% were concerned about the metal appearance of the prostheses.

Conclusions

RBFPDs can be used successfully in both the anterior and posterior regions of the mouth to replace 1 or 2 missing teeth. However, the survival rate of RBFPDs is still considerably less than that of conventional fixed partial dentures. The principle reason for failure is debonding of the framework from the abutment teeth. The use of cantilevered and nonrigid attachments may decrease interabutment forces and reduce debonding of retainers. The selection of nonmobile abutment teeth, preparation designs that enhance retention and resistance form, appropriate alloy selection and metal and tooth bonding technique are critical for success.

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This article has been peer reviewed.

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E/F
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The Third Decade of HIV/AIDS: A Brief Epidemiologic Update for Dentistry

Linda M. Kaste, DDS, PhD; Helene Bednarsh, RDH, MPH

ABSTRACT

Dental professionals currently entering the dental workforce are witness to a significantly different set of oral health issues with HIV than those encountered when the epidemic began. Populations at risk for infection have changed over time and, in Canada, the United States, and the rest of the world, higher proportions of minorities and women have become infected. Medication regimens that help manage HIV as a more chronic disease have affected its presentation, its frequency and, perhaps, the significance of its oral manifestations. These medications may provoke comorbidities that challenge medical and dental disease management and health promotion. The dental office may become a site for rapid testing for HIV. The complexity of HIV infection and treatment behooves all health care professionals to be aware of developments in the prevention and epidemiology of HIV infection, and in oral health care for patients who are HIV-positive.

For citation purposes, the electronic version is the definitive version of this article: www.cda-adc.ca/jcda/vol-73/issue-10/941.html
The leading routes of exposure for HIV infection vary by geographic region (Table 1). Routes of exposure in Canada and the United States seem similar. In the early years of the epidemic in the United States, for example, men who had sex with men were seen as the predominately infected population. This is still the leading reported route of transmission in Canada and the United States. In Canada, whose system tracks incident HIV infections, the ranking for routes of incident infection is slightly different than that for prevalent infections, with injecting drug use dropping below the 2 heterosexual categories (data not shown in the Table).

Globally, 17.7 million women (15.1–20.9 million) are living with HIV, just under half (48%) of the estimated number of adults living with HIV. In sub-Saharan Africa, women are more likely to be infected than men, and in those 15 to 24 years of age, women represent almost 80% of those who are HIV-positive. Worldwide, the number of women and girls who are HIV-positive is increasing. In Canada, about 20% of the people living with HIV/AIDS at the end of 2005 were women, who represented 27% (620–1,240) of new infections. In 2006, 26% of people 15 years of age and older living with HIV in the United States were women and of those with new diagnoses of HIV or AIDS in 2004, 27% were female, as was found in Canada.

Although perinatal transmission is not discussed in the AIDS Epidemic Update from UNAIDS (Joint United Nations Programme on HIV/AIDS), some, but not all, sub-Saharan Africa countries have experienced about a 25% decline in HIV infections in young pregnant women. The Public Health Agency of Canada found that children less than 15 years of age had 1.3% of the positive HIV tests between 1985 and 2006, and that 66% of those positive cases resulted from perinatal transmission. In the United States, perinatal (vertical) transmission has markedly declined with the use of antiretroviral treatment during pregnancy or delivery.

Increasing rates of infection among youths and young adults are a global concern. New infections are quite concentrated among young people (15–24 years of age), with this group representing 40% of new infections among persons 15 years or older in 2006.

### Table 1 Selected 2005–2006 statistics for HIV and AIDS around the world, and in Canada and the United States

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of HIV/AIDS</td>
<td>39.5 million (&lt;34.1–47.1 million)</td>
<td>58,000 (&lt;48,000–68,000)</td>
<td>1.2 million (&lt;720,000–2 million)</td>
</tr>
<tr>
<td>Estimate (%) of adults 15–49 years of age living with HIV</td>
<td>1.0%</td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Annual incidence of HIV</td>
<td>4.3 million</td>
<td>2,300–4,500</td>
<td>NA</td>
</tr>
<tr>
<td>Annual deaths from AIDS</td>
<td>2.9 million</td>
<td>72</td>
<td>17,011</td>
</tr>
</tbody>
</table>
| Top exposure categories          | Reported regionally for leading exposure by selected regions:  
  - IDU in East Europe and Central Asia  
  - Commercial sex workers in South and Southeast Asia (excluding India)  
  - MSM in Western and Central Europe  
| For prevalent HIV:  
  1. MSM  
  2. IDU  
  3. Heterosexual or from non-endemic country  
  4. Heterosexual or from endemic country  
  5. MSM–IDU | For AIDS diagnosis:  
  1. MSM  
  2. High-risk heterosexual contact  
  3. IDU  
  4. MSM–IDU  
  5. Other | In many areas, new HIV infections are heavily concentrated among young people 15–24 years of age. Report conclusion: overall incidence is not decreasing. Only 7 countries are estimated to have more people living with HIV than the United States. |
| Other notable comments           | In many areas, new HIV infections are heavily concentrated among young people 15–24 years of age. | | |

