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

CJDH JCHD

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QUARTERLY ISSUE · MAY 2011 VOL. 45, NO. 2

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Ladies in Red, Canmore, Alberta, 133

THE OFFICIAL JOURNAL OF THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

Advancing the Profession! Critical thinking skills needed!

Palmer Nelson,
BA(Bio.), DDH, RDH

It has been a very busy time at the CDHA since my last message to you. Following my themed messages and reflections on *Entry-To-Practice Competencies and Standards for Canadian Dental Hygienists,*[1] I was struck by the core competency—the dental hygienist as a critical thinker.

As critical thinkers, we, as a Board, are "habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit."[1]

It is how and where we seek inquiry and become informed that the CDHA relies on you to employ your critical thinking skills and advance the profession by shaping our strategic ends or goals, and enable our Executive Director, Ondina Love, formalize the goals by devising operational strategic plans that will carry out your insight and view of the future.

Opportunities to be heard in person are available soon at our upcoming national conference, *Advancing Dental Hygiene Practice,* in Halifax, 9–11 June. The CDHA Board of Directors will launch its *Members Handbook* and host a breakfast to listen to your input. Our social media is always open for your contributions through our Educators' List serve, Community Forums, Facebook and Twitter; while email and phone calls are welcome. Let us know how you would like to be heard.

Thank you to all who have contributed! We are listening, and have heard your concerns—job shortages, economy of dental hygiene practice, proliferation of dental hygiene programs, standardization of education, degree completion, master and doctorate programs, opportunities for research and funding, advocacy and the excitement around interprofessional collaboration, as well as the advancement of the profession into alternative practice settings. Thank you for individually employing your critical thinking skills.

I charge you all to think about YOUR profession and let the CDHA know how you see the future and the advancement our profession. Get involved—why not run for election to sit on the Board of Directors? Be part of the big picture.

Pride in our profession propels us into the future. We at CDHA need your voice and support, your critical thinking skills to collectively advance the profession and move the profession forward as we work towards and expanding

…continued on page 81

CDHA welcomes your feedback: president@cdha.ca

L'avancement de la profession ! Besoin d'esprits critiques !

L'ACHD a été fort occupée depuis mon dernier message. À la suite de mes propos et réflexions sur le thème des Compétences et normes d'entrée en pratique pour les hygiénistes dentaires canadiennes,[1] *j'ai été impressionnée par la compétence fondamentale de l'hygiéniste dentaire, celle de l'esprit critique.*

En tant qu'esprits critiques, nous, membres du conseil, « sommes ordinairement curieuses, bien renseignées, confiantes en la raison, ouvertes d'esprit, souples, équitables dans l'évaluation, honnêtes devant les préjugés personnels, prudentes dans nos jugements, prêtes à reconsidérer, lucides face aux problèmes, ordonnées sur les questions complexes, diligentes dans la recherche de l'information pertinente, raisonnables dans le choix des critères, concentrées dans nos recherches et déterminées dans la recherche de résultats qui seront aussi précis que le sujet et les circonstances qui auront permis l'investigation. »[1]

L'ACHD compte sur vous, sur vos capacités critiques, pour établir les circonstances, où et comment mener l'investigation, pour se renseigner et faire progresser la profession en définissant des buts ou objectifs et en permettant à notre directrice générale, Ondina Love, d'officialiser ces objectifs par l'élaboration d'un plan stratégique d'opérations qui permettra de réaliser nos compréhensions et perspectives d'avenir.

Vous aurez bientôt l'occasion de vous exprimer de vive voix lors de notre prochain congrès national qui traitera de L'avancement de la pratique d'hygiène dentaire, du 9 au 11 juin, à Halifax. Le Conseil d'administration de l'ACHD lancera son Guide des membres et organisera un petit déjeuner pour écouter votre apport. Nos médias sociaux sont toujours ouverts à vos contributions par le biais de la Liste des éducatrices, les Forums communautaires, Facebook et Twister; ou encore par courriel ou téléphone. Dites-nous par quelle voie vous souhaitez vous faire entendre.

Merci à toutes celles qui ont contribué ! Nous vous écoutons et avons entendu vos préoccupations : manque d'emplois, rentabilité de l'exercice de l'hygiène dentaire, prolifération des programmes d'hygiène dentaire, normalisation de la formation, achèvement du diplôme, programmes de maîtrise et de doctorat, opportunités de recherche et financement, représentation et incitation à la collaboration interprofessionnelle, de même que l'avancement de la professions dans des voies parallèles d'exercice. Merci d'utiliser personnellement votre propre sens de la critique.

Je vous incite vivement à penser à VOTRE profession et à informer l'ACHD de votre façon de voir l'avenir et l'avancement de notre profession. Impliquez-vous – pourquoi ne pas vous présenter aux élections pour siéger au Conseil d'administration ? Faites partie du tableau d'ensemble.

La fierté de notre profession nous propulse dans l'avenir. À

…suite page 81

L'ACHD accueille vos commentaries : president@cdha.ca

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Editorial contributions to the *CJDH* do not necessarily represent the views of the CDHA, its staff or its board of directors, nor can the CDHA guarantee the authenticity of the reported research. As well, advertisement in or with the journal does not imply endorsement or guarantee by the CDHA of the product, service, manufacturer or provider.

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Getting it right

Ondina Love, CAE
Executive Director

I am very excited to be working alongside a committed and dedicated Board of Directors who have established a vision and goals for the association, based on member feedback. It is the role of the staff, under the leadership of the Executive Director, to interpret these goals and to ensure that these are translated into valuable programs and services for all members. This cannot be done in isolation. It's important that over 16,000 dental hygienists across Canada lend their voice to the types of programs and services that they want.

We will be seeking your input and direction over the next several months to ensure that we are delivering the right programs to meet the needs of the majority of members. I've been very impressed with the wide range of services the CDHA provides including advocacy, continuing education, a professional peer reviewed journal, public awareness, affinity programs, and much more. However, society is changing at a very rapid pace, and it's imperative that the CDHA delivers the right programs and services that are relevant to members' needs.

What does it mean to be a member of your national professional association—the CDHA? What current programs and services do you value the highest? What challenges do you face day-to-day in your workplace, and are there any new or innovative programs or services that the CDHA could offer to help you with? What are the key issues that you feel the profession is facing today?

Feedback from members will form the basis for CDHA's strategic plan. We'll translate your advice and the goals you have identified to the Board of Directors into meaningful, relevant, and useful programs and services.

The CDHA is not just an office in Ottawa. It's a membership based organization—with over 16,000 professionals contributing to the health and well being of Canadians. We look forward to hearing your input so that we can support our members in the important role they play in Canadian society.

I have worked for non profit associations for twenty-six years—and the past fifteen years with healthcare associations. I feel very privileged to be working for the CDHA and the profession of dental hygiene. It's a critically important profession, vital to oral health.

We look forward to your input. Lend your voice, and help us get it right.

Bien agir

C'est très emballant d'avoir à travailler avec un Conseil d'administration qui a établi les vues et buts de l'association à partir de la réaction des membres. Il incombe alors au personnel, sous la direction de son chef, d'interpréter ces buts et d'en tirer un programme et des services précieux pour tous les membres. Cela ne peut se faire isolément. Il importe donc que les plus de 16 000 hygiénistes dentaires du Canada se fassent entendre sur les types de programmes et services qu'elles souhaitent.

Nous solliciterons donc votre participation et vos orientations au cours des mois à venir pour faire en sorte de livrer les bons programmes et combler les besoins de la majorité des membres. J'ai été fort impressionnée de l'ampleur des services que l'ACHD fournit à ses membres, notamment, la représentation, la formation continue, le journal professionnel revu par les pairs, la sensibilisation du public, les programmes d'affinité et bien davantage. Toutefois, comme la société évolue très rapidement, l'ACHD se doit d'assurer à ses membres des programmes et services appropriés à leurs besoins.

Que signifie pour vous l'adhésion à votre association professionnelle nationale — l'ACHD ? Quels sont les programmes et services actuels que vous appréciez le plus ? Quels sont les défis que vous devez relever quotidiennement dans votre milieu de travail et quels seraient les programmes et services nouveaux ou innovateurs que l'ACHD pourrait vous offrir pour vous aider ? Quels sont, d'après vous, les problèmes clés qui confrontent la profession ?

La réaction des membres servira de fondement au plan stratégique de l'ACHD. De vos avis et vos buts nous tirerons à l'intention du Conseil d'administration des programmes et services constructifs, pertinents et utiles.

L'ACHD, ce n'est pas uniquement un bureau à Ottawa. C'est une organisation fondée sur des adhésions — elle compte plus de 16 000 professionnelles qui contribuent à la santé et au bien-être de la population canadienne. Nous accueillerons avec plaisir votre apport qui nous aidera à soutenir nos membres dans le rôle important qu'elles assument dans la société canadienne.

J'ai travaillé pour des associations sans but lucratif pendant vingt-six ans — et les quinze dernières années pour des organises de la santé. Je m'estime fort privilégiée de travailler pour l'ACHD et la profession d'hygiène dentaire. C'est une profession d'importance essentielle pour la santé buccodentaire.

Nous attendons votre participation. Prêtez votre voix et aidez-nous bien agir.

CDHA welcomes your feedback: info@cdha.ca

L'ACHD accueille vos commentaires : info@cdha.ca

Dental hygiene business owners and our *Code of Ethics*

Dear editor:

In my home province of New Brunswick, dental hygienists may soon be able to open their own practices, unsupervised by a dentist. With expanding opportunities, we may follow the emerging nationwide trend of increasing numbers of dental hygiene business owners. CDHA's *National Dental Hygiene Job Market and Employment Survey 2009*[1] indicated that 18.9% of respondents were actively seeking to practise outside of a traditional dental clinic, an increase from 7.4% in 2006. Among this group, those who sought to own their own dental hygiene business increased from 0.0% in 2006 to 27.7% in 2009. The percentage of respondents currently practising in dental hygiene clinics rose as well from 0.6% in 2006 to 6.1% in 2009.

As several contributors to the November–December 2010 issue of this journal noted, dental hygiene advocates have come a long way in increasing the opportunities for the men and women of our profession to deliver care in alternative settings. Over 250 dental hygienists have already opened their own practices across Canada.[2] CDHA offers numerous resources for its members who are interested in starting their own businesses. However, the CDHA *Code of Ethics*[3] makes no mention of dental hygienists as proprietors of dental hygiene practices. As

Table 1. Comparison of the Principles of the CDHA *Code of Ethics* with the Articles of the CDA *Code of Ethics*.

CDA Article		CDHA Principle
Responsibilities to Patients	Service	Beneficence
	Competency	Accountability and Professionalism
	Consultation and Referral	Accountability
	Emergencies*	Beneficence
	Provision of Duties	Beneficence
	Delegation of Duties*	Accountability
	Arrangements for Alternate Care*	Beneficence and Accountability
	Choice of Treatment	Autonomy and Professionalism
	Confidentiality	Privacy and Confidentiality
	Guarantee	Autonomy, Accountability, and Professionalism
	Provision of Information	Autonomy
	Records*	Privacy and Confidentiality and Accountability
Responsibilities to the Public	Representation*	Accountability
	Contractual Services*	Accountability
	Choice of Dentist*	Beneficence and Autonomy
	Fees and Compensation for Service*	Beneficence
	Third Party Dental Plans*	Beneficence, Accountability, and Professionalism
	Community Activities	Professionalism
	Market Advocacy	Professionalism
Responsibilities to the Profession	Support of the Profession	Professionalism
	Inappropriate Conduct	Accountability
	Advertising*	Beneficence, Accountability, and Professionalism
	Professional Equality	Professionalism
	Patents and Copyright	Beneficence and Professionalism
Responsibilities to Colleagues	Consultation and Referral	Professionalism
	Judgements in Peer Relations	Professionalism

* Dentists as business owners or emergency care providers.

such, given an opportunity in the form of a class assignment, I made a comparison of the *Codes of Ethics* of the Canadian Dental Association[4] (the association of traditional dental business owners) and of the CDHA.

The *Codes of Ethics* of the two organizations both serve essentially the same purpose — providing a public document as a resource for all members of the profession that serves as a basis for ethical decision making.

While the principles of the two *Codes* differ, they share the common theme of the health professional's first responsibility being to the patient or client. The principles of the CDA's *Code*, in order of priority, are:

i. Life and Health
ii. Appropriate and Pain Free Oral Function
iii. Patient Autonomy
iv. Practice Preferences
v. Aesthetic Values
vi. Cost

CDA's *Code of Ethics* is elucidated in a slightly different format than is the CDHA's. Rather than listing several standards that fall under a common principle, it elaborates many articles under the categories of *Responsibilities to Patients, to the Public, to the Profession*, and *to Colleagues*. Most of these duties parallel the standards that fall under the principles in the CDHA's *Code of Ethics*, or could be interpreted as generally upholding one or more of the principles. Table 1 summarizes these correlations.

Several of the articles (denoted in Table 1 with an asterisk) of the CDA *Code of Ethics* relate specifically to dentists as business owners or emergency care providers, while virtually none of the CDHA's principles and standards take this same approach. Another related difference between the *Codes* is that the CDHA *Code* mentions specifically the role of the dental hygienist as an employee. Though these articles may have no exact equivalent in the CDHA *Code*, many would be presumed to fall under the principles of Accountability, Professionalism, and Beneficence. My impression is that several of these articles may have come about to discourage the use of a commercial model of professionalism in dentistry and to reinforce that the primary responsibility of the dentist is quality patient care. Some articles also elaborate on topics relevant to clinic administration.

It is interesting to note that while the Canadian *Codes of Ethics* have mimicked the traditional employer–employee relationship between dentists and dental hygienists, our colleagues south of the border use a more flexible *Code*, which bears a close resemblance in structure to CDA's (rather than the CDHA) *Code*. The American Dental Hygiene Association's *Code of Ethics*[5] addresses both employee and employer roles for dental hygienists in its standards.

While the CDHA's *Code of Ethics* may lack the detailed guidance for employers that the CDA's *Code* provides, its concise format has clear benefits. The ease with which practitioners can bring to mind the five ethical principles — Beneficence, Autonomy, Privacy and Confidentiality, Accountability, and Professionalism — allows for greater pervasiveness and more rapid decision making. Furthermore, these principles would likely lead us to make decisions similar to those guided by the CDA's articles (as per the assumptions made in Table 1). However, one way in which the CDHA *Code* does fail us is subliminally — by neglecting to make note of our potential to become entrepreneurs and employers.

Are changes to our *Code of Ethics* necessary with increasing opportunities and more widespread self regulation? Or are we capable of inferring what our principles would have to say about some of the finer points of practice management? The latter is already the case with many other relevant articles of the CDA's *Code*, but we must bear in mind that the current CDHA *Code of Ethics*, originally published in 2002, pre-dates self regulation in half of the Canadian provinces. It will be interesting to see if our *Code* evolves as more of us step out of our traditional employee role to deliver care.

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Unbiased information for the dental hygienist

Dear editor:

I attended the 9th Annual Symposium of Cochrane Canada as a recipient of the CDHA–P&G Travel Bursary award this February. As a clinical dental hygienist, daily I am challenged to practise with scientific evidence and complete information on which to base my decision making. My clients and colleagues ask such questions as: What is the optimal time interval for routine scaling and polishing? Which are better – manual or powered toothbrushes? What are effective strategies to increase adherence to oral hygiene instruction? How effective are topical fluoride treatments?

Do these questions sound familiar? How do I find this knowledge of unbiased information and use that evidence? "Knowledge is the enemy of disease. The application of what we know will have a bigger impact on health and disease than any drug or technology likely to be introduced in the next decade. The application of what we know from research, from data analysis, and from experience."[1]

▲ Sherry Priebe at the Cochrane symposium in Vancouver, 16–17 February.

The *Canadian Cochrane Centre* (CCC) is one of fourteen independent centres of the Cochrane Collaboration worldwide supporting evidence based healthcare in Canada. The CCC promotes the collaboration of all health professionals and associations through *The Cochrane Library*. Systematic, quality appraised reviews in this library, based on the highest of standards, are the assembly of research studies to enable us develop the knowledge, skill and culture for evidence informed decisions. An explanation of evidence based practice is the integration of best research evidence with clinical expertise and patient values to facilitate clinical decision making. Evidence based clinical decision making should incorporate consideration of the patient's *clinical state, the clinical setting, and clinical circumstances*.

Unfortunately, not everyone in Canada has access to databases of research or the search skills to find information; however, Cochrane Collaboration has abstracts of systematic reviews available for public viewing at http://www.cochrane.org/cochrane-reviews. In addition, once the research is found, clinicians often do not have training in critical appraisal skills. It is imperative that we increase access to credible and practical information as an investment in our knowledge infrastructure. So, knowledge synthesis can offer a solution by summarizing large amounts of information in a systematic, scientific way. This can form the basis for the knowledge translation of research in the form of systematic reviews. The CDHA is one of twenty-two health professional, research, and patient organizations that advise CCC on future directions and activities, and promote the awareness, appreciation, distribution, and use of Cochrane systematic reviews among their members.

The theme of the symposium was *Early Exposure to Cochrane: Accessible, Credible, Practical*, reflecting these subthemes:

Accessible	Knowledge Translation: How to access and use evidence easier
	Education: Creating and using systematic review evidence
Credible	Leadership: Using best evidence for good decisions
	Methodology: Ensure the available evidence is of the highest quality
	Evidence for policy: Using evidence for complex health systems and policy decisions
	Evidence for good reporting: Reaching journalists and the media

Practical Healthcare providers and policy makers: Tools, guidelines and products for using best evidence to inform treatment decisions
Consumers: Using reliable health information at difficult times. Using Cochrane evidence in health decisions

As CDHA's representative at the symposium, my role also included a presentation of our activities to the stakeholders:

- Cochrane systematic review information posted on the CDHA web site, in CDHA e-newsletters, and in the *Canadian Journal of Dental Hygiene*;
- an award of a $1,500 bursary (with P&G) was presented to one of the members to attend the CCC Symposium;
- a collaboration to develop and deliver three webinars on Cochrane systematic reviews; and
- the presentation of a webinar on fluoride toothpaste with a follow up research forum to continue an online discussion in partnership between CIHR, Cochrane Canada, Cochrane Oral Health Group and the CDHA.

Some of my favourite quotes from the event were:

- Alan Cassels, U of Vic., author of 'Selling Sickness': *How do we increase access to health? Find the evidence (which settles arguments) in context from reliable sources to give a balanced story.*
- Ian Scott, U of McMasters: *We need patient centred care/a partnership in care model with social accountability and responsibility. Serve rather than practise on a patient.*

Twitter quotes:

- Dif levels of evidence required for dif levels of decision making. Policy makers need other sources of info besides 'what works'.
- Knowledge translation is a synthesis of results and not just one set of results.
- Cognitive skill of the 21st century: the ability to scan to deal with the amount of information coming in.
- Most effective way to get your health research out there on social media? Get @JustinBieber to retweet it.

These tweets and quotes brought home to me once more the urgency and importance of having relevant and unbiased information on research available to help us practise our profession.

Yours sincerely,

Sherry Priebe, RDH, BDSc, MSc.
E-mail: spriebe@shaw.ca

Reference

1. Sir Muir Gray, CBE. National Knowledge Service. Quoted on http://www.london.nhs.uk/lpfit/knowledge-management ©CDHA

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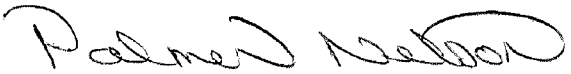
President's message, *Advancing the Profession! Critical thinking skills needed!*…continued from 67

workforce models of employment in diverse practice settings. Engage your critical thinking skills and be part of your CDHA! *To travel hopefully is a better thing than to arrive* — Robert Louis Stevenson

I look forward to meeting members in my upcoming travel to events in Edmonton, Cornerbrook, and Halifax!



Palmer Nelson
President, 2010–2011

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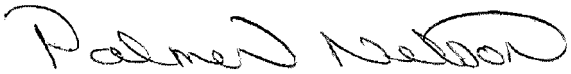
Message de la présidente, *L'avancement de la profession ! Besoin d'esprits critiques !*…suite 67

l'ACHD, nous avons besoin de votre voix et de votre soutien ainsi que de votre esprit critique pour promouvoir et faire avancer collectivement la profession par notre contribution à l'expansion de nos modèles de travail et d'emploi dans divers cadres d'exercice. Faites aller votre sens critique et participez à votre ACHD ! L'espérance du voyage vaut mieux que l'arrivée — *Robert Louis Stevenson (notre traduction)*

Il me tarde de rencontrer les membres lors de mes prochains voyages à Edmonton, Cornerbrook et Halifax !



Palmer Nelson
Présidente, 2010–2011

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The modern role of the dental hygienist

Tracey Lennemann, RDH, BA

Backed by policy, advocacy, and legislation, opportunities in the second decade of this millennium are throwing open doors to wider scope of practice for dental hygienists in Canada. Dental hygienists today are riding the successes of decades of work that our pioneers in the field of dental hygiene paved for us. We owe ourselves the responsibilities to carry forward the principles of our profession, and re-evaluate our roles as dental hygienists in the wider world of overall health.

Take some time this month to re-evaluate your role as a key part of a dental team. Answering these questions will help you determine some professional goals for this new decade.

Think about the following questions:

1. Do you like what you do? Is it fulfilling or a bit boring?
2. Is your job just a job or a career/profession?
3. Are you working to your full potential?
4. How is your relationship with the dental team? Can it be improved?
5. Do you work as part of a team or as an individual in it?
6. Do you have or are you interested in opening your own independent practice?
7. Who do you network with? Do you have good dental contact lists and referral practices?
8. How many continuing educations courses have you attended each year?
9. Do you implement this information regularly to your practice or just attend courses for the credits?
10. Are you working with modern technologies and equipment?
11. How effective are your communication skills?
12. Do you think you are a good motivator for your clients?
13. What can you do to create a more successful dental team and practice?

We should then assess our clinical duties and how we align ourselves with the workflow. Think about how you can involve the dental team and what you can improve and update this year. Your current familiarity with the various methodologies, therapies and techniques, and how you implement them within your treatment plans are part of this self assessment.

1. Consultation, education, chartings, health history, medical changes, and updates

You should be updating and reviewing each client, every visit. It only takes a few minutes and is essential in determining overall possible links to periodontal disease and other dental conditions.

Are you involved in the initial treatment planning? Are you regularly educating clients about oral disease and links to general health? Do you have a protocol for updating health histories and taking X-rays?

2. Periodontal risk assessments

These assessments are of extreme importance to determining therapeutic options for clients. Complete annual periodontal charting including measuring of bone loss, pocket depths, recession, furcation involvement, mobility, abrasion and/or any other defects found. Plaque indexes, bleeding/inflammation indexes, oral hygiene indexes, taking, updating and interpreting X-rays, and DNA testing of subgingival bacterial colonies help evaluate the status of health or disease of a patient. These findings should be evaluated during the first several visits and then monitored at each consecutive visit. How comfortable do you feel in implementing periodontal treatment? Do your skills need to be optimized, improved, or renewed?

3. Other risk assessments

Caries risk assessment including caries detection and control, DNA saliva and sulcular fluid testing, nutritional analysis, smoking cessation, oral cancer screening, intra and extra oral examinations are also important to the general health of patients. They are carried out when the patient shows signs of high risk factors contributing to each specific condition. Have you implemented any of these advanced screenings into your oral health programs?

4. Therapeutic treatments

After assessing the client, a dental hygienist must develop an individual treatment plan. General light plaque debridement with ultrasonic power scalers and some hand instruments, polish, including air and manual, and some oral care instructions can be split as two appointments depending upon the condition of the disease and time allotment. Non surgical periodontal treatment (curettage) and presurgical periodontal treatment (soft and hard tissue curettage) which uses hand instruments for removing rough root surfaces and dead tissue in deep pockets can be completed in multiple separate visits. Are you advancing your skills for periodontal therapy? Are you using the latest instruments and techniques for optimal treatment results?

Dentistry as we knew it twenty years ago has changed. A profession that was primarily mechanical and repair oriented is developing into a medical profession. It is not about trying to treat many people in a short time period. Research is bringing forward increasing links between the oral cavity and systemic diseases. Studies and statistics are providing us with more information as to the bidirectional relationship of periodontal disease and systemic conditions.[1] Therapies will take more time and be more involved than previously. Therefore, the role of the dental hygienist has changed.

We now know that periodontal disease is an inflammatory disease.[2] Health or disease of the oral cavity can contribute to the overall status of such systemic conditions as diabetes, heart disease, and circulatory problems, and in some cases can even effect medical treatments. The improved life expectancy and the increase in older population grow with the increase in health issues and systemic diseases.[3] The need for oral health and care is more important than before.

Case report

A diabetes Type 1 patient came in with heavy bleeding, gingival inflammation, 5-6-7 mm pockets and poor oral care. The doctors were having problems regulating his medication and kept changing the dosage. Periodontal therapy was completed in a series of 4 appointments and his oral hygiene optimized. At the 3 month periodontal recall appointment his plaque scores and oral hygiene had not only improved but he now needed only half of the medication to regulate his blood sugar before periodontal treatment. Dental therapy and treatments helped him improve his oral health and helped stabilize his medication, blood sugar levels and improve his general health as well—a bidirectional effect of one disease to another.

Knowing how oral disease is linked to systemic conditions is vital for individual treatment planning. The more systemic complications a client has, the more diligent a dental hygienist must be when recommending therapeutic options specific to that client's needs. More time and treatment sessions will be needed to complete the therapy therefore increasing the time and money a patient will have to invest in his/her dental treatment. This must be explained, educated and "sold" to the client, so your communications skills must be at their best. As well, working with latest technologies, systems and updating hands on skills determine success of therapy.

A dental hygienist is no longer a "tooth cleaning person" as was believed in the past. Our duties are complex and multifaceted. We must wear many different hats: consultant, confidant, guidance counsellor, teacher, educator, oral therapist, trusted person, visionary, technician, motivator, conservative periodontal specialist, brand manager, sales representative, team leader and psychiatrist are some of the roles dental hygienists occasionally slide into.

A dental hygienist is a health professional, and respects the clients and the entire dental team. Advance communication, people skills and compassion are valuable leadership skills. Cotreatment planning with the dentist, support of dental team, motivation and education of clients, along with application of new therapies, treatments, and products are valuable characteristics of a good dental hygienist. Flexibility and good listening skills will help develop a step by step plan for treating and guiding patients to a stable oral condition and possibly reducing risk factors that lead to other systemic conditions.

I encourage you to review your duties as a dental hygienist, make some goals and plans to improve your skills, update your knowledge and apply modern therapies to become that dental hygienist you started out to be.

It is not just about cleaning teeth anymore.

It is now about saving lives.

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Tracey Lennemann is an international professional speaker and trainer. She has been a practising clinical dental hygienist since 1986 in the USA and in Europe. Her motivational and educational programs have provided a unique integration of sales, communication and customer service tools designed to help the dental professional promote prophylaxis and periodontal concepts to their patients and clients. Correspondence to: Tracey Lennemann; tl@in2motion.net

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

Gift From The Heart

Dear editor:

The *Gift From The Heart* event is a way for registered dental hygienists (RDH) to give back to the community, celebrating Valentine's Day. This year, on 12 February, a group of RDHs accompanied by sixteen students and staff from Ontario Dental Education Institute (ODEI) Dental Hygiene program in Ancaster, did just that!

Throughout the full-day event, self initiating RDHs provided free dental hygiene care to those individuals in the community who cannot afford regular oral health treatment. Our ODEI clinic and waiting room were full of eager and grateful clients. The services provided ranged from cleanings, polishing, scaling, and fluoride treatments to oral cancer screenings.

In all, nearly 200 clients came to ODEI for the event, a large increase from the 30 individuals who took advantage of the services last year. The increase is attributed to a province wide marketing initiative by the founders of the *Gift From The Heart* event, along with an obvious need for affordable oral care services. Larissa Voytek, Program Director of ODEI's Dental Hygiene program was thrilled with the outcome stating, "Almost $20,000 worth of dental hygiene services was provided for free today. What amazing teamwork and great clients!"

This is the second time ODEI participated in *Gift From The Heart*, and the school won't be stopping anytime soon.

Yours sincerely,
Abigail Santos
Marketing and Admissions Coordinator
Ontario Dental Education Institute, Ancaster
E-mail: asantos@on-dei.com

▲ **Some of the volunteers (L-R):** *Back:* Michelle Atkinson RDH and ODEI *Gift From The Heart* team leader, Vanna Silzer, Lesley Kenwell-Simpson RDH, Edit Baranyai, Debbie Hamilton RDH. *Front:* Larissa Voytek RDH and ODEI Program Director, Jessica Ryan, Dawna Chiarot, Jennifer Cooper RRDH, Adele Champagne, Ashley Burton.

▲ *Gift From The Heart* in action: RDHs treating clients of all ages.

Editor's Note: CJDH *first featured the* Gift From The Heart *initiative two years ago in volume 43.2; pp.50.*

THE COCHRANE COLLABORATION®

In this issue, the focus of Cochrane Review Abstracts falls on the client. Dental hygienists' roles embrace interdisciplinary professions as crucial players in delivery of oral healthcare to their clients.

These abstracts and summaries were selected to encourage dental hygienists read the entire articles published for the Cochrane Collaboration by Wiley-Blackwell, and have been reproduced with permission.

1. Interventions to support the decision-making process for older people facing the possibility of long-term residential care

Gravolin M, Rowell K, de Groot J

Summary

Ways to support older people deciding whether to enter long-term residential care

The decision to enter long-term care is a major life event for older people. It is usually made at a time of crisis and vulnerability, and there is often pressure to make the decision quickly. How the decision is made may affect older people's adjustment to residential care and quality of life, along with those of their carers or family. There are a number of ways that health professionals provide support to older people making this decision. These include a thorough assessment of their needs, provision of adequate information, counselling, providing choices, and the facilitation and timing of the decision-making process.

The review authors could not find any studies that adequately assessed these interventions. This means that there needs to be more studies, not necessarily that the interventions are not helpful.

Older people who were not able to make decisions due to medical conditions were excluded from the review.

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Abstract

Background

The decision to enter long-term care is often a major life event for older people, made in the context of personal crisis and loss. We hypothesised that the process through which a decision to enter long-term residential care emerges affects the overall psycho-social adjustment to, and acceptance of, this decision, and may have an impact on a range of other outcomes for older persons and their carers, such as health status.

Objectives

To assess the effects of various decision-support interventions delivered by health or social care providers on the outcomes of older people facing the possibility of entering long-term residential care.

Search strategy

We searched: the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library,* Issue 1 2005); MEDLINE (Ovid) (1966 to November week 3 2004); PsycINFO (Ovid) (1872 to February week 4 2005); and other databases. There were no language restrictions.

Selection criteria

Randomised controlled trials, quasi-randomised controlled trials/quasi-experimental trials, controlled before and after studies, controlled prospective studies and interrupted time series studies of assessment, information provision, counselling, decision-making facilitation, provision of choice, timing of the process, other communication strategies and any other intervention deemed relevant in supporting decision making for older people facing the possibility of long-term residential care.

Data collection and analysis

As there were no studies that met the inclusion criteria no data collection or analysis was conducted.

Main results

No studies met the review's inclusion criteria. Although the searches identified a number of studies, they were predominantly opinion pieces or qualitative in nature. While these studies are a potential source of evidence about current practice or people's views, they were not suitable for drawing conclusions about the effects of interventions to support decision-making.

Authors' conclusions

No eligible studies were identified to inform the use of interventions to support the decision-making process for older people facing the possibility of long-term residential care. This should not be interpreted as demonstrating that these interventions are not effective. The many related studies we identified which did not meet the study design criterion for this review indicate that there is substantial research interest in this topic. It would be useful to summarise the information available in the wider literature using newly-developing methods for synthesising qualitative studies. This could help identify interventions which warrant further research. Rigorously conducted randomised controlled trials of these interventions could then make a valuable contribution to the range of evidence surrounding this significant event in the lives of many older people, informing practice and policy development.

2. Audio-visual presentation of information for informed consent for participation in clinical trials

Ryan R, Prictor M, McLaughlin KJ, Hill S

Summary

Audio-visual presentation of information used in the informed consent process for people considering entering clinical trials

Informed consent is important for people who are thinking about participating in a clinical trial. Information for informed consent could be presented on the Internet, DVD, video cassette or by other means.

We conducted thorough searches for randomised and quasi-randomised controlled trials of information about trial participation that contained some audiovisual component compared with standard information (such as written or oral information as usually provided in the particular setting). We found four relevant studies, all set in the USA and Canada. The four studies varied in terms of the design and type of the audio-visual information, its content and delivery, the people participating in the informed consent study and the different ways of measuring outcomes. While study quality was mixed, three of the studies attempted to minimise at least some sources of potential bias.

Uncertainty remains about the effects of audio-visual information for informed consent, compared with standard forms of information provision, for people thinking about participating in a clinical trial. All four studies assessed knowledge and/or understanding of the trial to which people's informed consent was being sought. Audio-visual interventions did not consistently increase participants' levels of knowledge/understanding, although one study showed better retention of knowledge amongst intervention recipients. One study showed that an audio-visual intervention could briefly increase people's willingness to participate in trials, but this was not sustained two to four weeks post-intervention. The audio-visual intervention did not affect people's views of the worth of the trial they were considering joining (one study). Another study found that an audio-visual intervention may enhance the quality of the information conveyed to participants. Many outcomes including possible harms were not measured.

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Abstract

Background

Informed consent is a critical component of clinical research. Different methods of presenting information to potential participants of clinical trials may improve the informed consent process. Audio-visual interventions (presented for example on the Internet, DVD, or video cassette) are one such method.

Objectives

To assess the effects of providing audio-visual information alone, or in conjunction with standard forms of information provision, to potential clinical trial participants in the informed consent process, in terms of their satisfaction, understanding and recall of information about the study, level of anxiety and their decision whether or not to participate.

Search strategy

We searched: the Cochrane Consumers and Communication Review Group Specialised Register (searched 20 June 2006); the Cochrane Central Register of Controlled Trials (CENTRAL), *The Cochrane Library*, issue 2, 2006; MEDLINE (Ovid) (1966 to June week 1 2006); EMBASE (Ovid) (1988 to 2006 week 24); and other databases. We also searched reference lists of included studies and relevant review arti-

cles, and contacted study authors and experts. There were no language restrictions.

Selection criteria

Randomised and quasi-randomised controlled trials comparing audio-visual information alone, or in conjunction with standard forms of information provision (such as written or oral information as usually employed in the particular service setting), with standard forms of information provision alone, in the informed consent process for clinical trials. Trials involved individuals or their guardians asked to participate in a real (not hypothetical) clinical study.

Data collection and analysis

Two authors independently assessed studies for inclusion and extracted data. Due to heterogeneity no meta-analysis was possible; we present the findings in a narrative review.

Main results

We included 4 trials involving data from 511 people. Studies were set in the USA and Canada. Three were randomised controlled trials (RCTs) and the fourth a quasi-randomised trial. Their quality was mixed and results should be interpreted with caution.

Considerable uncertainty remains about the effects of audio-visual interventions, compared with standard forms of information provision (such as written or oral information normally used in the particular setting), for use in the process of obtaining informed consent for clinical trials. Audio-visual interventions did not consistently increase participants' levels of knowledge/understanding (assessed in four studies), although one study showed better retention of knowledge amongst intervention recipients. An audio-visual intervention may transiently increase people's willingness to participate in trials (one study), but this was not sustained at two to four weeks post-intervention. Perceived worth of the trial did not appear to be influenced by an audio-visual intervention (one study), but another study suggested that the quality of information disclosed may be enhanced by an audio-visual intervention. Many relevant outcomes including harms were not measured. The heterogeneity in results may reflect the differences in intervention design, content and delivery, the populations studied and the diverse methods of outcome assessment in included studies.

Authors' conclusions

The value of audio-visual interventions for people considering participating in clinical trials remains unclear. Evidence is mixed as to whether audio-visual interventions enhance people's knowledge of the trial they are considering entering, and/or the health condition the trial is designed to address; one study showed improved retention of knowledge amongst intervention recipients. The intervention may also have small positive effects on the quality of information disclosed, and may increase willingness to participate in the short-term; however the evidence is weak. There were no data for several primary outcomes, including harms. In the absence of clear results, triallists should continue to explore innovative methods of providing information to potential trial participants.