*IDU = injecting drug use; MSM = men who have sex with men; NA = not available.
*A number of states have confidential name-based reporting of HIV cases, but national estimates are available only for the incidence of AIDS.*
*According to the Public Health Agency of Canada, Quebec has not reported data since mid-2003, thus limiting the national data.*
*Ranking corresponds to UNAIDS 2006 reporting of exposure categories for HIV/AIDS.*


United States, teens 13 to 19 years of age accounted for 0.5% of the AIDS cases in 1981–1995, 0.7% in 1996–2000, and 0.9% in 2001–2004.9

Populations particularly vulnerable to high rates of HIV infection and challenges obtaining care and antiviral medications vary tremendously by region globally.4 Women are frequently disproportionately highly represented within these vulnerable populations around the world. In the HIV epidemic in Canada, Aboriginal persons are a major concern.5 Representing about 7.5% of HIV infections and 9% of new HIV infections, Aboriginals, who comprise 3.3% of the Canadian population, have rates almost 3 times higher than those for non-Aboriginals. Recently in the United States, African Americans, who comprise 12% to 13% of the population, represented half of the HIV/AIDS cases diagnosed.1,9 The national estimate of HIV infection in the Hispanic population, who represent 14% of the US population, is 20% of infections.4 In 2005 Native Americans, who comprise 1% of the US population, had an adult AIDS rate of 10.0 per 100,000, the third highest rate among reported racial and ethnic groups.7

As recently as 2004, the Fifth World Workshop on Oral Health Disease in AIDS, a review of the interactions of HIV infection with health issues concluded that “The evidence base for specific interactions is currently weak, partly because few good-quality studies have been published, partly because of the naiveté of the instruments currently available for recording these interactions and their inherent complexity.”10 This call for more rigorous HIV/AIDS research is being answered. Publications about complex systemic health interactions with HIV/AIDS as causes of death and a factor in mortality rates,11 cardiovascular disease,12 non-AIDS-defining malignancies,13 metabolic syndrome14 and reproductive health15 have begun to appear.

The need for constant monitoring and communication of findings to assist in the prevention of HIV and clinical care for those infected with it has led to focused meetings such as an annual conference sponsored by the Foundation for Retrovirology and Human Health, in collaboration with the US Centers for Disease Control and Prevention, for clinicians and researchers to update and critique ongoing developments related to progress against AIDS (Conference on Retroviruses and Opportunistic Infections — CROI, www.retroconference.org); and resources such as Canadian AIDS Treatment Information Exchange (www.catie.ca), Canadian HIV/AIDS Information Centre (www.aidsssida.cpha.ca), AIDS training and education centres (www.aids-ed.org) and HIVdent, an oral health care resource (www.hivdent.org).

A significant challenge lies in major portions of HIV-positive populations being unaware of their infection. Global estimates were not found and are difficult to calculate. In Canada and the United States, 1 in 4 persons with HIV is unaware of his or her infection.4,5 In the United States, this means an estimated 252,000 to 312,000 persons are unaware of their infection.1

Oral health practitioners have a role not only in diagnosing an oral manifestation of HIV, but also in recognizing the potential significance of the manifestation. They must take appropriate action to manage the lesion and test for HIV. In the near future, oral health practitioners can expect to have a role in screening for HIV infection through rapid testing in the dental office.16

Conclusion

The introduction to a special issue of the US Centers for Disease Control and Prevention’s Morbidity and Mortality Weekly Report published June 2, 2006, elegantly summarizes the current status of HIV infection: “HIV/AIDS remains a potentially deadly chronic disease. Prevention of HIV infection requires a continued commitment from persons at risk, persons infected, and society as a whole. Prevention efforts need to keep pace with a changing epidemic. Most importantly, younger generations, who might not remember the deadlier, early days of the epidemic, continually need to receive basic HIV-prevention messages.” Dentistry must continue to be a member of the health care team seeking optimal health for everyone by keeping up with medical advances in and prevention of this infectious chronic disease, and by continuing its own research about evidence-based oral health management.