Further research should take the form of high-quality randomised controlled trials, with clear reporting of methods. Studies should conduct content assessment of audio-visual and other innovative interventions for people of differing levels of understanding and education; also for different age and cultural groups. Researchers should assess systematically the effects of different intervention components and delivery characteristics, and should involve consumers in intervention development. Studies should assess additional outcomes relevant to individuals' decisional capacity, using validated tools, including satisfaction; anxiety; and adherence to the subsequent trial protocol.

3. Visual feedback of individuals' medical imaging results for changing health behaviour

Hollands GJ, Hankins M, Marteau TM

Summary

Medical scan images for promoting health behaviour change

This review investigated whether showing (and explaining) to people their medical scan images motivates them to change their behaviour to reduce any health risks identified. This is important because getting people to change their health behaviours is generally very difficult. New techniques are needed and giving people visual evidence of how certain behaviours may be damaging their body could be an effective approach.

We included nine trials involving 1371 participants in the review. In general, no strong evidence was found to support the effectiveness of this approach, but it was shown to be effective in some contexts. In smoking cessation interventions the effect of showing and explaining artery scanning images (to assess the risk of cardiovascular disease) was found to be more effective than not communicating images. In other outcomes, the effects were mixed. There was no evidence of significant harmful effects of this approach, although this was not well reported.

A main limitation of the review is the small number of studies in this area and the great differences between them in terms of the precise nature of the interventions and the populations being studied. This makes drawing broad conclusions difficult.

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Abstract

Background

Feedback of medical imaging results can reveal visual evidence of actual bodily harm attributable to a given behaviour. This may offer a particularly promising approach to motivating changes in health behaviour to decrease risk. Applicable behaviours include smoking cessation, skin self-examination, sun protection behaviour, dietary intake, physical activity and medication usage. The current review assembles and evaluates the evidence concerning the behavioural impact of showing and explaining images, in order to determine whether their communication is an effective intervention approach.

Objectives

To assess the extent to which feedback to individuals of images of their own bodies created during medical imaging procedures increases or decreases a range of health behaviours.

Search strategy

We searched the Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library,* Issue 3 2009), MEDLINE (1950 to 14 September 2009), EMBASE (1980 to 14 September 2009), CINAHL (1982 to 9 October 2009), PsycINFO (1806 to 14 September 2009) and reference lists of articles. We also contacted authors of selected papers, and searched the ProQuest Dissertations and Theses database on 1 October 2009 for grey literature.

Selection criteria

Randomised or quasi-randomised controlled trials involving adult (18 years and over) non-pregnant individuals undergoing medical imaging procedures assessing risk of disease or of an existing condition, for which personal risk may be reduced by modification of behaviour. The sole or principal component of included interventions is visual feedback of individuals' medical imaging results, defined as individuals being shown, and having explained, source images (still or moving images) of their bodies generated by the procedure.

Data collection and analysis

Two authors searched for studies and independently extracted data from included studies, with disagreements resolved by consensus and a third author acting as arbiter. The risk of bias of included studies was assessed and reported in accordance with the guidelines in the Cochrane Handbook for Systematic Reviews of Interventions. We conducted a narrative synthesis of the included studies, dividing them into clinical and non-clinical population groups and presenting major characteristics and results. Where the studies were sufficiently similar in terms of population, inclusion criteria, interventions and/or outcomes, we pooled the data statistically.

Main results

We included nine trials involving 1371 participants. Overall, results were mixed. Regarding five trials in clinical populations, three assessed smoking cessation behaviours, all featuring arterial scanning procedures to assess cardiovascular risk, and reported a statistically significant effect favouring the intervention, producing a pooled odds ratio (OR) of 2.81 (95% confidence interval (CI) 1.23 to 6.41, P = 0.01). One of these trials also measured physical activity

and reported no statistically significant difference between the groups. A further trial measured skin examination behaviour following a skin photography procedure for assessing moles, and reported a statistically significant increase in favour of the intervention, with an OR of 4.86 (95% CI 1.95 to 12.10, P = 0.0007). The final clinical population trial measured a range of dietary intake and medication usage behaviours and featured an arterial scanning procedure assessing cardiovascular risk, and reported no statistically significant effects.

Among the four trials in non-clinical populations, all featuring ultraviolet (UV) photography to highlight UV-related skin damage, a statistically significant result favouring the intervention was found in one trial for reducing tanning booth use, producing a mean difference (MD) of -1.10 (95% CI -1.90 to -0.30, P = .007) and one trial reported an outcome on which the control condition was favoured, with an MD of 0.45 (95% CI 0.04 to 0.86, P = 0.03) on intentional hours spent in the sun. In two further trials, no statistically significant behavioral effects were reported regarding time spent in the sun or sun protection behaviours.

There was no evidence of significant adverse effects in the included trials, although this was not well reported.

Authors' conclusions

Due to the limited nature of the available evidence and the mixed results that were found, no strong statements can be made about the effectiveness of communicating medical imaging results to change health behaviour. Only three trials in clinical populations were similar enough in term of setting, intervention and outcome to allow meta-analysis. We suggest, however, that targeted interventions using medical imaging technologies may be effective in certain contexts, or as applied to certain behaviours, but that this should be considered on an intervention by intervention basis, and not assumed as a general principle.

4. Interventions before consultations for helping patients address their information needs

Kinnersley P, Edwards AGK, Hood K, Cadbury N, Ryan R, Prout H, Owen D, MacBeth F, Butow P, Butler C

Summary

Interventions before healthcare consultations for helping patients get the information they require

Patients often report that they want more information from their healthcare providers or that the information they do receive does not address their needs. Generally, the amount of information given is small. People have differing needs for information, which also varies with the specific illness, but providing information is important as it helps patients recall, understand and follow treatment advice and be more satisfied. Clinicians may underestimate or undervalue the information needs of patients. They may also lack the skills to give information effectively. Training doctors and nurses probably helps, but another approach is to try to directly help patients ask questions in their consultations. This can be done by various methods such as question prompt sheets (which encourage patients to write down their questions) or coaching (when someone helps the patient to think of the questions they want to ask). This review evaluated studies of these types of interventions.

We identified 33 randomised controlled trials involving 8244 patients from six countries, mainly the USA, in a range of clinical settings. Most interventions, which included written materials (for example, question prompt sheets) and coaching sessions, were delivered in the waiting room immediately before the consultation. They were compared to dummy interventions or usual care. Health issues included primary care and family medicine, cancer, diabetes, heart problems, women's issues, peptic ulcer and mental illness.

We found small increases in question asking and patient satisfaction and a possible reduction in patient anxiety before and after consultations. We also found a possible reduction in patient knowledge and a possible small increase in consultation length. Both coaching and written materials produced similar effects on asking questions but coaching had a larger benefit in terms of patient satisfaction. Interventions immediately before the consultation led to a small increase in patient satisfaction whereas giving the intervention some time before did not. Interventions immediately before the consultation also resulted in small increases in consultation length, particularly when using written materials rather than coaching. Interventions some time before the consultation did not alter consultation time.

The interventions seem to help patients ask more questions in consultations, but do not have other clear benefits. Doctors and nurses need to continue to try to help their patients ask questions in consultations and question prompt sheets or coaching may help in some circumstances.

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Abstract

Background

Patients often do not get the information they require from doctors and nurses. To address this problem, interventions directed at patients to help them gather information in their healthcare consultations have been proposed and tested.

Objectives

To assess the effects on patients, clinicians and the healthcare system of interventions which are delivered before consultations, and which have been designed to help patients (and/or their representatives) address their information needs within consultations.

Search strategy

We searched: the Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library* (issue 3 2006); MEDLINE (1966 to September 2006); EMBASE (1980 to September 2006); PsycINFO (1985 to September 2006); and other databases, with no language restriction. We also searched reference lists of articles and related reviews, and handsearched *Patient Education and Counseling* (1986 to September 2006).

Selection criteria

Randomised controlled trials of interventions before consultations designed to encourage question asking and information gathering by the patient.

Data collection and analysis

Two researchers assessed the search output independently to identify potentially-relevant studies, selected studies for inclusion, and extracted data. We conducted a narrative synthesis of the included trials, and meta-analyses of five outcomes.

Main results

We identified 33 randomised controlled trials, from 6 countries and in a range of settings. A total of 8244 patients was randomised and entered into studies. The most common interventions were question checklists and pa-

tient coaching. Most interventions were delivered immediately before the consultations.

Commonly-occurring outcomes were: question asking, patient participation, patient anxiety, knowledge, satisfaction and consultation length. A minority of studies showed positive effects for these outcomes. Meta-analyses, however, showed small and statistically significant increases for question asking (standardised mean difference (SMD) 0.27 (95% confidence interval (CI) 0.19 to 0.36)) and patient satisfaction (SMD 0.09 (95% CI 0.03 to 0.16)). There was a notable but not statistically significant decrease in patient anxiety before consultations (weighted mean difference (WMD) -1.56 (95% CI -7.10 to 3.97)). There were small and not statistically significant changes in patient anxiety after consultations (reduced) (SMD -0.08 (95%CI -0.22 to 0.06)), patient knowledge (reduced) (SMD -0.34 (95% CI -0.94 to 0.25)), and consultation length (increased) (SMD 0.10 (95% CI -0.05 to 0.25)). Further analyses showed that both coaching and written materials produced similar effects on question asking but that coaching produced a smaller increase in consultation length and a larger increase in patient satisfaction.

Interventions immediately before consultations led to a small and statistically significant increase in consultation length, whereas those implemented some time before the consultation had no effect. Both interventions immediately before the consultation and those some time before it led to small increases in patient satisfaction, but this was only statistically significant for those immediately before the consultation. There appear to be no clear benefits from clinician training in addition to patient interventions, although the evidence is limited.

Authors' conclusions

Interventions before consultations designed to help patients address their information needs within consultations produce limited benefits to patients. Further research could explore whether the quality of questions is increased, whether anxiety before consultations is reduced, the effects on other outcomes and the impact of training and the timing of interventions. More studies need to consider the timing of interventions and possibly the type of training provided to clinicians.

5. Interventions for improving older patients' involvement in primary care episodes

Wetzels R, Harmsen M, Van Weel C, Grol R, Wensing M

Summary

Ways of improving older patients' involvement in their primary care

Stimulating the involvement of older patients in their primary care may enhance their health. Therefore we reviewed studies of interventions to improve older people's involvement in their care. There has been little research in this area involving older people as the main target of the research. Only three trials were identified. These evaluated the effects of written or face-to-face preparation for consultations with doctors. Interventions of a pre-visit booklet and a pre-visit session (either combined or pre-visit session alone) led to more questioning behaviour by older people and more self-reported active behaviour. Overall, there is sparse evidence about the effects of interventions for improving older patients' involvement in their primary care.

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Abstract

Background

There is a growing expectation among patients that they should be involved in the delivery of medical care. Accumulating evidence from empirical studies shows that patients of average age who are encouraged to participate more actively in treatment decisions have more favourable health outcomes, in terms of both physiological and functional status, than those who do not. Interventions to encourage more active participation may be focused on different stages, including: the use of health care; preparation for contact with a care provider; contact with the care provider; or feedback about care. However, it is unclear whether the benefits of these interventions apply to the elderly as well.

Objectives

To assess the effects of interventions in primary medical care that improve the involvement of older patients (>=65 years) in their health care.

Search strategy

We searched: the Cochrane Consumers and Communication Review Group Specialised Register (May 2003); the Cochrane Central Register of Controlled Trials (CENTRAL), *The Cochrane Library* issue 1, 2004; MEDLINE (Ovid) (1966 to June 2004); EMBASE (1988 to June 2004); PsycINFO (1872 to June 2004); DARE, *The Cochrane Library* issue 1, 2004; ERIC (1966 to June 2004); CINAHL (1982 to June 2004); Sociological Abstracts (1963 to June 2004); Dissertation Abstracts International (1861 to June 2004); and reference lists of articles.

Selection criteria

Randomised controlled trials or quasi-randomised trials of interventions to improve the involvement of older patients (>= 65 years) in single consultations or episodes of primary medical care.

Data collection and analysis

Two review authors independently assessed trial quality and extracted data. Results are presented narratively as meta-analysis was not possible.

Main results

We identified three studies involving 433 patients. Overall, the quality of studies was not high, and there was moderate to high risk of bias. Interventions of a pre-visit booklet and a pre-visit session (either combined or pre-visit session alone) led to more questioning behaviour and more self-reported active behaviour in the intervention group (3 studies). One study (booklet and pre-visit session) showed no difference in consultation length and time engaged in talk between the intervention and control groups. The booklet and pre-visit session in one study was associated with more satisfaction with interpersonal aspects of care for the intervention group although no difference in overall satisfaction between intervention and control. There was no long-term follow up to see if effects were sustained. No studies measured outcomes relating to the use of health care, health status and wellbeing, or health behaviour.

Authors' conclusions

Overall this review shows some positive effects of specific methods to improve the involvement of older people in primary care episodes. Because the evidence is limited, however, we can not recommend the use of the reviewed interventions in daily practice. There should be a balance between respecting patients' autonomy and stimulating their active participation in health care. Face-to-face coaching sessions, whether or not complemented with written materials, may be the way forward. As this is impractical for the whole population, it could be worthwhile to identify a subgroup of older patients who might benefit the most from enhanced involvement, ie. those who want to be involved, but lack the necessary skills. This group could be coached either individually or, more practically, in group sessions.

6. Contracts between patients and healthcare practitioners for improving patients' adherence to treatment, prevention and health promotion activities

Bosch-Capblanch X, Abba K, Prictor M, Garner P

Summary

Contracts between patients and healthcare practitioners for improving patients' adherence to recommended healthcare activities

Sometimes patients do not complete a course of treatment or they do not follow recommended changes in diet or personal habits. This poor adherence may be because treatments take a long time, have side effects or involve changing patients' habits, which is often difficult. Several interventions aim to change the relationship between patients and healthcare practitioners in order to improve the patients' adherence to treatments. One of these interventions is in the form of contracts between healthcare practitioners and patients, by which one or both parties commit to a set of behaviours related to the care of the patient. Contracts may be written or verbal. Most contracts are between healthcare practitioners and patients, but they may also occur between practitioners and carers, carers and patients or by a patient with him/herself. In this review we assessed whether contracts between practitioners and patients really improve the patients' adherence to treatment or their health status. We also assessed the effects of contracts on other outcomes, including patient participation and satisfaction, health practitioner behaviour and views, health status, harms, costs, and ethical issues.

We found 30 trials involving 4691 participants, examining several types of contracts. The main health problems targeted were substance addictions, hypertension and overweight. Many of the trials were of poor quality and involved small numbers of people. Most were conducted in the USA. In 15 of the trials there was at least one outcome showing statistically significant differences in favour of the contracts group (although some of the improvements in adherence did not remain when measured after a longer period). In six trials at least one outcome showed such differences in favour of the control group. In 26 trials there was at least one outcome for which there was no difference between the contract and control groups.

There is not enough reliable evidence available to recommend the routine use of contracts in health services to improve patients' adherence to healthcare activities or other outcomes.

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Abstract

Background

Contracts are a verbal or written agreement that a patient makes with themselves, with healthcare practitioners, or with carers, where participants commit to a set of behaviours related to the care of a patient. Contracts aim to improve the patients' adherence to treatment or health promotion programmes.

Objectives

To assess the effects of contracts between patients and healthcare practitioners on patients' adherence to treatment, prevention and health promotion activities, the stated health or behaviour aims in the contract, patient satisfaction or other relevant outcomes, including health practitioner behaviour and views, health status, reported harms, costs, or denial of treatment as a result of the contract.

Search strategy

We searched: the Cochrane Consumers and Communication Review Group's Specialised Register (in May 2004); the Cochrane Central Register of Controlled Trials (CENTRAL), (*The Cochrane Library* 2004, issue 1); MEDLINE 1966 to May 2004); EMBASE (1980 to May 2004); PsycINFO (1966 to May 2004); CINAHL (1982 to May 2004); Dissertation Abstracts. A: Humanities and Social Sciences (1966 to May 2004); Sociological Abstracts (1963 to May 2004); UK National Research Register (2000 to May 2004); and C2-SPECTR, Campbell Collaboration (1950 to May 2004).

Selection criteria

We included randomised controlled trials comparing the effects of contracts between healthcare practitioners and patients or their carers on patient adherence, applied to diagnostic procedures, therapeutic regimens or any health promotion or illness prevention initiative for patients. Contracts had to specify at least one activity to be observed and a commitment of adherence to it. We included trials comparing contracts with routine care or any other intervention.

Data collection and analysis

Selection and quality assessment of trials were conducted independently by two review authors; single data extraction was checked by a statistician. We present the data as a narrative summary, given the wide range of interventions, participants, settings and outcomes, grouped by the health problem being addressed.

Main results

We included thirty trials, all conducted in high income countries, involving 4691 participants. Median sample size per group was 21. We examined the quality of each trial against eight standard criteria, and all trials were inadequate in relation to three or more of these standards. Trials evaluated contracts in addiction (10 trials), hypertension (4 trials), weight control (3 trials) and a variety of other areas (13 trials). Fifteen trials reported at least one outcome that showed statistically significant differences favouring the contracts group, six trials reported at least one outcome that showed differences favouring the control group and 26 trials reported at least one outcome without differences between groups. Effects on adherence were not detected when measured over longer periods.

Authors' conclusions

There is limited evidence that contracts can potentially contribute to improving adherence, but there is insufficient evidence from large, good quality studies to routinely recommend contracts for improving adherence to treatment or preventive health regimens.

7. Interventions for providers to promote a patient-centred approach in clinical consultations

Lewin S, Skea Z, Entwistle VA, Zwarenstein M, Dick J

Summary

Training healthcare providers to be more 'patient centred' in clinical consultations

Problems in health care may arise from healthcare providers focusing on managing diseases rather than on people and their health problems. Patient-centred approaches are increasingly incorporated into training for providers, although 'patient-centredness' is hard to define or measure. Interventions focus on issues like consultation style, developing empathy, and identifying and handling emotional problems. This review of trials found that training in patient-centredness for healthcare providers may improve communication with patients, enable clarification of patients' concerns in consultations and improve satisfaction with care. It is not clear whether this training makes a difference to healthcare use or outcomes.

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Abstract

Background

Communication problems in health care may arise as a result of healthcare providers focusing on diseases and their management, rather than people, their lives and their health problems. Patient-centred approaches to care are increasingly advocated by consumers and clinicians and incorporated into training for healthcare providers. The effects of interventions that aim to promote patient-centred care need to be evaluated.

Objectives

To assess the effects of interventions for healthcare providers that aim to promote patient-centred approaches in clinical consultations.

Search strategy

We searched: MEDLINE (1966 to December 1999); HEALTH STAR (1975 to December 1999); PsycLIT (1987 to December 1999); CINAHL (1982 to December 1999); EMBASE (1985 to December 1999) and the bibliographies of studies assessed for inclusion.

Selection criteria

Randomised controlled trials, controlled clinical trials, controlled before and after studies, and interrupted time series studies of interventions for healthcare providers that promote patient-centred care in clinical consultations. Patient-centred care was defined as a philosophy of care that encourages: (a) shared control of the consultation, decisions about interventions or management of the health problems with the patient, and/or (b) a focus in the consultation on the patient as a whole person who has individual preferences situated within social contexts (in contrast to a focus in the consultation on a body part or disease). The participants were healthcare providers, including those in training.

Data collection and analysis

Two review authors independently extracted data onto a standard form and assessed study quality for each study. We extracted all outcomes other than healthcare providers' knowledge, attitudes and intentions.

Main results

Seventeen studies met the inclusion criteria. These studies display considerable heterogeneity in terms of the interventions themselves, the health problems or health concerns on which the interventions focused, the comparisons made and the outcomes assessed. All included studies used training for healthcare providers as an element of the intervention. Ten studies evaluated training for providers only, while the remaining studies utilised multi-faceted interventions where training for providers was one of several components. The healthcare providers were mainly primary care physicians (general practitioners or family doctors) practising in community or hospital outpatient settings. In two studies, the providers also included nurses.

There is fairly strong evidence to suggest that some interventions to promote patient-centred care in clinical consultations may lead to significant increases in the patient centredness of consultation processes. Twelve of the fourteen studies that assessed consultation processes showed improvements in some of these outcomes. There is also some evidence that training healthcare providers in patient-centred approaches may impact positively on patient satisfaction with care. Of the eleven studies that assessed patient satisfaction, six demonstrated significant differences in favour of the intervention group on one or more measures. Few studies examined healthcare behaviour or health status outcomes.

Authors' conclusions

Interventions to promote patient-centred care within clinical consultations may significantly increase the patient centredness of care. However, there is limited and mixed evidence on the effects of such interventions on patient healthcare behaviours or health status; or on whether these interventions might be applicable to providers other than physicians. Further research is needed in these areas.

8. Written information about individual medicines for consumers

Nicolson D, Knapp P, Raynor DK (Theo), Spoor P

Summary

Written information about individual medicines for patients

Medicines are the most common intervention in most health services. People taking medicines need good quality information: to enable them to take and use the medicines effectively, to understand the potential harms and benefits, and to allow them to make an informed decision about taking them. Written medicines information is provided in some countries as a leaflet accompanying medicines, and is available via the Internet. Our review examined if written information about individual medicines can improve knowledge or attitudes, or change behaviours relating to taking a medicine.

The findings of this review were inconclusive for a number of reasons. First, because the included trials measured different outcomes in different ways, we were unable to combine their results. Second, these trials presented the written information for patients in different ways, and most did not design the leaflets in a way that made them easy to read. Third, in many cases trials were not clearly reported, so we do not know if they were carried out correctly. Despite these limitations several trials, while using different types of information and different measures, found written information improved knowledge. This is encouraging for people who want to learn about their medicines from leaflets. None of the studies showed that written information was harmful.

Future research needs to use improved methods, and needs to examine the same measures on many occasions. It is important that medicines information be well written and designed to maximise the possibility of improving knowledge. Consumers are increasingly seeking out health information, including information about medicines, on the internet, but we found no trials examining whether internet-based medicines information changed people's knowledge, attitudes, or behaviour.

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Abstract

Background

Medicines are the most common intervention in most health services. As with all treatments, those taking medicines need sufficient information: to enable them to take and use the medicines effectively, to understand the potential harms and benefits, and to allow them to make an informed decision about taking them. Written medicines information, such as a leaflet or provided via the Internet, is an intervention that may meet these purposes.

Objectives

To assess the effects of providing written information about individual medicines on relevant patient outcomes (knowledge, attitudes, behaviours and health outcomes) in relation to prescribed and over-the-counter medicines.

Search strategy

We searched MEDLINE, EMBASE, CINAHL, *The Cochrane Library*, PsycINFO and other databases to March 2007. We handsearched five journals' tables of contents, and the reference lists of included studies, and contacted experts in the field.

Selection criteria

Randomised controlled trials (RCTs) of medicine users, comparing written medicines information with no written medicines information; or trials that compared two or more styles of written medicines information. We only included trials that measured a knowledge, attitudinal or behavioural outcome. There were no language restrictions.

Data collection and analysis

Two review authors independently extracted data relating to the interventions, methods of the trials, and outcome measures; and reconciled differences by discussion. Heterogeneity of interventions and outcomes measured meant that data synthesis was not possible. The results are presented in narrative and tabular format.

Main results

We included 25 RCTs involving 4788 participants. Six of twelve trials showed that written information significantly improved knowledge about a medicine, compared with no written information. The inability to combine results means we cannot conclude whether written information was effective for increasing knowledge. The results for attitudinal and behavioural outcomes were mixed. No studies showed an adverse effect of medicines information.

Authors' conclusions

The combined evidence was not strong enough to say whether written medicines information is effective in changing knowledge, attitudes and behaviours related to medicine taking. There is some evidence that written information can improve knowledge. The trials were generally of poor quality, which reduces confidence in the results. Trials examining the effects of written information need to be better designed and use consistent and validated outcome measures. Trials should evaluate internet-based medicines information. It is imperative that written medicines information be based on best practice for its information design and content, which could improve its effectiveness in helping people to use medicines appropriately.

Oral health professional alert: Elder abuse concern in the United States and Canada

Winnie Furnari, RDH, MS, FAADH

ABSTRACT

Introduction: Elder abuse has become a domestic concern in the United States and Canada. Although there are various mandates to report suspicions and incidences in both countries, professionals in dentistry are not identifying and responding at the same rate as the situation is rising. This study has shown that the laws and recommendations have not compelled oral health professionals to action. The reason may be a true lack of education in knowing how to be aware of signs and how to report suspicions, and even ignorance of the scope of consequences to each individual and to society. **Discussion:** This paper offers the dental practitioner the signs of elder abuse, a review of the legal definitions and mandates and the poor history of reporting within this vulnerable population with the objective to aid in the recognition, awareness, and prevention of elder abuse. **Findings:** Statistical reviews from national and private research sources reveal a non compliant reporting status in this group, and the problem needs to be addressed through more thorough education and awareness strategies to reach dental healthcare providers in both countries. **Conclusions:** With initial and continuing education, the oral health professional should become familiar with the problem, and satisfy the obligation to senior patients. Information provided is to enhance existing knowledge on the problem, its prevention, and responsibilities towards victims of elder abuse. When oral health professionals are aware of the prevalence, incidence, and consequences physically and emotionally and the oral health implications, they will be better equipped to help these members of the community.

RÉSUMÉ

Introduction : La maltraitance des aînés est devenue une préoccupation familiale aux États-Unis et au Canada. Malgré l'existence de divers mandats pour en signaler les suspicions et les incidences dans les deux pays, le personnel professionnel de la dentisterie ne relève pas ces problèmes et n'y réagit pas au même rythme d'évolution de la situation. Cette étude démontre que les lois et recommandations n'ont pas contraint les professionnels de la santé buccodentaire à agir. La raison en est peut-être un véritable manque de connaissance des façons de déceler les signes et d'en faire état, et même l'ignorance de l'ampleur des conséquences pour chaque personne et la société. **Discussion :** Cet article présente aux praticiens buccodentaires les signes de maltraitance des aînés, un aperçu des définitions et des mandats juridiques ainsi que la faiblesse du signalement au sein de cette population vulnérable, le tout accompagné d'objectifs pour aider à la reconnaissance, à la sensibilisation et à la prévention de la maltraitance des aînés. **Résultats :** L'examen des statistiques de la recherche privée et nationale révèle un état non conforme de signalement dans ce groupe et le problème doit être abordé par des stratégies minutieuses de formation et de signalement pour atteindre les prestataires de soins buccodentaires dans les deux pays. **Conclusions :** Une formation initiale et continue devrait amener les professionnels de la santé buccodentaire à se familiariser avec le problème et à satisfaire à leurs obligations envers les patients aînés. L'information fournie a pour objet d'améliorer la connaissance actuelle du problème, de l'intervention et des responsabilités envers les aînés victimes de maltraitance. Quand ils sont informés de la prévalence, de l'incidence, des conséquences physiques et affectives et des implications pour la santé buccodentaire, les professionnels de la santé buccodentaire seront mieux équipés pour aider ces membres de la communauté.

Key words: vulnerable populations, elder abuse, caregiver, co-morbidity, domestic violence, prevalence, incidence

Introduction

There is no doubt that the populations of both Canada and the United States, and of countries around the world, have a rising trend of older adults. People in the older populations are maintaining their dentition and seek care in dentistry. The dental practitioner is in a unique position to be aware of the obvious and subtle evidences of elder abuse. A record one in seven Canadians are 65 years or older. As a result of the increase in the number of seniors since 2001, their proportion relative to the total population reached a record 13.7% in 2006. That proportion, the best indicator of the aging of Canada's population, has been rising steadily since 1966, when it was 7.7%.[1]

In the United States, the older population — persons 65 years or older — numbered 39.6 million in 2009 the latest year for which data are available. They represented 12.9% of the US population, about one in every eight Americans. By 2030, there will be about 72.1 million older persons, more than twice their number in 2000. People 65+ years represented 12.4% of the population in the year 2000; but are expected to grow to be 19% of the population by 2030.[2]

For purposes of this paper, an elder or older adult is one who is at least 60 years of age. Abuse discussed will be that of neglect, physical, sexual, emotional, psychological and or verbal. There are other categories of elder abuse in the literature and in reality. They include financial and material abuse or exploitation.

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In the United States, no definitive definition of elder abuse exists, and the legal definition of that term differs by jurisdiction. While all 50 states in the USA have enacted laws that address the problem of elder abuse and neglect, the laws are not uniform. Each state law specifically defines elder abuse. Typically, state law definitions include physical abuse, neglect, or a deprivation of care that results in physical harm or pain and/or mental suffering.

The National Center on Elder Abuse defines elder abuse as "any knowing, intentional, or negligent act by a caregiver or any other person that causes harm or a serious risk of harm to a vulnerable adult."[3] The National Seniors Council on Elder Abuse in Canada and the World Health Organization use the following definition of elder abuse: "Elder abuse can be defined as a single, or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person."[4,5] In 1987, *Amendments to the Older Americans Act* in the United States included federal definitions of elder abuse, neglect and exploitation. These definitions were provided as guidelines for identifying the problems, and not for enforcement purposes.[6]

Methods

Statistics which would include the collection of comprehensive national data studies are not collected. There are no comprehensive data studies of prevalence, or the total number of cases at a designated time. There are also none for incidence, or the number of new cases at a given time. As a result, studies have been made by such entities as independent investigators and government departments. Statistics have been compiled from police and state reports, and social services reports. All the data must be considered estimates because no one can know precisely how many older adults in the United States and Canada are being abused, neglected, and even exploited.

Estimates in the United States of the frequency of elder abuse range from 2% to 10% based on various samplings, survey methods, and case definitions. According to the best available estimates, between 1 and 2 million Americans aged 65 or older have been injured, exploited, or otherwise mistreated by someone whom they depended for care or protection. In 2000, states were asked to indicate the number of elder/adult reports received in the most recent year for which data were available. The total number of reports was 472,813.[7]

In the United States, the National Committee for the Prevention of Elder Abuse and the National Adult Protective Services Association released the *2004 Survey of State Adult Protective Services: Abuse of Adults 60 years of Age and Older*. This revealed a total of 565,747 reports to Adult Protective Agency in the United States — a 19.7% increase.[8] The most common reporters of elder abuse in the United States were family members at 17%, followed by social services agency staff at 10.6%, and friends and neighbors at 8%.

Other reporters were long term care facility staff at 5.5%, law enforcement at 5.3%, nurses and nurses' aides at 4.7%, home health staff at 2.9% and physicians at 1.4%. The total also includes self at 6.3%, anonymous at 3.8% and other. The study[8] also revealed that 65% of victims aged 60+ were women, and that the majority were Caucasian. Slightly more than half of the perpetrators were women and the vast majority (89.3%) of elder abuse reports occurred in domestic settings. The most common relationship of the perpetrator to the victim was that of adult child followed by other family member.[8]

In Canada, the Canadian Centre for Justice Statistics releases a yearly profile: *Family Violence in Canada: A Statistical Profile*. In the report of 2009, the prevalence and nature of police reported crimes against seniors by members of their family were listed for 2007.[9] There were 5,499 police-reported incidents. In Canada, seniors were usually victimized by someone they knew, often a relative. Victims' adult children and spouses or ex-spouses were the most common perpetrators of family violence against seniors, and common assault was the most frequent violence.[9]

The only Canadian national study on the prevalence of domestic elder abuse was completed by Podneiks and Pillemer in 1992, and reported by Lai.[10] According to the telephone survey interviews of 2000 individuals over 65 years living in private homes, the prevalence of abuse is 4%. Results revealed that 4% of Canadian seniors who responded to the survey had experienced some type of abuse in the home.[10]

Family Violence in Canada; a Statistical Profile[11] reveals additional findings about police-reported violence against older adults. It reports that in 2007, 1,938 incidents of family violence against seniors were reported to police, representing more than one-third of all violent incidents committed against older adults. The rate of family violence for seniors was 48 per 100,000. Senior men (163 per 100,000) had a higher overall rate of violent victimization compared to senior women (114 per 100,000). However, senior women had higher rates of violent victimization by a family member (52 per 100,000) compared to senior men (43 per 100,000).[11]

The report[11] further states, spouses, and adult children were the most common perpetrators of family violence against senior women, while adult children were most often the accused in family violence against senior men. Just over half of police-reported family violence incidents against seniors were common assaults.[11]

Results

The obligation to report is jurisdictional. Where health professionals live in the United States as well as where they live in Canada determines the mandate to report. It behooves all practicing health professionals to become familiar with their state/province, and territory statutes for practicing their profession in their jurisdiction.

In the United States, a review of wording in each state's statute from the American Bar Association Committee on Law and Aging reveals far from standardized requirements for a mandated reporter. It is noted that "dental hygienist" is specifically mentioned in Arkansas and Nevada. Licensed health care provider, dentist, health related practitioner,healing arts practitioner, and providers of care or services are listed in thirty-one states. Other states list

statements such as all persons must report, or any person must report or does not have a mandatory reporting requirement at all.[12]

In Canada some jurisdictions now require mandatory reporting of older adults; here too, there are differences in specific reporting requirements and penalties. Nova Scotia, and Newfoundland and Labrador have general mandatory reporting as a responsibility of the general population to report suspected cases. Manitoba requires the helping professions to report. Several other provinces call for voluntary reporting from citizens and others are silent in this regard.[10]

Discussion

There exist obvious signs of elder abuse; there also exist subtle or tell tale signs.[3] Unfortunately the accused appears to be someone the victim knows and loves. The physical and emotional signs of elder abuse and also of neglect are similar in many ways to those of child and partner abuse. Research studies show that as much as 65% and more of physical abuse involves injuries to the head, neck or mouth.[13]

The evidence of abuse can be identified by the dental professional. Traumatic injuries are usually the most obvious. They present as bruises, burns, bite marks, and injuries where treatment was not rendered or delayed. There can also be facial bone fractures detected on radiographs. Obvious tooth and denture fractures and torn frena can also be readily observed. The clinician should ask the nature of the injuries. The explanation must match the injury. Suspicions should be forthcoming when the injury does not match the explanation. Changes in the personality of long time patients may also indicate a change in life situations. Other examples might include a patient who you know was always fastidiously groomed and dressed becomes unkempt; or prized jewelry is no longer worn may also indicate possessions have been taken; or when adequate personal hygiene is missing.

A patient whose regular oral home care has declined may also indicate lack of care, or emotional despair, and possible malnourishment. The beloved pet can also indicate something suspicious if the elders are worried about the welfare of their pet. It is most important to be alert. The suffering is often in silence. If you notice changes in personality or behavior, you should start to question.

The elder population may present with several co-morbidities that would likely necessitate communication and collaboration among different healthcare providers. For example, a person taking blood thinning medication would likely bruise easily. Pigmentation irregularities or aging spots appear on the skin of elders. Cultural sensitivity must also be part of a dental professional's knowledge base.

One of the challenges to addressing elder adult maltreatment in our increasingly diverse society is the need for sensitivity to variations in cultural background. Many folk medicine remedies may also mimic abuse. These are the signs oral health professionals need to become familiar with to stay aware and to satisfy the delegated obligation. When a suspicion is present, a skill set of ethics, empathy, and compassion must be utilized coupled with confidentiality and trust. A protocol model was developed for oral health professionals at the University of Minnesota.[14] It is a comprehensive curriculum to educate oral health professionals about the symptoms and patterns of abuse, methods for creating a safe environment for disclosure, appropriate interventions when abuse is suspected, and patient referrals. *Family Violence: An Intervention Model for Dental Professionals* has instructional videos including visual images of injuries.[14] This is also a training manual, which includes specific questions to ask along with resources. It has been promoted to every dental school in the United States. Several other schools in the United States and Canada have incorporated elder abuse education into their curriclum.[15]

Danley et al.[14] set out to develop a program that would help dentists recognize and respond to signs of domestic violence. They concluded, "As more dentists and other health care providers receive education about domestic violence, it will be important to conduct research to determine whether education leads to actual changes in screening, intervention and other behaviors."[14]

A commendable project has been initiated in Canada by the Canadian Dental Hygienists Association (CDHA). The CDHA is creating a professional development program for dental hygienists on elder abuse comprising an online course, interactive webinars, and educational print resources to increase awareness and understanding of elder abuse among its association members, and to enhance dental hygienists' capacity to respond to situations of abuse. The CDHA was selected to receive federal funding to initiate, prepare, and present this program.[15]

The World Health Organization (WHO) is involved to address the problem of elder abuse. Its work is based on the *Call For Action of the Toronto Declaration on the Global Prevention of Elder Abuse* that was adopted on 17 November 2002.[16] See Table 1. Official statistics on the reporting habits for elder abuse from the dental communities are scarce, and difficult to find. It is commonly agreed that elder abuse is notoriously under reported, and that no statistics can come close to telling all the facts. A few statistics may mention dentists but, more likely than not, it is recorded in the nondescript category called "other reporters". Surveys of dentists and dental hygienists are the source of information on reporting.[17] It is argued that elder abuse laws have had little impact on the performance of physicians in detecting or reporting abuse in Canada or the United States. Evidence cannot be substantiated that mandatory reporting is effective in enhancing treatment of elder abuse; yet research does indicate that reporting, whether voluntary or mandatory, is substantially less effective than public and professional education and awareness.[18]

A study, *Connection between Dentistry and Family Violence Intervention*,[19] in the United States revealed that despite the likelihood that oral health professionals will interact with a victim of abuse in a clinical setting, few recognize violence as a problem their patients encounter. The study reports that dentists and dental hygienists were the least likely of all clinicians surveyed to suspect child, spouse, or elder abuse. Only 7 percent had suspected a case of elder abuse, and slightly more than 1 percent had reported at least one such case.[19] For information on reporting see Table 2.