The complexity of HIV infection and its treatment behooves all health care professionals to be aware of ongoing developments about the prevention of HIV infection and the care of patients who are HIV-positive. As the epidemic progresses and further advances are made in the treatment of HIV infection and related opportunistic infections, HIV infection is becoming more manageable. Oral health practitioners will find that their role is similar to that for treating patients with other complex medical conditions.
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Essential Medical Issues Related to HIV in Dentistry

Arthur H. Moswin, MD, FACP; Joel B. Epstein, DMD, MSD, FRCD(C), FDS RCSE

ABSTRACT

Management of HIV infection has progressed dramatically since the disease was first recognized, to the point that HIV infection is now considered a chronic condition. Some of these new approaches in management are related to the strides that have been made in understanding the pathogenesis of this condition. Such changes in medical care may also affect the provision of oral health care. Dental providers must therefore be aware of current management practices. This paper reviews current approaches to managing HIV-related disease.

HIV infection is now a chronic manageable illness. Affected patients are living longer and increasingly normal lives, thanks largely to highly active antiretroviral therapy (commonly called HAART). It is estimated that a 21-year-old person infected with HIV today will live to 60 years of age.1 Regular dental care is an important aspect of the management of HIV infection. Oral lesions can be among the earliest manifestations of this infection and may develop anytime during the course of the illness. This article summarizes medical issues related to HIV infection of which the dentist should be aware.

Overview of Dental Care in the Context of HIV-Related Disease

As many as one-quarter of people infected with HIV are unaware of their condition.2 In a survey of patients with HIV/AIDS conducted in 2000, the Rand Corporation found that 58% did not see a dentist regularly (i.e., had not seen a dentist in the past 6 months), and 20% reported having had an unmet need for dental care in the previous 6 months.3 Not surprisingly, dental programs that were affiliated with a comprehensive HIV treatment program were most successful, probably because of greater referrals and greater funding available for care in those settings.

There are various reasons for the disparity between need for and availability of dental care, including lack of dental insurance and competing medical and social needs; however, reticence on the part of the dentist should not be a factor. Although universal precautions should be used for all patients, regardless of HIV status, occupational transmission of HIV in the course of providing dental care is extremely unlikely,4 despite the fact that some patients will have HIV infection and despite the frequency of accidental skin punctures from instruments. This is probably because HIV is rarely transmitted through saliva and because of the small quantities of blood involved. In fact, it appears that most percutaneous injuries associated with dental care occur during extraoral procedures such as laboratory work.
Recommendations on occupational exposure to HIV: When undertaking dental care of an HIV-positive patient, communication with the primary treating physician is imperative and should cover more than the usual (though still important) questions about bleeding, allergies, cardiac history and antibiotic prophylaxis. Such communication should also include information about recent CD4 (T cell) count, HIV viral load, any other medical issues (e.g., hepatitis, cardiac problems) and the patient’s current medication list (to allow identification of potential drug–drug interactions). As patients with HIV age, the incidence of renal disease, liver disease (often from concomitant hepatitis), cardiomyopathy and lipid abnormalities such as high cholesterol tends to increase. There may also be a higher incidence of coronary artery disease (although this is controversial because of the conflicting evidence) and a higher incidence of osteoporosis, especially among men; these latter patients may be taking bisphosphonates, such as alendronate (Fosamax). In light of recent cases of jaw osteonecrosis in non-HIV patients taking these drugs, vigilance is advised. An otherwise fit HIV-positive person with good muscle mass probably has the same risk of wound complications as an HIV-negative person.

Minor laboratory abnormalities are common in HIV-positive patients, whether or not they are receiving antiretroviral therapy. Abnormalities in the complete blood count, such as mild anemia, neutropenia and, less often, thrombocytopenia, are common; unless these problems are severe, they should not delay delivery of care. Usually, no further work-up is required, as long as the primary medical provider is experienced in the care of HIV-infected patients, is aware of the issues and agrees that there is no contraindication to surgery. However, a hemoglobin level less than 0.007 g/dL (0.07 g/L), an
Another laboratory abnormality in patients who are receiving HAART is an isolated increase in bilirubin in association with normal levels of aspartate aminotransferase and alanine aminotransferase, a phenomenon that may be seen in patients taking atazanavir (Reyataz); however, this abnormality is of no medical consequence. It (and, though more rarely, frank jaundice) is being seen more frequently as use of HAART increases. Patients with concomitant hepatic or renal dysfunction may be at higher risk of bleeding and other complications, but the usual caveats apply; there is no increase in risk due solely to HIV status.

Another important test for patients with HIV is the purified protein derivative (PPD) test, also known as the Mantoux skin test, for tuberculosis (TB). Patients with HIV are at higher risk for active TB if the PPD test result is positive; therefore, they should undergo PPD testing annually. The patient’s TB status and most recent PPD test result should be ascertained from the primary provider; if the test result is positive, the dental care provider should confirm that the results of chest radiography are normal (i.e., that the patient does not have active TB) and that prophylaxis with isoniazid has been started before initiating dental care.

### Medication-Related Issues

The continued success of a patient’s HIV therapy depends on strict adherence to the medication regimen, with no missed doses. Missing 10% of doses (essentially 1 or 2 doses a month) or more can cause selection of resistant virus and lead to regimen failure. Adherence is one of the guiding principles of HIV therapy, and every attempt should be made to minimize missed doses and to encourage patients to take all scheduled medication doses. Patients who are receiving therapy and who must fast in preparation for laboratory testing or who must take nothing by mouth in advance of surgery should be allowed to take their HIV medications with sips of water, if at all possible. In cases where the patient must miss one or more doses, as when the jaw has been wired after fracture, consultation with the treating physician is important. Standard antibiotics and pain medications usually pose no additional concerns for patients with HIV. However, the dental care provider must be aware of the possibility of current or prior drug abuse, which may affect the choice of pain medication. Although the combination drug trimethoprim–sulfamethoxazole (Bactrim) is not frequently used by dentists, up to 50% of patients with HIV may be allergic to this drug, a problem that may be discovered by the dentist if he or she unknowingly prescribes it for an allergic patient. The allergic reaction usually resolves on its own once the drug is discontinued.

The most important drug with potential for drug–drug interactions is ritonavir (Norvir), which may be administered alone or combined with lopinavir in the drug Kaletra. This agent is involved in many known drug–drug interactions and has many contraindications. The full list of potential problems is given in the package insert available online (www.norvir.com) or in various drug references. Among drugs that may be used in dentistry and that can interact with ritonavir or lopinavir–ritonavir, meperidine (Demerol) should not be used at all, whereas acetaminophen, ibuprofen, tramadol and oxycodone all seem to be minimally affected. Proxyphene levels may be increased by ritonavir or lopinavir–ritonavir, and this drug should therefore be used with caution in patients taking either of these HIV drugs. Antibiotics require no dose adjustments, although levels of clarithromycin (Biaxin) are increased. All ergot derivatives and the sedatives midazolam (Versed) and triazolam (Halcion) are contraindicated for patients taking ritonavir or lopinavir–ritonavir and should be used with extreme caution or avoided altogether.

### Table 1

<table>
<thead>
<tr>
<th>Mode of transmission</th>
<th>Risk per 10,000 exposures$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percutaneous (blood)</td>
<td>30</td>
</tr>
<tr>
<td>Mucocutaneous (blood)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Receptive anal intercourse</td>
<td>50</td>
</tr>
<tr>
<td>Receptive vaginal intercourse</td>
<td>10</td>
</tr>
<tr>
<td>Insertive vaginal intercourse</td>
<td>5</td>
</tr>
</tbody>
</table>

$^a$Adapted from reference 8
$^b$Assuming an infected source and, for intercourse-related modes of transmission, no condom use.

### Table 2

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep injury</td>
<td>16.1</td>
</tr>
<tr>
<td>Visible blood on needle</td>
<td>5.2</td>
</tr>
<tr>
<td>Device in artery or vein (vs. subcutaneous or intramuscular injection)</td>
<td>5.1</td>
</tr>
<tr>
<td>Source patient with high viral load</td>
<td>5.4</td>
</tr>
<tr>
<td>Use of zidovudine after exposure</td>
<td>0.2</td>
</tr>
</tbody>
</table>

$^a$Adapted from reference 9
The Road Ahead

There are many new and promising drugs in the pharmaceutical “pipeline.” These drugs, combined with ongoing vaccine research, may further revolutionize the care of patients with HIV and prolong their life expectancies. These include entirely new classes of drugs such as fusion inhibitors (e.g., the recently approved enfuvirtide [Fuzeon]), integrase inhibitors (e.g., raltegravir [Isenstress]), HIV receptor antagonists (e.g., maraviroc [Selzentry]) and others13 that are coming to market. As the number of people living with HIV infection and AIDS continues to increase, we must work to reduce their unmet needs for dental care.

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This article has been peer reviewed.