Table 1. *The Toronto Declaration on the Global Prevention of Elder Abuse*

Abuse of older people has only recently been recognized as a global problem. INPEA's advocacy work and the emphasis given to elder abuse prevention by the World Health Organization have contributed significantly to raising awareness worldwide. Academic institutions, around the world, have also substantially contributed to enhancing understanding and raising awareness and have developed methodological tools to study the problem. However, much is still to be done.

On one hand more research is needed – for instance, along the lines of the seminal joint project "Global Response to Elder Abuse" which resulted in the publication "Missing Voices-Views of Older Persons on Elder Abuse" and on the other hand practical action at local, regional and national levels.

Twenty or thirty years ago, societies throughout the world denied the existence of violence against women and child abuse. Then, through research, came the evidence. As a result the civil society exercised the appropriate pressure for action from governments. The parallel with elder abuse is clear. This declaration is a Call for Action aimed at the Prevention of Elder Abuse.

Points to be considered:

- Legal frameworks are missing. Cases of elder abuse, when identified are often not addressed for lack of proper legal instruments to respond and deal with them.
- Prevention of elder abuse requires the involvement of multiple sectors of society.
- Primary health care workers have a particularly important role to play as they deal with cases of elder abuse regularly –although they often fail to recognize them as such.
- Education and dissemination of information are vital – both in the formal sector (professional education) and through the media (combating the stigma, tackling the taboos and helping to de-stereotype older people).
- Elder abuse is a universal problem. Research conducted so far shows that it is prevalent in both the developed and the developing world. In both, the abuser is more often than not well known to the victim, and it is in the context of the family and/or the care unit that most of the abuse happens.
- A cultural perspective is mandatory in order to fully understand the phenomenon of elder abuse – i.e. the cultural context of any particular community in which it occurs.
- Equally important is to consider a gender perspective as the complex social constructs related to it help to identify the form of abuse inflicted by whom.
- In any society some population sub-groups are particularly vulnerable to elder abuse – such as the very old, those with limited functional capacity, women and the poor.
- Ultimately elder abuse will only be successfully prevented if a culture that nurtures intergenerational solidarity and rejects violence is developed.
- It is not enough to identify cases of elder abuse. All countries should develop the structures that will allow the provision of services (health, social, legal protection, police referral, etc) to appropriately respond and eventually prevent the problem.

The United Nations International Plan of Action adopted by all countries in Madrid, April 2002, clearly recognizes the importance of Elder Abuse and puts it in the framework of the Universal Human Rights. Preventing elder abuse in an ageing world is everybody's business.

This declaration was devised at an expert meeting, sponsored by the Ontario Government in Toronto, 17 November 2002.[18]

More information at the following websites:

www.who.int/hpr/ageing

www.inpea.net

www.onpea.org

www.inpea.net

There may be numerous reasons for the low reporting rates from oral health professionals. Gutmann and Solomon[20] report that fears of litigation, lack of referral information, and the provider's own embarrassment about bringing up the subject was cited. The study[20] also found that the likelihood that dentists and dental hygienists will suspect or intervene in family violence appears to depend on the amount of related education they receive. The study's authors also conclude that education on domestic violence needs to be standardized and incorporated in the dental school and continuing education curricula making it a standard part of a dentist's professional responsibility.[20]

Conclusion

There is no doubt that as the elder population increases so will the incidents of abuse. It is a serious concern in which oral health professionals are in unique positions to make a difference and affect the quality of life and preserve life. Whether the incidents occur in the United States or Canada, the statistics available confirm the problem and its escalation. There is an ethical and, in many jurisdictions, a legal responsibility to detect, prevent, report and treat victims and potential victims in the older population. It is especially challenging to identify what may be a very private and silent problem in society. With an increase level of awareness and level of sympathy, action will take place. Actions of reporting can lead to prevention of further abuse. Oral health professionals receive formal education in abuse reporting, yet this education may not be sufficient to prepare the professional for action. The laws of many states and provinces mandate oral health professionals to report; but the minimal amount of education may be causative in the weak proportionate response.With continuing education, it is likely that the oral health professional will have a better understanding. Building a relationship of trust with the elder population is a goal.

From health and social perspectives, unless both primary health care and social service sectors are well equipped to identify and deal with the problem, elder abuse will continue to be underdiagnosed and overlooked.

Table 2. What should I do if I suspect elder abuse?

In the United States

- You should call police or adult protective services right away if you suspect that an elder is being abused, neglected, or exploited. You do not need to prove abuse in order to make a report.
- Most states have a toll free hotline number that you can call to relay your concerns. To find your state's number, go to the National Center on Elder Abuse Web site at www.elderabusecenter.org and then click Where to Report Abuse. (15 questions and answers on elder abuse.) US National Domestic Violence hotline 1-800-799-7233.

National Center on Elder Abuse

Adapted from www.ncea.aoa.gov/ncearoot/Main_Site/pdf/publication/FINAL%206-06-05%203-18-0512-10-04qa.pdf

In Canada

- If the threat of harm is imminent, report to local police according to the criminal code.
- Local community health services are the areas to refer patients.

  Adapted from Wiseman M. *The role of dentist in recognizing elder abuse*. Available from www.cda-adc.ca/jcda/vol-74/issue-8/715.html
- Canadian Network for Prevention of Elder abuse offers resources and referral recommendations for Provinces and territories www.cnpea.ca

Oral health professionals should be poised to face the challenge as we participate in this crucial segment of responsibility. Awareness, action and further research can positively affect this serious situation.

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Antibiotic prophylaxis with prosthetic joint replacement. What is the evidence?

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ABSTRACT

Introduction: A wide diversity of opinion exists concerning patients with prosthetic joint replacements who should receive antibiotic prophylaxis before undergoing oral procedures. This leads to the perceived need on the part of oral health professionals to contact physicians for advice on management indications. **Discussion:** There is scarce evidence to support the need for universal prophylactic antibiotics prior to oral procedures in order to prevent infection in a prosthetic joint replacement site. **Conclusion:** Without reliable clinical studies indicating antibiotic prophylaxis would decrease infection in joint areas, the recent statement published by the American Academy of Orthopedic Surgeons calling for universal antibiotic prophylaxis prior to oral procedures in individuals with a joint replacement should be questioned.

RÉSUMÉ

Introduction : Les opinions varient beaucoup au sujet des patients qui, subissant une arthroplastie prothétique, devraient recevoir une prophylaxie antibiotique avant l'intervention buccale. Cela mène à la perception du besoin pour le professionnel des soins buccaux de chercher auprès des médecins des conseils sur les indications à suivre. **Discussion :** Très peu de données probantes soutiennent le besoin d'antibiotiques prophylactiques universels avant les procédures buccales pour prévenir l'infection dans le site de remplacement du joint prothétique. **Conclusion :** Sans études cliniques fiables indiquant que l'arthroplastie prothétique pourrait réduire l'infection dans les joints, on devrait remettre en question l'énoncé récent de l'Association américaine des chirurgiens orthopédiques qui demande l'arthroplastie prothétique universelle avant l'intervention buccale chez les personnes qui subissent une arthroplastie prothétique.

Key words: antibiotic prophylaxis, total joint replacement, infective endocarditis, systematic review

Case vignette

A 65 year old male presented for oral prophylaxis with a non complicated health history, normal vital signs, and a history of osteoarthritis of the right knee and occasional hip pain during the last three years following total replacement of the right hip.

Oral examination revealed generally healthy gingival tissue with isolated bleeding on probing on the linguals of teeth #36, 37, 46 and 47 and light supragingival calculus deposits on the lingual of the lower anterior teeth. How should this case be managed?

Introduction

The surgical replacement of knee and hip joints is becoming increasing popular, with primary total hip and total knee replacements increasing in the United States from 250,000 in 1988 to ~773,000 in 2006.[1] In Canada during 2006–2007, there were more than 62,000 hospitalizations for hip and knee replacements, and data from the Canadian Joint Replacement Registry report a 101% increase in hip and knee replacements since data collection began in 2001.[2]

Although primary surgical joint replacement is highly successful the chance of joint failure exists necessitating additional surgical procedures and often removal of the infected prosthesis and replacement with a new prosthesis.[3] Infection of the joint prosthesis and surrounding tissue is one of the most serious complications and occurs in ~1-2% of knee replacements and less than 2% of hip replacements.[3]

Before the 1997 joint statement between the American Dental Association (ADA) and the American Academy of Orthopaedic Surgeons[4] (AAOS), all patients with a total joint replacement (TJR) were advised to receive antibiotic prophylaxis (AP) prior to oral procedures.[5] Antibiotic prophylaxis is a practice of administering antibiotics when no infection exists, but with the goal of preventing an infection from a transient bacteremia. During this time, concern increased regarding development of antibiotic resistance and the connection to unnecessary use of antibiotics.

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Box 1. Considerations for antibiotic prophylaxis in client with prosthetic joint replacement*

- Universal coverage during initial two years following joint replacement
- Immunocompromised or immunosuppressed conditions include corticosteroid, immunosuppressive drug therapy for conditions such as rheumatoid arthritis, systemic lupus erythematosus
- Co-morbidities, including
  - Previous prosthesis infection
  - Hemophilia
  - Type 1 diabetes mellitus
  - Malnourishment
  - HIV infection
  - Malignancy
- Any condition which has an increased risk for hematogenous prosthesis infection

**Does not include pins, screws, plates*

Adapted from Advisory Statement from ADA/AAOS, 2003[7]

Antibiotic prophylaxis is suggested as a practice promoting antibiotic resistance.[6] This adverse effect led the professional associations' expert committees to identify appropriate uses for AP in the patient with TJR.[4] The 1997 joint statement, updated in 2003 with minor revisions,[7] determined that only selected individuals with TJR would likely benefit from antibiotic prophylaxis (Box 1), and specified oral procedures involving significant bleeding as likely to cause bacteremia.

In 2009, without collaboration with the ADA, the AAOS published a new statement calling for antibiotic prophylaxis prior to any oral procedure (not only procedures associated with significant bleeding) in all individuals with a TJR.[8]

Prosthetic joint replacement is one of the most commonly performed and successful operations in orthopedic surgery. As the population of the United States ages, and advances in technology lead to expansion of the indications for TJR to include younger, more active patients, the prevalence of TJR is expected to increase dramatically over the next several decades, especially in elderly individuals.[1,2] If all these individuals were to receive prophylactic antibiotics prior to oral procedures, the use of antibiotics would increase dramatically. History reveals this could lead to subsequent increases in adverse drug effects and antibiotic resistance.[6] The current international trend is to withhold antibiotics unless there is a proven benefit for their use. For example, in the United Kingdom the 2008 National Institute for Health and Clinical Excellence (NICE) guidelines recommend the complete abandonment of AP for prevention of infective endocarditis (IE).[9] The recommendation resulted when the group could find no scientific evidence that the practice reduced IE. The same conclusion may be appropriate for AP in the client with TJR, since no scientific evidence exists that AP prevents prosthetic joint infection.

Pathogenesis of bacteremia and prosthetic joint infection

The proposed mechanism for how oral procedures might be a factor in infection of a prosthetic joint is related to the development of bacteremia *during an oral procedure*.[3,4] When bacteremia forms, the infected blood flows throughout the body and possibly into the space of a replaced joint. The microorganisms in this bacteremia could possibly infect the joint space. However, this hypothesis of bacteremia related infection *from oral treatment* has been questioned. Studies have revealed that simple toothbrushing can result in bacteremia that can last longer than bacteremia associated with tooth extraction plus AP.[10,11] In one study bacteremia following toothbrushing occurred in a similar magnitude as bacteremia following a single tooth extraction.[11] It is surmised that toothbrushing is practiced hundreds of times each year resulting in far greater cumulative exposure to bacteremia than from oral procedures, which occur less often on an annual basis. The logic for AP prior to oral procedures is flawed since there is no recommendation for antibiotic prophylaxis prior to toothbrushing. Bacteria enter the bloodstream routinely each day, not only from toothbrushing but also from other daily activities such as chewing food.[12] If bacteremia played a major role in prosthetic joint infection one would likely see much greater prevalence of joint infection—higher than the 2% reported earlier—since bacteremia is verified to be present on a daily basis from daily activities.[9–12] Amoxicillin and various cephalosporins (cephalexin, cephradrine, cefazolin) are first choice antibiotics in the AP regimen for TJR in order to prevent bacteremia and reduce risk of hematogenous infection of the implant space.[7] When penicillin allergy is present, clindamycin is suggested; and when tablets cannot be swallowed, the recommendation is an injection of ampicillin or cefazolin.[7] National guidelines[9] determined AP does not prevent bacteremia; a clinical randomized study found the same lack of bacteremia prevention following AP,[11] and a recent case control study reported that AP did not reduce prosthetic joint infection.[13]

Risk factors for prosthetic joint infection

Risk factors for joint infection include previous joint infection, revision surgery to replace an infected joint, rheumatoid arthritis, hemophilia, and immunosuppression from a variety of conditions.[4,7] More than half of prosthetic joint infections are a result of staphylococci—*S. aureus* and coagulase-negative staph species—which are bacteria commonly found on skin.[3] Up to 20% of infections are due to other skin inhabiting bacteria, such as methicillin resistant *S. aureus* (MRSA), or from anaerobes.[14] Oral microorganisms associated with joint infection mostly belong in the *Streptococcus viridans* species. To determine that the client's oral microorganisms are responsible for infection in the joint replacement space, DNA from bacteria taken from the prosthetic joint infection must match the DNA of an oral microorganism from the client's mouth. Although there are case reports[15,16] inferring an oral source for joint infection, there are no published reports with the DNA verification matching the bacterium causing the prosthesis infection with oral organisms.[17,18]

A recent study demonstrated that bacteremia after

toothbrushing is associated with poor oral hygiene and gingival bleeding.[10] This toothbrushing study reported an almost eightfold increase in the risk for bacteremia in the group with generalized bleeding. Another analysis of data from this study reported the incidence of bacteremia in the group with high plaque and calculus scores was not significantly different from the group having a single tooth extraction.[11] Results such as this support the recommendation for individuals with prosthetic joints to maintain healthy oral tissues. The recommendation for individuals to maintain healthy periodontal tissues and reduce apical or other oral infection comes from the logic that healthy tissues would lower the magnitude of bacteremia. Since having bacteria in the circulation is the perceived avenue for prosthetic joint infection, this recommendation seems logical. It must be stated, however, that no research has demonstrated that healthy oral tissues prevents prosthetic joint infection. As well, developing a recommendation to give AP before oral procedures for the purpose of preventing associated bacteremia formation and prosthetic joint infection when research does not demonstrate the practice to be successful, is not an evidence based clinical decision.

Indications for prophylactic antibiotics

People with various medical conditions and devices—vascular grafts, pacemakers, indwelling catheters—have been suggested candidates for antibiotic prophylaxis before undergoing dental procedures.[19] AP for these conditions is controversial, due to the lack of proof for efficacy. A systematic review (SR) to determine the level of evidence for this practice, and whether AP prevents distant site infections in eight medical conditions is available.[19] The eight conditions included cardiac-native heart valve disease and pacemakers; hip, knee and shoulder prosthetic joints; renal dialysis shunts; cerebrospinal fluid shunts; vascular grafts; immunosuppression secondary to cancer and cancer chemotherapy; systemic lupus erythematosus; and insulin-dependent (type 1) diabetes mellitus. The conclusion of the SR was that no definitive, scientific basis exists for the use of AP before dental procedures for these eight medical conditions.

Use of best evidence for efficacy of antibiotic prophylaxis

A systematic review by Uckay et al.[20] evaluated the science related to AP. This group reviewed 144 studies in their SR of evidence pertaining to AP to prevent prosthetic joint infection. They found that delays between the oral procedure and symptoms of joint infection ranged from 24 hours to 9 months. The development of a prosthetic infection nine months following an oral procedure makes the etiological case from the oral procedure questionable. The SR included 23 prospective studies, but no randomized controlled trials were available. The vast majority of authors of these studies took no position regarding the need for antibiotics prior to oral procedures. This is not surprising as the research evidence does not answer the clinical question, "In humans with prosthetic joints undergoing oral procedures, will antibiotic prophylaxis with penicillin or cephalosporin compared to no antibiotic prophylaxis, result in the prevention of joint infection?". In one human prospective study (N=1000) included in the review,[20] three patients developed joint infections and all were associated with *Staphylococcus aureus*, a bacterium found mainly on skin and in very low numbers within the mouth. Implementation of a randomized controlled trial could provide more evidence to answer this clinical question, however this study design has likely not been implemented due to the perception of an ethical conflict. This SR comes to the same conclusion as a narrative review by Seymour et al. in 2003,[21] that the evidence for AP to prevent prosthetic joint infection is very weak or nonexistent. The evidence suggests that oral procedures completed without prophylactic antibiotics in healthy individuals with a TJR *does not* put the person at risk for joint infection.

Case Reports

The following section discusses elements of two frequently cited case reports of orally caused prosthetic joint infection. Bartzokas et al.[15] reported that the oral bacterium *Streptococcus sanguis* was isolated from the mouth and from the prosthesis on four patients. According to the report all four patients had a periodontal condition and caries. The study was to determine if strains of *S. sanguis* isolated from the mouth and the infected prostheses were identical in each of these four cases. The group evaluated the cell wall polypeptides of *S. sanguis* in relation to the four pairs — mouth origin and the prosthesis—from the four subjects. They determined that the strain of *S. sanguis* isolated from the four mouths was the same as that from the infected prostheses. However, authors stated that since an exogenous source of *S. sanguis* could not be ruled out, the causation from the oral site was inconclusive.