References

Clinical PRACTICE

Changes in the Pattern of Oral Lesions Associated with HIV Infection: Implications for Dentists

Herve Y. Sroussi, DMD, PhD; Joel B. Epstein, DMD, MSD, FRCD(C), FDS RCSE

ABSTRACT

Broad access to better HIV treatment has resulted in a significant reduction in the prevalence of HIV-associated oral lesions in western industrialized countries. However, a possible increased prevalence of oral warts and a potential dissociation between CD4+ T-cell counts and oral manifestations of HIV require continued vigilance by oral health care providers. Head and neck and oral examination coupled with a careful consideration of the complications associated with hyposalivation remain essential components of a comprehensive oral health care program.

HIV is a retrovirus carried by more than 40 million people worldwide.¹ HIV infection leads to gradual deterioration of the immune system and to the development of AIDS. As of June 2006, 61,423 people in Canada had been infected with HIV; 20,493 of them had been diagnosed with AIDS, and at least 13,326 people with AIDS had died.² Notwithstanding extraordinary progress in understanding and managing HIV pathogenesis, there is no cure for HIV-related disease and the treatment of choice is to target HIV viral replication with the expectation of delaying further immune suppression. With disease progression, the deleterious effect of HIV on the immune system results in an escalating incidence of widely recognized and extensively described opportunistic infections and diseases, among which are the oral manifestations of HIV (OMHS).³⁻⁵ A summary of the most common OMHS and their recommended treatment is presented in Table 1.

Since the onset of the HIV pandemic, OMHS have been well documented as early markers of HIV infection⁶ and as predictors of HIV disease progression.⁸ Oral candidiasis (Fig. 1) and oral hairy leukoplakia (Fig. 2)⁹ are lesions associated with fungal and viral pathogens, respectively, and are the most frequently occurring OMHS. Others, such as human papillomavirus (HPV) related warts (Fig. 3), aphthous-like ulcers and Kaposi’s sarcoma have also been reported extensively. OMHS contribute to HIV-related morbidity and are believed to serve as important markers of HIV infection and disease progression even in those on modern HIV therapy.

The therapeutic breakthrough associated with the introduction of HIV-specific protease inhibitors more than 10 years ago has significantly improved the prognosis of HIV disease.¹⁰,¹¹ The use of HIV protease inhibitors combined with therapy targeting the HIV reverse transcriptase enzyme (highly active antiretroviral therapy or HAART) is associated with a sustained decrease in viral replication and stabilization or even an increase in the peripheral CD4+ T-helper cell count,¹² a subset of lymphocytes targeted by HIV. It is generally accepted that the risk of developing an OMH
### Table 1: Most commonly observed oral manifestations of HIV and recommended treatment

<table>
<thead>
<tr>
<th>Oral manifestations of HIV</th>
<th>Treatment</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Oropharyngeal candidiasis | Clotrimazole: 10-mg troches, orally, 5 times a day for 7–14 days  
Flucloxacillin: 100 mg, orally, once daily for 7–14 days  
Refer when refractory to fluconazole a | • CDC guidelines do not recommend prophylaxis except for exceptional cases of severe or frequent recurrences.  
• Consider drug–drug interactions and liver status when choosing a systemic or topical treatment. |
| Oral hairy leukoplakia | In-office application of podophyllum resin (25%) | • There are insufficient data to support evidence-based treatment recommendations. Considering the inconsequential nature of the lesion, systemic antiviral medication may not be warranted. |
| Oral warts | Surgical excision and biopsy; refer for extensive/recurrent lesions a | • There are insufficient data to support evidence-based treatment recommendations other than surgical excision.  
• Consideration should be given to the possibility of spreading HPV to other surfaces during surgery, and potential cancer risk. |
| Oral herpes simplex | Acyclovir: 800 mg, 4 times a day for 7 days  
Valacyclovir: 500 mg twice daily for 7 days  
Refer those with severe, persisting or recurrent lesions a | • Topical antiviral medication should be considered for patients with CD4+ counts above $0.2 \times 10^9/L$ and herpes labialis. |
| Recurrent aphthous-like ulcerations | High-potency topical steroids, such as fluocinonide and clobetasol  
Refer severe cases b; systemic steroids, thalidomide or immunosuppressives may be considered | • The use of topical steroids may result in increased incidence of oropharyngeal candidiasis.  
• Systemic therapy should be limited to those experienced in the use of these medications. |
| Gingival and periodontal disease | Oral hygiene, prophylaxis, scaling/ curettage, chlorhexidine rinse; may be combined with systemic antibiotics | • Some studies report linear gingival erythema with a band-like pattern of erythema and increased intensity of bone and soft tissue loss |
| Malignant lesions: oral Kaposi’s sarcoma, squamous cell carcinoma, lymphoma | Intralentional injection of vinblastine or sodium tetradecyl sulfate 3% and/or low-dose radiation therapy | • Patient with biopsy-confirmed disease should be referred to physician for evaluation of the involvement of other organs.  
• Intralressional treatment should be limited to those experienced in the use of these medications. |
| Hyposalivation | Stimulation of gland function: taste, chewing and sialogogues  
Prevention of oral complications (caries, candidiasis) | |

*aRefer to an appropriate specialist  
CDC = US Centers for Disease Control and Prevention; HPV = human papillomavirus.

Source: Reference 6
increases with decreasing CD4 count and higher HIV load.\textsuperscript{13,14} However, this observation may be less accurate in patient populations with long histories of HIV infection.\textsuperscript{15} Because CD4+ counts are not a direct measure of immune function, opportunistic infections, such as OMHs, may be a more accurate reflection of HIV disease status. A disconnect between opportunistic infections and CD4+ counts could also be explained by a paradoxical transient deterioration of immune function during initial response to HIV medication, referred to as the immune reconstitution syndrome.\textsuperscript{16}

Although the treatment of specific OMHs has been effective,\textsuperscript{6} it is evident that the most successful treatment is to prevent or reverse the underlying primary immunodeficiency disease.\textsuperscript{17} Accordingly, the introduction of HAART is associated with a significant decrease in the prevalence of opportunistic diseases including OMHs. For example, HAART is associated with a significant decrease in the prevalence of oral candidiasis and oral hairy leukoplakia coupled with an improved CD4 count.\textsuperscript{18}

Seemingly in contradiction with those findings, an increased prevalence of oral warts has been noted by some investigators despite a marked improvement in CD4 cell count.\textsuperscript{19} This observation may not reflect true increased prevalence in the population. However, because of the link between HPV and cancer, it suggests that, with increased life expectancy of HIV-infected patients, oral cancer may become a clinically significant long-term complication.

The prevalence of OMHs is declining in populations in industrialized countries with the introduction of better HIV therapies. However, an increase in salivary gland disease, xerostomia and oral warts has been seen.\textsuperscript{20} This should be of utmost interest to the dental profession because saliva is an essential contributor to oral health. Xerostomia in HIV patients, either triggered by HIV disease directly or as a side effect of medications, represents an additional risk factor for caries and periodontal disease as well as OMHs, especially oral candidiasis, the most commonly diagnosed OMH.

Finally, in addition to poor response or adherence to HIV treatment, low CD4 counts or high HIV load, tobacco use is confirmed as a risk factor for OMHs.\textsuperscript{21–23} Furthermore, the effect of tobacco use in addition to increased HPV disease may result in a dramatic increase in the incidence of oral cancer in HIV patients.

Taken together, the epidemiology of OMHs in the post-HAART era indicates that OMHs are less frequent, but new and poorly understood paradigms are emerging. Those paradigms include a possible upsurge in the prevalence of oral warts and the possibility that, with time, CD4+ T-cell counts and the prevalence of OMHs may not correlate. The practical significance of those 2 emerging paradigms is that oral health care providers have to continue to be vigilant in their examination and treatment of their HIV-infected patients. To deliver an optimal level of care, oral health clinicians should emphasize the early detection of oral cancer. They should remain vigilant in the diagnosis of OMHs traditionally associated with low CD4+ counts (i.e., Kaposi’s sarcoma) even in patients with high CD4+ counts. In addition, clinicians must address the complications of hyposalivation and must offer an effective tobacco smoking cessation program either by referral or by the oral health care provider directly.

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References
Oral Malignancies Associated with HIV

Joel B. Epstein, DMD, MSD, FRCD(C), FDS RCSE

Abstract

Advances in the management of HIV infection have resulted in significant changes in survival and in the prevalence and incidence of oral diseases found in persons infected with HIV (as discussed in other articles in this series). HIV is associated with an increased risk of malignant disease that is related to immunosuppression and the activity of the HIV transactivator of transcription protein, co-viral infection and exposure to carcinogens. The presence of oral malignancies varies with the route of the transmission of HIV and varies geographically, based on behaviour, viral cofactors, HIV therapy and genetic variation. Oral health care providers can identify these lesions early.