Kaar et al.[16] reported a case of hematogenous bacterial infection of a hip TJR which was placed three years before the patient had revision surgery. Revision was necessary due to loosening of the prosthesis from osteolysis, not from infection. The revision surgery was completed 11 months before the 67 year old male presented for oral prophylaxis treatment. Authors of the case report stated the client had excellent oral hygiene and regular "dental review with no evidence of oral disease, and had teeth cleaned every six months". The surgical area of the hip had been pain free, allowing the client to walk independently for three months prior to the periodontal procedure. In the description of the case it was reported the dentist employer instructed the dental hygienist to provide "a noninvasive cleaning making sure to cause no bleeding since antibiotic prophylaxis had not been taken". Questioning of the patient revealed no bleeding occurred during the prophylaxis procedure. Thirty hours following the oral procedure, sudden severe pain developed in the right midthigh. Subsequent medical therapy revealed an initial aspiration of the area was negative for bacteria, but later aspiration revealed *Streptococcus intermedius*, a member of the *S. milleri* family. Authors state this microorganism is found in the gingival crevice and supragingival plaque. Intravenous penicillin agents were administered, along with surgical debridement of the hip joint area and the patient recovered. Authors stated the patient must have long term antibiotic adminis-

tration and had a guarded prognosis, although 37 months after treatment for the acute event the patient was pain free and able to walk independently. No organisms from the patient's mouth were cultured to verify the infecting microorganism came from the patient's mouth. Without DNA verification of the infecting microorganism and the same organism from the patient's mouth, no judgment can be made regarding the etiology of the bacteria in the prosthetic infection.

Where did this organism originate?

Streptococcus intermedius—formerly referred to as "*S. milleri*" and a type of *streptococcus viridians* species—is considered to be a commensal oral organism, but it is also found in other parts of the body, such as the respiratory tract and gastrointestinal tract. It has been associated with various abscesses in the body and uncommonly in osteomyelitis.[22] In the Kaar et al. case report[16] the microorganism is implicated since the prosthesis infection developed soon after the oral prophylaxis. In the 1997 joint statement of the ADA and AAOS,[4] it was thought that bleeding was necessary for bacteremia to develop. Later research showed this to be incorrect.[23] One cannot dispute the "hunch" that oral prophylaxis may have been responsible for the hematogenous transmission of *S. intermedius*, but it is just as possible that chewing, brushing, and flossing could cause the event. Since the case report did not include information regarding a recent history of pyogenous infection (abscess), it is likely that abscess is not a source for the infectious event in the prosthesis. Clearly, this case provides evidence that the affected client had no bleeding during the prophylaxis, which infers a healthy periodontium. AP would not have been indicated for a client with healthy, non bleeding gingivae according to the updated 2003 regimen.[7] If the microorganism became part of a bacteremia following the oral prophylaxis, the host response should have removed it from the bloodstream within 15 to 30 minutes.[10,11,19] Given this knowledge it could be concluded that the Kaar et al. case report[16] represents an extremely rare event which could have developed even if AP were employed.

Discussion: What is the evidence?

What is the evidence supporting use of AP prior to oral procedures when the patient reports having a TJR? Research to answer this question was published recently.[13] To examine the association between oral procedures with or without AP and prosthetic hip or knee infection, a prospective, single center, case control study for the period between 2001 and 2006 was performed. Case patients (N=339) were those hospitalized with infection in a replaced hip or knee joint. Control subjects (N=339) were individuals with a total hip or knee replacement without a prosthetic joint infection but who were hospitalized on the same orthopedic floor. Data regarding history of oral procedures and other risk factors were collected. There was no increased risk of prosthetic hip or knee infection for those undergoing a high risk or low risk dental procedure, and who did not receive AP (adjusted odds ratio [OR] 0.8; 95% CI, 0.4-1.6) compared with the risk for those not undergoing a dental procedure (adjusted OR, 0.6; 95% CI, 0.4-1.1). The neutral value for odds ratio associations is one (1) and any value ≤ (1) means that there is no association. Antibiotic prophylaxis in high risk (tooth extraction) or low risk (dental restorations) dental procedures did not decrease the risk of subsequent prosthetic joint infection (adjusted OR, 0.9 [95% CI, 0.7-2.2]). Authors of the study[13] concluded dental procedures are not risk factors for joint infection in individuals with a TJR, and that the use of AP did not decrease the risk of subsequent joint infection. Given the lack of science to support that AP prevents bacteremia,[10,11] taking action to recommend AP for TJR prior to dental procedures is unfounded.

Many other authorities have determined there is little to no evidence to support AP in individuals with TJR except for instances where the risks for infection are high—previous joint infection, joint replacement surgery within two years, hemophilia and circumstances which compromise the host immune system.[4,7] Presently, there is no statement of best practice agreed on by both dentists and orthopedic surgeons regarding the efficacy of AP for individuals with TJR undergoing oral procedures. The Canadian Orthopedic Association does not have an official statement regarding AP prior to oral procedures when a TJR is present. The Canadian Dental Association updated the policy on AP for the client with TJR in 2009 and maintained support of the ADA/AAOS joint policy of 2003.[24]

Potential adverse effects from antibiotic prophylaxis

"The case for providing AP prior to dental treatment in patients fitted with a joint prosthesis is weak or virtually non-existent. Furthermore, the risk (of adverse effects) from providing prophylaxis is greater than the risk of a joint infection."[21] Antibiotics have side effects, some of which can lead to morbidity and mortality.

Mortality: It has been reported that the death rate from an immediate hypersensitivity anaphylaxis reaction due to receiving penicillin prophylaxis is higher than the number of individuals who die from infective endocarditis.[25] This analysis, although reported in 1986, is still cited to support this observation. A group of oral health professionals completed a probabilistic model analyzing the American Heart Association's (AHA) recommendations for the prevention of infective endocarditis (IE) of dental origin.[25] The model combined available data elements with the AHA recommendations with mortality serving as the sole valued outcome measure. The analysis showed that an annual death rate of 1.36 per million population was attributable to antibiotics administered in an attempt to prevent IE, whereas not more than 0.26 annual deaths per million were traceable to IE of dental origin. Sensitivity and threshold analyses were conducted to determine the conditions under which a recommended prophylactic policy will prove beneficial. The model suggested that the standard AHA antibiotic regimen should be applied only in IE susceptible patients belonging to the high risk categories, and that the value in moderate, low, and negligible risk patients was doubtful. This surprising statistic shows the potential for harm from unnecessary use of AP.

Morbidity: Morbidity from antibiotics can involve ef-

fects ranging from opportunistic infection to gastrointestinal upset. *Clostridium difficile* (*C. difficile*) infection, formerly called pseudomembranous colitis, is increasing; and the causative microorganism has mutated to a more virulent form in some cases.[26,27]

Other potential adverse effects associated with antibiotic administration include increased risk for antibiotic associated colitis, opportunistic candida infection and antibiotic resistance.[5,6,17] It is generally accepted that the increase in the number of microorganisms resistant to antibiotics—which formerly controlled disease attributed to them—is a direct result from taking an antibiotic. The current guideline from the Centers for Disease Control advises to use antibiotics only when absolutely needed,[28] and taking an antibiotic when it is unlikely to prevent an infection is a questionable use. Since the rate of infection in joint prostheses is very low, and bacteria from an oral source in joint infections is extremely rare, the adverse effects of antibiotic administration must be considered before prescribing AP.

Inappropriate use of antibiotic prophylaxis

In two editorials in the *Journal of Canadian Dental Association*,[17,29] and an editorial from the *Journal of American Dental Association*,[30] authors write of concern regarding the AAOS information statement[8] of 2009. No input from the dental community, including ADA Council on Scientific Affairs, was elicited before the AAOS published their statement[8] of 2009. The AAOS information statement[8] fails to provide the surgeon or dentist with the information required to make an evidence based decision regarding AP in this situation, and also makes claims that are in direct conflict with available scientific evidence.[13,21] Furthermore, compliance with the statement[8] will result in greater numbers of patients exposed to antibiotics with no scientific evidence for benefit.[17]

Since the publication of the 2009 AAOS statement,[8] questions have been raised about how AP could increase problems with resistance to antibiotics.[17,29,31] The general consensus from the three editorials above is that prescribing AP prior to oral procedures for all individuals with a TJR can result in harmful effects. Another potential problem related to the AAOS information statement[8] involves perception of a need to avoid the risk for legal litigation so that oral health professionals will probably continue to use antibiotics before oral procedures in all patients with prosthetic devices.[29] In Alberta dental hygienists prescribe antibiotics, so the same dilemma is confronted. The Canadian Dental Association (CDA) published a position statement in October 2009 supporting the ADA 2003 policy on AP for individuals with prosthetic joint replacement undergoing certain oral procedures.[24] More recently the American Academy of Oral Medicine (AAOM) concluded that the new AAOS statement should not replace the 2003 ADA /AAOS joint statement,[31] and that until the issue of AP prior to oral procedures is resolved, clinicians have three options:

i. inform individuals with prosthetic joints about the risks associated with AP and let the patient decide,

ii. follow the 2003 ADA guidelines (and risk potential for legal ramifications), or

iii. gain consensus from the orthopedic surgeon to follow the ADA 2003 guidelines (possibly the best option).[31]

In the AAOM position statement, the organization suggests interested organizations including the Infectious Disease Society of America (IDSA), AAOS and ADA should develop a more evidence based approach to the recommendations for management of patients with TJR. The AAOS has agreed to review science and establish an evidence based joint statement with other groups associated with AP and TJR. The IDSA is currently updating guidelines related to prosthetic joint infection.[32] A joint statement from the professional associations listed above is expected at the end of 2011 or early in 2012.

Joint infection despite receiving AP

A case report in 1995 by Skiest and Coykendall[33] described a hip prosthesis infection after a series of dental procedures despite receiving AP. The medical history reported osteonecrosis of both hip joints, and systemic lupus erythematosus with drug related immunosuppression that may have increased the risk of infection. A right hip prosthesis was placed ten years prior to the dental appointment and replaced five years later due to infection with *Staphylococcus aureus*. The patient had an allergy to penicillin and an inability to tolerate cephalosporin. At the initial appointment for a tooth extraction, the client took 3 grams of erythromycin—to which the organism was later found to be highly resistant thereby providing no protection—two hours prior to the dental appointment, and 500 mg six hours later. Subsequent appointments for periodontal examination, oral prophylaxis and placement of temporary restorations were likely prophylaxed with erythromycin, according to the American Heart Association regimen in 1995. Resistance forms easily with erythromycin, and is likely with multiple administrations over a short time period. It is unclear about the dose and timing of AP administration on appointments after the initial visit, as the case report notes that nothing was recorded in the treatment record about AP information. This event occurred before the official 1997 joint guidelines of ADA and AAOS which did not list erythromycin as an appropriate antibiotic for AP in TJR. Authors of the case report concluded that even if AP is given "appropriately", it may be ineffective because of the presence of resistant organisms. [33]

Conclusion and Case management

The management of the case identified at the beginning of this paper starts with questioning the cause of pain in the TJR area, and determining if an infection has ever been diagnosed in the prosthetic joint. In the current AAOS/ADA policy, AP is recommended prior to oral procedures which could cause a bacteremia for the individual with a history of infection in a TJR or in immunocompromised individuals with TJR. However, AP is not recommended by the ADA or the CDA if the joint replacement surgery is over two years old; the patient is healthy; and infection has not previously developed in the joint prosthesis. Management, using the updated 2003 ADA/AAOS guidelines, would be based on whether infection developed within

the three year history of the TJR procedure. If the recent policy of the AAOS is followed, AP would be given prior to any oral procedure regardless of the time since surgery. The antibiotic selected and the dose and time of administration should be recorded in the treatment record. When antibiotics are administered, a risk for adverse drug effects and development of antibiotic resistant microorganisms exists. Oral health professionals must use critical thinking in professional judgments regarding management of this case. It is currently the practice to base official position statements or guidelines for clinical practice on a systematic review of the best evidence related to the position statement. Health professionals must understand the rationale for implementing clinical guidelines and guidelines must be based on scientifically established cause and effect. "Using clinical guidelines that cannot be scientifically supported tarnishes professional integrity and diminishes public trust".[30]

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An overview of health behavioural change theories and models: Interventions for the dental hygienist to improve client motivation and compliance

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ABSTRACT

Background: While striving to deliver optimal healthcare, dental hygienists must support their clients' progression towards health related behavioural changes. An understanding of the theory behind behavioural change can guide dental hygienists in recognizing clients' barriers to improved oral health practices and offer methods to overcome obstacles. **Discussion:** Dental hygiene education programs could apply behavioural change theories in clinical assessments. This overview discusses behavioural change theories and models which have been applied in a clinical setting for the purpose of assisting dental hygienists to enhance and support client behaviours. A common theme found in the literature was that in order to successfully improve clients' long term oral health, dental hygienists must identify barriers that prevent effective daily oral self care regimes. Dental hygienists can establish a respectful collaborative relationship with their clients by recognizing and responding to the clients' level of readiness for change. This can ultimately result in improvement of their oral health behaviours. **Results:** The findings included several techniques dental hygienists can utilize to become more proficient in investigating the client's rationale for non compliance. The techniques focused on using an individualized approach to integrate the clients' existing beliefs and values into the process of care. **Conclusion:** Good communication skills and a trusting supportive relationship are the fundamental keys to facilitating the clients' ability to improve oral health.

RÉSUMÉ

Introduction : En s'efforçant de livrer les meilleurs soins de santé, les hygiénistes dentaires doivent soutenir la progression de leur clientèle dans l'évolution des comportements en matière de santé. La compréhension de la théorie qui soutient cette évolution peut aider les hygiénistes dentaires à reconnaître les barrières qui freinent l'amélioration des pratiques de santé buccale chez la clientèle, et offrir des moyens de surmonter les obstacles. **Discussion :** Les programmes de formation en hygiène dentaire peuvent appliquer les théories de changement de comportement aux évaluations cliniques. Cette vue d'ensemble traite des théories et des modèles appliqués en clinique pour aider les hygiénistes dentaires à améliorer et à soutenir le comportement des patients. La littérature indique communément que, pour réussir à améliorer à long terme la santé buccale de la clientèle, les hygiénistes dentaires doivent reconnaître les obstacles qui bloquent l'efficacité des régimes personnels de soins buccaux quotidiens. Les hygiénistes dentaires peuvent établir une relation de collaboration respectueuse avec leur clientèle en reconnaissant le niveau d'empressement au changement. Cela peut ultimement améliorer leurs comportements en santé buccale. **Résultats :** Les résultats comprennent plusieurs techniques que les hygiénistes dentaires peuvent utiliser pour améliorer leur compétence dans l'investigation des raisons qui incitent la clientèle à l'inobservance. Les techniques se concentrent sur l'approche individuelle pour intégrer les croyances et les valeurs du client dans la prestation des soins. **Conclusion :** De bons talents de communication et une relation de confiance et de soutien sont les éléments clés qui faciliteront la capacité de la clientèle à améliorer sa santé buccale.

Key words: motivational theories and models, behavioural change theories and models, health behavioural models, Transtheoretical Model, Health Belief Model, adherence, compliance.

Introduction

Up to 75 per cent of the United States adult population has periodontal disease.[1] Those affected must modify their oral health practices to improve their oral status or to inhibit the progression of their disease.[2] This adjustment includes adherence to an effective daily self care routine complemented by regular professional oral care.

The chief goal of dental hygienists is to improve the oral condition of their clients while promoting health and preventing disease.[3] The main detriments to oral health — dental caries and periodontal disease — are usually preventable and controllable if effective oral health behaviours are maintained.[4] It is necessary for dental hygienists to understand certain barriers that complicate a client's ability and motivation to adopt preventive oral health practices.[5]

Objective: This paper discusses the application of theoretical techniques for dental hygienists to assist their clients with overcoming barriers to oral health, and encourage motivation to make a positive change in their oral health.

Method: An overview of the literature from 1997 to 2010 was considered to evaluate the application of health behaviour models by the dental hygiene profession. The information was collected using the following search engines: National Centre for Biotechnology Information,

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PubMed Central, MEDLINE, EviDents Search Engine and Google Scholar. Searches were limited to full text publications in English. Several articles were recommended in a personal e-mail from Susan Isaac, RDH, MEd. A proposal to enhance dental hygiene education was suggested in personal communication with Dianne Gallagher, BGS, DipDH, PGD, EdAdmin, MEd. Information was obtained from two text books used in North American dental hygiene curricula.[2,3] Articles were also retrieved from the Camosun College Dental Hygiene 151 course package, which accompanies a course intended to develop the dental hygiene student's understanding and the influence of evidence based research, statistics, professional standards, and ethics in providing oral healthcare.

Results and Discussion: Behavioural change has been defined as the progression of identifiable phases that ultimately result in the acquisition of a new behaviour.[2] "Compliance," or the client's level of obedience to the dental hygienist's recommendations, has been distinguished from "adherence," which is a behavioural change resulting from the client's educated choice.[2] For successful periodontal health, thorough daily self care practices must be followed as a complement to professional periodontal therapy. The client's homecare is a key for a successful outcome, so it is essential that clients reach a personal decision to alter their oral health practices.[2]

Dental hygienists can encourage self efficacy and reinforce the potential benefits of the new behaviour to support clients make educated choices. A wholesome relationship between a doctor and a patient is founded on trust in the physician's opinion and empathy from them.[6] Compliance has been found to be high when doctors are emotionally supportive, reassuring, and treat patients respectfully as an equal partner.[6] These principles can also be applied to the efforts of oral health professionals. To enhance adherence, the client must believe that the dental hygienist's advice is sound, that the change will be beneficial, and that his or her opinions and choices are included in setting behaviour goals.