People who are HIV-positive have more than a twofold increased risk of malignant disease, and an estimated 30% to 40% of them will develop a malignant disease.1 AIDS-related cancers include Kaposi’s sarcoma, Hodgkin’s lymphoma, non-Hodgkin’s lymphoma, basal cell carcinoma, cervical cancer, seminoma, leiomyoma and leiomyosarcoma.2,3 A risk of Hodgkin’s lymphoma, hepatocellular carcinoma and anogenital epithelial neoplasia has been associated with HIV, whereas data about the risk of testicular seminoma, multiple myeloma, melanoma and oral squamous cell carcinoma are limited.4–6

Oral Kaposi’s sarcoma is highly associated with sexual transmission and is an AIDS-defining condition. This sarcoma is much less common in females than in males.7 Oral signs of non-Hodgkin’s lymphoma and oropharyngeal squamous cell carcinoma have been classified as malignancies and are non-AIDS-defining conditions. The route by which HIV is acquired carries a risk of transmission of additional viruses that may contribute to the development of malignant disease.8 Smoking tobacco seems to play a major role in cancer in patients who are HIV-positive.9

Since the introduction of highly active antiretroviral therapy (HAART) in the mid 1990s, dramatic changes have occurred in the oral manifestations of HIV (see the article on the changes in the pattern of oral lesions associated with HIV infection on page 949), including a dramatic reduction in Kaposi’s sarcoma. However, oral verrucous lesions caused by human papilloma virus (HPV) infection have increased. Lymphoma is the most rapidly increasing malignant disease in patients with HIV and its prevalence has not been affected by HAART. A number of non-AIDS-defining malignancies have been reported with increasing frequency, including melanoma, and cancers of the head and neck, anus, lung and testis.9 Oral malignant disease may occur before a diagnosis of HIV, may arise during the progression of HIV disease or may be largely independent of the overall helper-cell counts, such as lymphoma. The purpose of this paper is to help dental practitioners identify the early signs of these diseases and maintain the oral health of their patients with HIV.
Oral Squamous Cell Carcinoma

Tobacco and alcohol use, HPV infection, immuno-deficiency and possibly genetic changes represent risk factors for oral squamous cell carcinoma in patients with HIV infection (Fig. 1). One study reported a more than twofold increase in the incidence of oral and pharyngeal cancer, although the study did not control for the effects of tobacco and alcohol use. Oral squamous cell carcinoma in patients who were HIV-positive may affect younger people who have no other known risk factors commonly associated with squamous cell carcinoma. One study showed that patients who were HIV-positive had a more advanced stage of oral squamous cell carcinoma and poorer survival (57% survival at 1 year and 32% at 2 years) than patients who were HIV negative (74% and 59%, respectively). The pathogenesis of oral squamous cell carcinoma in patients with HIV includes increased cell growth and proliferation caused by viral interference with tumour suppressor proteins (p53, Rb) and activity of the HIV transactivator of transcription protein and HPV. Squamous cell carcinoma of the tonsils has the highest prevalence of HPV-16 DNA and may therefore be associated with some cases of oral squamous cell carcinoma in patients who are HIV-positive. The frequency of HPV-containing oral warts in adults who are HIV-positive and are on HAART is increasing. These warts are most often associated with oncogenic HPV-16 and HPV-18. Regezi and others reported that 20 of 22 dysplastic warts in patients with HIV showed high-proliferation protein levels, suggesting that these lesions may carry a risk of malignancy, although this was not demonstrated in the study cohort.

Epstein-Barr virus was identified in 17.59% of all oral tumours and in 63.1% of squamous cell carcinomas of the tongue in 12 patients, suggesting a potential relationship between Epstein-Barr virus and oral squamous cell carcinoma in some patients.

Kaposi’s Sarcoma

Kaposi’s sarcoma (Figs. 2 and 3) is an angioproliferative disease that may arise from a mesenchymal progenitor cell infected by human herpes virus-8. The risk of Kaposi’s sarcoma in patients with HIV, which is closely associated with sexual transmission, is 5 to 10 times greater in male homosexuals than in other HIV-risk groups. The HIV transactivator of transcription protein may promote the growth of Kaposi’s sarcoma, the most prevalent AIDS-associated malignancy before the advent of HAART. The reduction in the incidence of Kaposi’s sarcoma has been attributed to the protease inhibitors in HAART.

Kaposi’s sarcoma may present with localized, regional or widespread involvement. Oral Kaposi’s sarcoma frequently involves the palate, gingiva and tongue. Treatment is related to the distribution of lesions. If they are limited to the oral environment, local or regional therapy may be considered. If these lesions are widespread, systemic chemotherapy may be used.

Lymphoma

Non-Hodgkin’s lymphoma in patients with HIV is an AIDS-defining condition. Oral signs of lymphoma may be soft-tissue masses with or without ulceration and tissue necrosis that frequently involves the gingival, palatal and alveolar mucosa, along with other oral tissues (Figs. 4, 5 and 6). Oral lymphoma may mimic periodontal disease, with thickening, mass, ulceration and radiographic changes, including widening of the periodontal ligament space, loss of lamina dura and bone destruction. The risk of non-Hodgkin’s lymphoma for patients with AIDS is 15 times greater for those with low-grade and T-cell
non-Hodgkin’s lymphoma, and up to 400 times greater for those with high-grade non-Hodgkin’s lymphoma than for patients without HIV. Non-Hodgkin’s lymphoma is evenly distributed for different HIV transmission groups and is often diagnosed at an advanced stage with bone marrow involvement in about half of patients. The risk of developing non-Hodgkin’s lymphoma is 1.6% per year of HIV infection; the risk for patients on HAART for 3 years is 19%. Unlike Kaposi’s sarcoma, the incidence of non-Hodgkin’s lymphoma has not changed since the introduction of HAART.

The majority of cases of AIDS-related non-Hodgkin’s lymphoma are aggressive large-cell lymphomas or immunoblastic lymphomas that are associated with the Epstein-Barr virus. Most non-Hodgkin’s lymphomas are high-grade B-cell lymphomas. B-cell mucosa-associated-lymphoid-tissue lymphoma may involve mucosal sites or the salivary glands. Patients with HIV who have enlargement of the salivary glands may have benign lymphoepithelial lesions involving the gland that are associated with a 44-fold increased risk of developing lymphoma, most often mucosa-associated lymphoid tissue lymphoma. While the lesions are generally benign, the potential for the development of malignant lymphoma requires further study. AIDS-related non-Hodgkin’s lymphomas are commonly aggressive B-cell lymphomas, mucosa-associated-lymphoid-tissue large-cell lymphomas, or immunoblastic lymphomas. T-cell lymphomas are less common. Survival rates for patients with non-Hodgkin’s lymphoma are lower for those who are HIV-positive.

Treatment includes systemic chemotherapy given in conjunction with HAART, and supportive care with hematopoietic growth factors and prophylaxis for HIV-associated infections. High-dose chemotherapy combined with autologous hematopoietic transplantation may be considered. Patients with advanced Hodgkin’s lymphoma are usually treated with a combination chemotherapy regimen, such as MOPP (mechlorethamine, vincristine sulfate, procarbazine and prednisone), or ABVD (doxorubicin hydrochloride, bleomycin, vinblastine and dacarbazine), or EBVP (epirubicin, bleomycin, vinblastine and prednisone). Autologous stem-cell transplantation may also be considered.

**Conclusion**

The pattern of cancer in patients with HIV may continue to change as HAART and new therapies prolong the life of patients. Chronic immunosuppression because of HIV, other viral risk factors and tobacco play a significant role in a number of malignancies in patients who are HIV-positive. Oral Kaposi’s sarcoma is rarely seen, but may be identified in untreated people or be a sign of the progression of HIV. Tobacco use and HPV may play an increasing role in oral squamous cell carcinoma in the future. Lymphoma is now the most common malignant disease in patients with HIV. Hodgkin’s lymphoma may be more common with injection drug users than other HIV-risk groups. Patients who are HIV-positive and have Hodgkin’s lymphoma have a higher frequency of infection with the Epstein-Barr virus than those who are HIV negative. Challenges in the management of malignancies include marrow suppression and opportunistic infections, as well as potential drug–drug interactions between chemotherapy and HAART. In most cases, HAART is continued unless excessive toxicity develops. Active prophylaxis of infections, new regimens of systemic chemotherapy and increased use of hematopoietic stem-cell transplantation are part of modern anticancer therapy when patients have HIV. The dentist’s role is to identify early changes in the mucosa that lead to a diagnosis of cancer and to maintain the patient’s oral and dental health.
THE AUTHOR

**Dr. Epstein** is professor and head, department of oral medicine and diagnostic sciences, College of Dentistry, and director, interdisciplinary program in oral cancer, College of Medicine, Chicago Cancer Center, University of Illinois at Chicago, Chicago, Illinois.

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The author has no declared financial interests.

This article has been peer reviewed.

**References**


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### CDA Fund Performance (for period ending October 31, 2007)

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

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

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

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