Discussion

Factors which may hinder clients' success of acquiring improved oral health practices

The ability of dental hygienists to foster motivation to change oral health behaviour can be hindered by determinants such as childhood upbringing,[3] age, gender, ethnicity, level of education, marital status, socioeconomic status,[4] and social support networks.[6]

People with low income levels, financially burdened by the cost of therapy, are less likely to obey their doctor's advice.[6] Socioeconomic status and cultural practices can influence a person's perception of oral health.[4] Some people may not expect to keep their teeth for life, and may perceive dental care solely as emergency care. Poverty can be considered a culture in which health attitudes, beliefs, and values are passed down through generations within families with low income.[3] Poverty is a key predictor of poor oral health. Low income earners perceived the benefits of health services as less valuable and utilized preventive services less often than higher earners.[3] People with low income were still reluctant to receive professional dental services even when the cost of dental treatment was eliminated.[4] This research reinforces the need for dental hygienists to advocate for increased public funding to improve access to preventive oral healthcare services.

Attitudes and beliefs shaped in childhood,[4] by family, media, cultural factors, and economics influence health beliefs and behaviours.[4] People with a strong social networks have higher rates of compliance.[6] The dental hygienist can strive for cultural attunement and the knowledge of each client's familial values to better understand their perspectives and incorporate their beliefs into the personalized care plan.

Motivation is most effective when strategies are employed to encourage inspiration from within the client.[7] The best self care plan is the one the client makes for his or herself (personal communication with Gallagher D, 2011 Jan. 11). The following theories have been found to be effective in the oral health field, and offer techniques for dental hygienists to enhance the motivation for behavioural change.

Theories which explain cognitive barriers to behavioural change and offer motivational techniques

The following theories, compared in Table 1, include appropriate dental hygiene interventions for each theory.

Self Efficacy Theory

The Self Efficacy Theory offers an explanation of how self confidence is a determinant of oral health behaviour[4] and an accurate predictor of oral health status.[5] Showing clients microbial slides from their plaque samples before and after self care routines is a motivator for clients with a low self efficacy. [4] Participants were more likely to practise plaque control by visualizing the outcome of their self care techniques.[4] Plaque disclosing agent was also a powerful means of increasing self efficacy because it made the result visible.[3] Another way is to verify to the clients that they have the skills to change a behaviour. Recognizing low self efficacy will also help dental hygienists enhance adherence by collaborating with their clients to set achievable, individualized goals. Achievable goals supplemented with ongoing encouragement are more likely to be met.[8] The cyclical pattern of an experience of success reinforcing further success can be initiated and maintained, consequently driving the client's self efficacy and motivation to improve their self care.

Locus of Control (LOC) Theory

The LOC Theory categorizes people's perception of how much their actions influence a health outcome.[5] Clients who believe their own behaviour determines their health status are considered to have an internal LOC (I-LOC), whereas clients who defer the blame of their poor oral health to family history or genetics are said to have an external LOC (E-LOC). This black-or-white categorization is not always realistic.[5] Clients may indicate an I-LOC regarding their overall health yet shift to an E-LOC when questioned about their oral health practices. Dental hygienists may encounter non compliance stemming from

Table 1. A comparison of theories which explain cognitive barriers to behavioural change. Dental hygiene interventions to empower and motivate clients are indicated.

Theory/Model	Main Concept	Dental Hygiene Intervention
Self-Efficacy Theory	• Success reinforces success; clients who have overcome a perceived barrier will be more likely to strive further to reach their goals because they have experienced feelings of accomplishment. • Relapses are a normal part of the learning process.	• Encourage achievable goals; these will be more likely reached, thereby reinforcing self efficacy. • Reassure that relapses may be expected and do not indicate failure.
Locus of Control Theory	Clients can be divided into two personality types: 1. Internal locus of control clients believe their own actions dictate the outcome of a condition. 2. External locus of control clients believe the outcome of a condition is out of their control and is determined by another person, fate, or God.	• Tailor interventions to motivate clients according to their personality type. • Offer feedback that supports self efficacy to motivate external locus of control clients by encouraging a sense of responsibility for their oral health.
Attribution Theory	Self perception is predictive of success or failure: • If clients believe they can reach the behavioural change goal, they will devote more effort to accomplishing the goal and be more likely to succeed. • Likewise, if clients do not think they are capable of carrying out the dental hygiene recommendation, they will not try as hard and be more likely to fail.	• Find out about other events in the client's life where hard work has resulted in rewarding benefits and compare this with the desired behavioural change. • Use this comparison to confirm that a positive health outcome can be achieved by oral health actions the client takes.
Theory of Reasoned Action	A client's attitude and intention to change a behaviour is influenced by: • perceived risks • benefits • possible outcomes (behavioural beliefs) • expectations of significant others (normative beliefs)	• Clients who understand that reduced dentinal hypersensitivity will follow consistently using a dentifrice with 5% potassium nitrate will be more likely to use it as directed rather than occasionally. • Inquire about the oral health beliefs and practices of the client's family or social group. If a client is the only one at work who smokes on coffee breaks, the dental hygienist can ask if the client feels cast out by his/ her work colleagues, and whether or not this might be a motivating factor for smoking cessation.
Health Belief Model	Informed people make better decisions. In order to change their behaviour, clients must believe: 1. They are at risk for a health condition. 2. The condition is a serious health risk. 3. There is a successful intervention. 4. Barriers to interventions can be overcome.	• Educate clients on the consequences of not modifying behaviours. • Explain the benefits of the new behaviour. • Offer reassurance and correct misinformation to counteract perceived barriers. • Explain how, where and when to take action, and provide verbal feedback to increase self-efficacy.
Transtheoretical Model (Stages of Change Theory)	• Tailor interventions to match the client's readiness to change. As a client progresses through the following predictable stages, the pros and cons of changing a behaviour are weighed. If the pros outweigh the cons, the client will continue to the subsequent stage. • Stages of change: Pre-contemplation, Contemplation, Preparation, Action, Maintenance and Relapse.	• Assess the client's readiness to change and create a personalized care plan to best suit the client's individual needs. • Table 2 provides dental hygiene interventions for each stage.
Conversational Interviewing	• Clients will respond more favourably to a dental hygienist's advice if the educational efforts complement the client's stage of readiness.	• Prompt the client with open ended questions to inquire about the client's values, experiences and knowledge. • To gather a better understanding of the client's desire to change a behaviour, observe non verbal cues along with verbal responses.
Motivational Interviewing	• Similar to conversational interviewing, but incorporates the Transtheoretical model into the interview. • Dental hygiene interventions are separated into two phases to help encourage clients to progress from precontemplation to action.	Phase I: For clients in precontemplation stage, interview to determine the client's chief complaint and build rapport and trust to establish a professional relationship. Phase II: For clients in contemplation stage, collaborate to find ways to identify and overcome perceived barriers which prevent their progression to preparation stage.

a sceptical I-LOC client who believes the dental hygienist's advice is motivated by the consumer market.[8] I-LOC clients tend to be highly motivated to comply if they are given evidence that a change will benefit them. An E-LOC client may retain the expectation that dentures are inevitable as one ages.[3] People living in poverty are more likely to acquire E-LOC expectations that restrict their perceptions of the value of seeking oral healthcare. Dental hygienists can motivate E-LOC clients by increasing their acceptance of responsibility for and ability to achieve oral health. One approach is to offer feedback that encourages self efficacy,[3] such as asking the client to recall previous behavioural change successes as a reminder that they are capable of accomplishing the newly desired change too.

Attribution Theory

The Attribution Theory describes how self perception is predictive of success or failure. It relates the belief of accomplishment to the effort devoted to a task, as well as the actual level of success.[8] Dental hygienists can promote self efficacy by confirming a positive oral health outcome. When this occurs, clients are more likely to invest greater effort in achieving a goal[8] which will in turn increase their ability to reach their goal.[5]

Theory of Reasoned Action (TRA)

The TRA proposes that a client's attitude and intention to alter individual behaviour drives the desire to change. The intent to change is influenced by perceived risks, benefits and possible outcomes of the new behaviour, as well as normative beliefs that stem from the expectations and persuasion of significant others and social groups. Social norms are stable over time and can provide strong motivation for compliance.[5] This is advantageous in oral healthcare as long as the recommended behaviours coincide with the group's practices.

Two primary models have been adapted for application in oral health. The Health Belief Model (HBM) attempts to explain and predict health behaviours by considering beliefs and values. Using the Transtheoretical Model (TTM), dental hygienists can assess the client's readiness to change and create a personalized care plan to best suit the client's individual needs.

Health Belief Model (HBM)

The HBM describes how behavioural change depends on the perceived threat of a health condition, such as periodontal disease. Clients must believe they are at risk for tooth loss or periodontal disease, and that this would impact their overall health and quality of life. They must trust that recommended interventions may help prevent tooth loss or halt further disease progression. Clients must be optimistic that the temporal commitments of daily self care and financial investment in dental services are worth it for keeping their teeth.[4] The stronger these beliefs are, the more likely the client will comply.[9] The client must be confident that barriers to the proposed interventions can be overcome by following recommendations.[5] Potential dental hygiene change strategies for the HBM are: educate clients on the consequences of not modifying behaviours, explain the benefits of the new behaviour, offer reassurance and correct misinformation to counteract perceived barriers, explain how, where and when to take action, and provide verbal feedback on their efforts to increase self efficacy.[3]

Client education plays a very important role in behavioural change. A misunderstanding of the disease process can result in poor compliance.[8] Supplying information alone is not enough to establish permanent behavioural changes.[2,5] It may be beneficial to supplement the HBM with efforts to identify a client's readiness to change.[9] This coupling, in combination with the previously discussed theories, holds potential for dental hygienists to encourage their clients towards a healthy oral self care routine.

Transtheoretical Model (TTM)

The TTM was originally developed from research on substance addictions[9] and has given rise to health promotion techniques which have been employed by oral health professionals.[10] The TTM describes how change is a non linear gradual process along a continuum which can be interrupted by relapses to old habits. This model appreciates how a client's decision making process involves weighing advantages and disadvantages.[11] The TTM relies on the support of a trusting relationship that demonstrates acceptance, caring and good listening skills,[11] of which one source is a dental hygienist.

The TTM stages are defined by various attitudes, beliefs, and actions characterized by certain motives. Dental hygiene interventions to promote success in behavioural change are indicated for each stage in Table 2.

The TTM has been predictive of the decision to comply with interdental cleaning at least three times a week in participants who did not previously practise this habit.[12] Figure 1 illustrates how the data in this study were consistent with the model's predictions of stage assessment, indicated by the perceived pros and cons of adopting the new behaviour. Clients in the precontemplation and contemplation stages found that the drawbacks to cleaning interdentally,

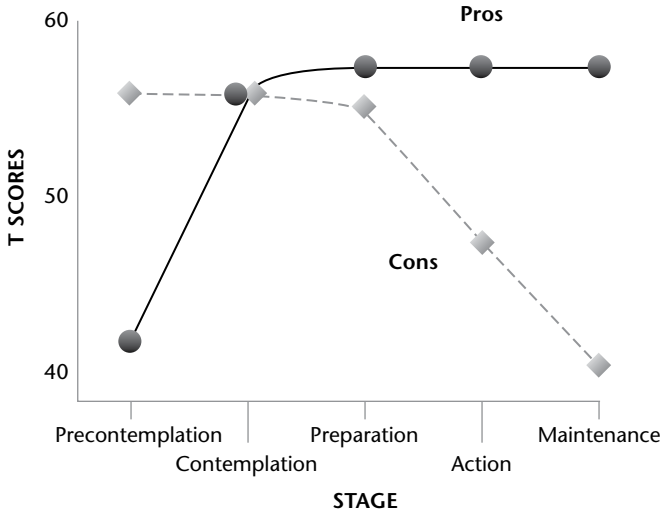

Figure 1. The relationship between stage and decisional balance for a healthy behaviour, extracted from Velicer *et al.* (1998).[11]

Table 2. Dental hygiene interventions to promote a successful outcome in behavioural changes, as proposed by the Transtheoretical Model and based on the Stages of Change Theory.

Stage	Assessment tools: Client characteristics	Dental hygiene interventions
Pre-contemplation	• Resistant and unmotivated to change • Unaware of the health risk (e.g. periodontal disease) • Aware of the risk, but denies it applies to them • Defensive about the problem • Considers the signs (e.g. bleeding gums) to be normal • Believes the outcome (e.g. tooth loss) of action (e.g. not flossing) will not have a significant impact on personal health • Has accepted that tooth loss is inevitable as one ages • Feels no control over the prognosis • Has no intent to change within the next six months	• Avoid trying to force into action • Validate their lack of readiness • Acknowledge the perceived cons • Encourage optimism and self efficacy • Respect their decision, clarify it is their decision • Encourage self exploration of present behaviours • Education: health risks of not changing, as it applies to client's individual situation • Increase frequency of professional care
Contemplation	• Acknowledges the problem • Begins to consider the benefits and costs of behavioural change • Reaches a point where the pros and cons of changing are equally important • Still resistant to change • Takes an interest in the appearance and function of own teeth and gingiva • Asks for information about oral health, disease and therapies • More open to discussing personal oral health status • Intends to make a change within the next six months	• Avoid trying to force into action • Validate their lack of readiness • Identify pros and cons of changing behaviour • Respect their decision, clarify it is their decision • Encourage self efficacy • Encourage small steps towards desired change • Inquire if client has a suggestion for how you could help • Education: long term benefits of change
Preparation	• Decides the benefits of changing slightly outweigh the costs of not changing behaviour • Plans to start changing behaviour within the next month • Inquisitive about own teeth/oral health status • Has a plan of action (e.g. has set aside a time to floss each day) • May write down or verbalize to significant others the desire to change • Becomes motivated and confident in personal ability to change • Purchases the self care aids (e.g. fluoridated toothpaste) required for personal new behaviours • Sets a date when new behaviour will commence	• Ask hypothetically: What would it feel like to have already made the change? • Reinforce long term benefits • Encourage small steps towards desired change • Offer support reminders via email or phone • Identify barriers, brainstorm to solve • Encourage self-efficacy
Action	• Has been practising the new behaviour(s) for one to six months • Benefits of the new behaviour are still as important as in the preparation stage, but the costs of not changing drop off • Actively engaged in strategies to modify their behaviour • Highly susceptible to discontinuing new behaviour and/ or reverting to old ones • Self efficacy to maintain the new behaviour may fluctuate	• Discover how client can create their own reminders • Evaluate obstacles • Encourage client problem solve, offer ideas if needed • Acknowledge the perceived cons • Identify social support: friends, family
Maintenance and Relapse	• Maintained the behavioural change for more than six months • Results of maintaining the new behaviour are much more advantageous than the thought of relapsing • Highly motivated to making new behaviour a permanent habit • Interrupted by regression to earlier stages • Increasingly more confident in personal ability to maintain the behaviour • Tempted to give up new behaviours in exchange for the familiarity of old ones • May be discouraged by the lack of tangible long term benefits • Negative self talk can signal a relapse	• Address relapse triggers • Brainstorm to overcome relapse triggers • Alternative strategies may be needed • Evaluate success/failures in dealing with previous obstacles • Encourage self efficacy: "Look how far you've come!" • Reinforce long term benefits • Reassess motivation and barriers • Education: relapses are expected as part of the process

Adapted from Nield-Gehrig (2008)[2], Darby and Walsh (2010)[3], Hollister and Anema (2004)[5], and Velicer *et al.* (1998).[11]

such as technique difficulty and messiness, outweighed the pros, which were improvement in appearance and oral health.

Twenty one per cent of the US population are in precontemplation for practising regular interdental cleaning.[12] A client may either be unaware oral self care is a problem, or aware of the problem but reluctant to modify behaviour. A client who has made unsuccessful attempts to change personal habits may become demoralized by failure. Clients in the precontemplation stage are often dismissed from health promotion programs as they are deemed unwilling to participate.[11] Rather, a common mistake is to presume that a client is ready for an instantaneous and permanent behavioural change.[11] It is estimated that few clients are in contemplation and action stages and more clients are in the maintenance stage for interdental cleaning.[12] The authors attributed these data to including clients who obtained regular oral health services and who may have already been influenced by previous exposure to oral hygiene instructions.[12]

Studies in the early to mid 1990s found that although stage distributions for smoking cessation among European countries were similar, the sample populations vary markedly from US results[11] as summarized in Table 3. While stage distributions for smoking cessation have been established, the stage distributions for other behaviours detrimental to oral health remain unknown.

Table 3. A comparison of stage distributions for smoking cessation behaviours between sample populations in the United States and three European countries (Spain, the Netherlands, and Switzerland) as reported by Velicer et al. (1998).[11]

	United States	European Countries
Precontemplation	40%	70%
Contemplation	40%	20%
Preparation	20%	10%

The TTM recognizes that appropriate interventions must be developed for each client depending on their readiness to change. Relationship and communication are critical aspects for interactions between dental hygienists and their clients. From research on therapeutic compliance from the medical perspective,[2,6,7,10] it was concluded that healthcare providers should involve their clients when designing a treatment plan. Involving the client in the process of care can be a worthwhile approach to enhance communication. It is not within the scope of this paper to review the extensive intricacies of human communication or learning styles; however, the following discussion draws attention to the value of strong communication skills in building rapport with clients.

Conversational Interviewing (CI)

A client will respond more favourably to a dental hygienist's advice if educational efforts complement the client's stage of readiness.[2,9,10] The CI method involves prompting the client with eight or ten open ended questions to gather information pertaining to the client's values, experiences, and knowledge of oral health.[4] The dental hygienist's observations of verbal and non verbal responses can reveal clues to the client's health beliefs.[9]

Motivational Interview (MI)

The MI approach is similar to CI in that it uses open ended questions to collect information before providing information and advice. Both CI and MI aim to create a supportive environment by the acceptance of clients' beliefs and the affirmation of their previous knowledge to help them reach informed decisions. MI differs from CI by applying the TTM to motivate a behavioural change. Within two phases, MI encourages people to progress from precontemplation into action.[10] The intention of the first phase is to determine the client's chief complaint and build rapport and trust to establish a professional relationship. Completion of this stage is reached when the client advances from precontemplation to contemplation, and this may take some time. Clients in the second phase are hesitant to commit to the new behaviour; they desire to change but are still hindered by perceived barriers.

While this method of interviewing has been used in the nursing profession, it can also be applied in many healthcare environments.[13] Table 2 provides further detail on additional stage specific dental hygiene interventions.

It is essential to learn how important a change is to a client[2] and what the perceived barriers to that change are. It is not the actual barriers which impede a client's motivation, but rather how they perceive the barriers.[7] For instance, a soccer player who presents with chipped anterior teeth and complains of dentinal hypersensitivity will likely not comply with wearing a sports mouthguard until her/his primary complaint has been addressed.

The client can also be asked to rate how ready he or she feels to make a change on a scale of one to ten. Probing as to what made the client choose that number is a valuable tool for dental hygienists to help identify underlying barriers to change not previously accounted for.[14]

Often with periodontal disease several adjustments to behaviour need to be made. An approach to this is to present each of the desired goals as written statements for the client to fill in with other priorities which may develop as progression is made. Clients can identify which goal is their highest priority. Working on one goal at a time to create one small alteration to a regular habit can help make the behavioural changes less overwhelming, and is predictive of successful progression into the action stage and to increased compliance.[2,6]

The upkeep of daily oral self care involves personal decisions that are chosen by the client.[2,5] Rather than relying solely on the generic oral health education approach of "show-tell-do" to explain the consequences of resisting recommendations, dental hygienists must accept that there is often a gap between the self care instructions given and their actual practice. To avoid confrontation during interviewing, dental hygienists can be the secondary source of solutions[13] while the primary source is the client. It is important to remember that there is a concealed rationale behind all uncooperative behaviours.[14]

There are aspects of this report which may devalue the

findings. The majority of articles were obtained from a limited number of electronic search engines. Only articles in English with full text available were included. Informative studies in other literature databases, paper copies, or in other languages may have been omitted. An emphasis of the HBM and TTM, both of which have been well established in oral healthcare, resulted from their use as key words whereas the other theories were not specified in the search. Based on a personal interest, the author focused on techniques for assisting clients with the progression from the precontemplation to the contemplation stage of the TTM.

Conclusion

It is essential to recognize that dental hygiene intervention is only one element in the goal to promote and maintain health and prevent disease; clients must also choose to practise an effective oral self care regime on a daily basis, and their general health must be considered. The challenge is to increase the client's motivation and facilitate adherence to evidence based recommendations for self care. A practical knowledge of health behaviour modification theories can provide dental hygienists with a basis of how to meet the unique needs of each client to better support their health. There are various techniques which dental hygienists can use to approach the client, including: establishing a respectful collaborative relationship, identifying the client's beliefs, priorities and interest in changing behaviours, addressing self efficacy and barriers to oral health, and encouraging progression through adequate monitoring to reach client centred goals. All of the findings in the cited literature support the need for dental hygienists to practise effective communication skills that are centred on a caring, non judgemental attitude. These methods of collecting information and incorporating it into a client centred care plan, applying motivational theories, and setting collaborative and realistic goals can facilitate the client's success at self care. If dental hygienists also recorded their client's stage of change and subsequently selected appropriately staged interventions, they could enhance movement towards compliance and oral health for their clients. Practising these methods in school would allow dental hygiene students to integrate their theoretical knowledge into dental hygiene practice. Reflection on the clients' responses would deepen the students' understanding of the rationale underlying client behaviours and enhance their proficiency in assisting clients to achieve optimal oral health. If applying behavioural change theories becomes routine through practice, graduates entering the field will exit with a repertoire of effective intervention strategies that could potentially reduce the gap between the dental hygienist's recommendations and the client's compliance.

Due to the lack of Canadian data on the effectiveness of the TTM for oral health related behaviour, there is a need for future qualitative research to add to our evidence base. In view of the notable difference between US and European tobacco users in the precontemplation stage of smoking cessation, it may be valuable to find out if there also exists a stage distribution for oral health behaviours. As it has been suggested for medical research[6], the extent of the impact of non compliance with oral health recommendations could be investigated to extrapolate the possible financial implications of a low compliance rate on healthcare systems.

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RESEARCH CORNER

This section features a few titles of the latest published research in oral health, the authors of the published research, and the journals of publication. The search terms used through the US National Library of Medicine's database, PubMed, were "dental hygiene", "innovations in oral health" and "dental hygiene education".

The work by researchers in the field of oral health is critical to the practice of the profession, and to client care. Please visit http://www.ncbi.nlm.nih.gov/pubmed/ for the entire articles, or access these articles through your university libraries.

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When is a food not a food?

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ABSTRACT

Objective: The objective of this paper is to review the evolution and landscape of common types of additives and "functional foods" in the food supply today, and to explore the scientific evidence available to support the value of these many new products to a healthy diet. **Discussion:** The definition of "food" is complex in today's world. Advances in technology have allowed the transformation of foods from their natural state to new forms enhanced with vitamins, minerals, and other compounds, usually with the goal of promoting better health. In addition, products traditionally considered "extras" and not basic foods are also being fortified, for example, vitamin water, in an effort to boost their nutrient profiles. These enhanced foods and beverages may appear on the market associated with health benefit claims that may or may not be supported by scientific evidence, and may leave consumers wondering whether they are consuming a food, a drug, or both or neither. **Methods:** National dietary guidelines, the legal regulations underpinning product marketing and claims, and the peer reviewed literature were reviewed for evidence supporting or not supporting usage and health benefit claims. **Results and Conclusion:** The number of new food products continues to increase, fueled by consumer interest and demand for healthy products. However, the evidence for actual health benefits for new products can range from strong to nonexistent. Misuse of some can even be harmful. The dental hygienist is an important ally in directing patients to sound and consistent nutrition and health information and should become familiar with the best resources available to assist in this endeavor.

RÉSUMÉ

Objet : Cet article traite de l'évolution et du paysage des types usuels d'additifs et des «aliments fonctionnels» dans l'approvisionnement alimentaire d'aujourd'hui, et d'explorer les données probantes de la science pour soutenir la valeur des nouveaux produits dans une saine alimentation. **Discussion :** La définition du mot «aliment» est complexe de nos jours. Les progrès technologiques ont permis de métamorphoser les aliments naturels avec des vitamines, des minéraux et d'autres composantes ordinairement dans le but de promouvoir une meilleure santé. En outre, les produits considérés traditionnellement comme des «suppléments», et non des aliments de base, sont fortifiés (e.g. l'eau vitaminée) afin d'en renforcer le profil nutritionnel. Les aliments et breuvages ainsi améliorés peuvent avoir sur le marché une allure de bienfaits pour la santé, qui pourraient être ou ne pas être soutenus par des données scientifiques et inciter les consommateurs à se demander s'ils consomment un aliment, un médicament ou les deux, ou ni l'un ni l'autre. **Méthodes :** L'on a cherché dans les lignes directrices nationales, dans la règlementation juridique des mises en marché et des allégations des produits et dans la littérature revue par les pairs les données probantes qui soutiennent et ne soutiennent pas l'usage et les bienfaits allégués pour la santé. **Résultats et Conclusions :** Le nombre des nouveaux produits alimentaires augmente constamment, sous l'effet de l'intérêt des consommateurs et la demande de produits sains. Toutefois, les données probantes sur les bienfaits actuels des nouveaux produits pour la santé varient entre fortes et inexistantes. Le mauvais emploi peut même être dangereux. L'hygiéniste dentaire est une alliée importante dans l'orientation des patients vers une nutrition saine et consistante et dans l'information sur la santé. Elle devrait se familiariser avec les meilleures ressources accessibles qui la seconderont dans cet effort.

Key words: dietary standards, food additives, functional foods, dietary supplements

Introduction

Food is a simple four letter word, but its definition "everything we eat, including fruits, vegetables, grains, meats dairy as well as beverages, herbs, spices and supplements"[1] fails to convey the complexity of today's food supply. In generations past, food was grown primarily for sustenance, and people relied on what was fresh and in season locally or from their own farms. Today, food serves a much broader role in culture, ethnicity, socialization, community, and health promotion,[2] and comes in a wide variety of forms—fresh, frozen, canned, fortified, etc.—from locations nearby or around the world.

The objective of this paper is to review the evolution and landscape of common types of additives and "functional foods" in the food supply today, and explore the scientific evidence available to support the value of these many new products to a healthy diet.

The earliest food adulteration was fortification for the purpose of resolving public health nutrition issues such adding niacin to food to prevent pellagra, adding thiamine to prevent beriberi and later adding iron to prevent iron deficiency anemia. The indications for these initiatives were backed by clear scientific evidence.[3] Increasingly, sophisticated technology has allowed foods to be enhanced with not just vitamins and minerals, but a host of other compounds with purported health benefits such as antioxidants or phytochemicals.[4] The finding in recent years that many natural food components have health bene-

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fits beyond their basic nutrient functions,[5] and consumer interest in more nutritious diets has also resulted in the proliferation of such consumables as drinks, supplements which are enhanced with these compounds, and touted for their health promoting benefits[6,7] whether justified by the scientific evidence or not.[7] As these trends continue and food additives, fortificants, and functional components become more and more commonplace in thefood supply, the resulting products may blur the line between what is a food and what is a drug.

Methods

National dietary guidelines, the legal regulations underpinning product marketing and claims, and the peer reviewed literature were reviewed for evidence supporting or not supporting usage and health benefit claims. Articles were found using comprehensive online databases including Medline Plus and EBSCOhost, Key search terms included: "fortification," "functional foods," "food additives," "dietary supplements," "nutrigenomics," "dietary guidelines" and "dietary standards". Additionally, government websites such as the Food and Drug Administration (FDA), the United States Department of Agriculture, and Health Canada were reviewed for comprehensive understanding of dietary standards as well as specific government policies, regulations, and guidelines related to the food industry.

Discussion

What is the basis for a healthy diet?

All of the basic nutrients—carbohydrates, proteins, fats, vitamins, minerals and water—needed for general health are known,[8] and can be obtained from a properly chosen diet of basic foods. Today, however, making wise food choices is often confusing due to the huge number of manufactured and enhanced foods available on the market. To help place these new products in context, a review of the basic nutritional requirements for health follows.

Nutrition research related to diseases and health has a long history. The first recognition that a certain nutrient could affect a health condition dates back to 1753 when James Linds suggested that lemons might prevent scurvy in British sailors; however these recommendations were not put into action until forty years later when ships were required to have lemons on board for long journeys.[9] As

Table 1. Components of the Canadian Food Guide.

	Foods included	Serving size	Recommendations	Abundant nutrients
Vegetables and Fruit	• Fresh, frozen, canned vegetable • Fresh, frozen or canned fruit • Cooked leafy vegetables • Raw leafy vegetables • 100% fruit or vegetable juice	• 125 mL (½ cup) • 125 mL (½ cup) • Cooked 125 mL (½ cup) • Raw 250 mL (1 cup) • 125 mL (½ cup)	• Eat leafy greens and orange vegetables frequently; prepare vegetables and fruits with little to no added at sugar or salt and have whole fruits and vegetables more than juice	• Vitamin A, Vitamin C • B Vitamins, Fiber • Iron
Grain Products	• Bread • Bagel • Flat breads • Cooked rice, bulgur, quinoa • Cold cereal • Hot cereal • Cooked pasta or couscous	• 1 slice (35 g) • ½ bagel (45 g) • ½ pita or ½ tortilla (35 g) • 125 mL (½ cup) • 30 g • 175 mL (¾ cup) • 125 mL (½ cup)	• Make at least half of your grain products whole grain each day. • Choose grain products that are lower in fat, sugar or salt. Have most servings as whole grains	• B vitamins • (especially folate & thiamine) • Magnesium
Milk and Alternatives	• Milk or powdered milk • Canned milk (evaporate) • Fortified soy beverage • Yogurt • Kefir • Cheese	• 250 mL (1 cup) • 125 mL (½ cup) • 250 mL (1 cup) • 175 g (¾ cup) • 175 g (¾ cup) • 50 g (1½ oz)	• Choose skim, 1%, or 2% versions of milk products • Select lower fat milk alternatives	• Calcium, vitamin D, phosphorus and magnesium
Meat and Alternatives	• Cooked fish, shellfish, poultry, lean meat • Cooked legumes • Tofu • Eggs • Peanut or nut butters • Shelled nuts and seeds	• 75 g (2 ½ oz) • 175 mL (½ cup) • 150 g or 175 mL (¾ cup) • 2 eggs • 30 mL (2 tblsp) • 60 mL (¼ cup)	• Choose lean cuts of protein (lower in saturated fat) • Have meat alternatives • Eat at least 2 *Food Guide* servings of fish each week • Select lean meat and alternatives	• Protein, Unsaturated fats (except in meat) • B vitamins (especially B12)

Adapted from: Health Canada. *Canada's Food Guide.* 2009.[11]

research progressed and specific nutrient deficiencies were identified as being responsible for life threatening medical conditions, the first *Recommended Dietary Allowances* (RDA) were developed by the United States government followed by the release of Canada's first *Official Food Rules*.[10] These guidelines addressed the prevention of nutritional deficiencies and improved health. Since the initial development of the RDAs and Canada's *Official Food Rules*, formal revisions and updates occur every few years, and the focus has shifted from preventing nutritional deficiencies to the role of nutrients in health promotion and disease prevention. The current dietary recommendations for Canadians are summarized in Table 1, and are translated into an educational tool, *Canada's Food Guide*. According to Health Canada,[11] the intent behind the nutrition guidelines is to "guide food selections to promote the nutritional health of Canadians".

These guidelines include specific age and gender recommendations for all known required nutrients—carbohydrates, protein, and fat—water, vitamins, and minerals. The recommendations are converted into recommended daily portions of the foundation foods: fruits, vegetables, whole grains and starches, dairy and some fats and oils in their natural forms. With some exceptions people should be able to meet their nutritional needs through diet alone, without the need for fortification or enhancements. It is important to note, however, that even some of the foods present in the food pyramid are already subject to fortification such as Vitamin D added to milk, and folate added to bread products and cereals.

Canada's *Food Guide* is an important educational tool that provides the fundamental recommendations for a healthy diet in an easily understood visual. Additionally, Canada's *Food Guide* also makes specific supplement recommendations for populations, including pregnant women, to include a multivitamin with iron and folic acid; and to include a daily vitamin D supplement for men and women >50 years of age.

Despite these guidelines, most diets are rarely composed only of the basic foods. Society is bombarded with a huge number of manufactured or altered food options, which are highly advertised and promoted.[12] The most highly promoted foods are often the least nutritious and vice versa.[12] The challenge for the consumer is to make wise,

Table 2. Definitions of commonly used terms.

Food related term	Definition
Fortification	The deliberate addition of synthetic vitamins to food. The additional amount of nutrient is added to a food, usually in an amount higher than that present before processing. It can be used to standardize the content of a nutrient that can be variable in a food product (i.e., Vitamin C in orange juice). Ref: Guidelines on food fortification with micronutrients. Allen L, de Benoist B, Dary O, Hurrell R. World Health Organization (WHO). 2006. www.who.int/nutrition/publications/guide_food_fortification_micronutrients.pdf
Enrichment	Restoration of nutrients lost during food processing at an amount approximately equal to the natural content in the food before processing. Ref: http://nutrition.about.com/od/askyournutritionist/f/enriched.htm
Additive	Any substance added to food, directly or indirectly. Ref: www.fda.gov/Food/FoodIngredientsPackaging/ucm094211.htm
Direct Additive	Substances added for a specific purpose, and are identified on the ingredients' label of foods. Ref: www.fda.gov/Food/FoodIngredientsPackaging/ucm094211.htm
Indirect Additive	Additives that become a part of the food in trace amounts due to its packaging, storage and other handlings. They must be proven as "safe" by the FDA before permitted used. Ref: www.fda.gov/Food/FoodIngredientsPackaging/ucm094211.htm
Functional Foods	A *functional food* is similar in appearance to, or may be, a conventional food, is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions. Ref: www.hc-sc.gc.ca/fn-an/label-etiquet/claims-reclam/nutra-funct_foods-nutra-fonct_aliment-eng.php
Antioxidant	A substance thought to reduce the harmful effects of free radicals on the body. Ref: http://nutrigenomics.ucdavis.edu/?page=Information/Glossary
Dietary Supplement	A product taken by mouth containing dietary ingredient intended to supplement the diet; these products may include: • Vitamins • Minerals • Herbs or botanicals • Amino acids • Substances such as enzymes, organ tissues, metabolites They are placed in a special category under the umbrella of "foods" by the FDA and must be labeled as a dietary supplement. Ref: www.fda.gov/Food/DietarySupplements/ConsumerInformation/ucm110417.htm

economical food choices in the face of often relentless product promotion.

Food fortification, food additives, and functional foods. How do they fit in to a healthy diet?

Natural foods can be changed in a variety of ways. They can be processed, refined, supplemented, or fortified with nutrients or other compounds or additives. Table 2 provides a brief glossary for the most common food manipulations.

Food fortification

The fortification of food for human benefit can be traced to the earliest days of our history when salt was used as a food preservative. Food additives have been used for much of history dating back to early methods of preservation with hunters and farmers seeking to prolong food's freshness after harvest and slaughter. Food preservation methods have included the use of salt to preserve meat and fish, sugar to preserve fruit, and vinegar to can vegetables.[13]

Regulation of food and drugs began in Canada in the 1920s through the *Food and Drugs Act* which was created to protect consumers from fraud and health hazards in sales of food and drugs.[14] In the 1930s, the idea of fortification occurred for the first time in Canada with a debate over the addition of thiamin to flour and bread. This debate carried on as both the United States and Britain fortified their flour with thiamin in 1938, and continued after a series of dietary surveys conducted by the Canadian Council of Nutrition revealed a wide array of vitamin deficiencies in the population, including all B Vitamins, calcium, iron, and Vitamin A.[15] As fortification proved beneficial in addressing pressing public health nutrition problems, new food and drug regulations were developed to define the amounts of vitamins and minerals that could be added to certain standardized food products. Today, foods are being fortified not only with additional vitamins and minerals, but also with "functional" components thought to have added beneficial effects such as phytochemicals, omega-3

Table 3. Examples of common food fortification.

Fortification	Reason/public health issue	Vitamin/mineral function in body
Vitamin A to margarine http://ods.od.nih.gov/factsheets/VitaminA-HealthProfessional/	To address Vitamin A deficiency Margarine was created as a substitute to butter	• Vision • Gene transcription • Immune function • Bone metabolism • Skin health • Antioxidant activity
Vitamin D to milk, evaporated/dry milk, margarine http://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/	In response to signs of clinical deficiency- Rickettes Our diet is VERY low in Vitamin D	• Promotes calcium absorption in the gut • Enables bone mineralization • Needed for bone growth and remodeling
Iodine to salt www.fao.org/docrep/w2840e/w2840e03.htm#vitamin c	To address prevelant deficiency seen as goiters	• Essential trace element, and is a constituent of the thyroid hormones, which play a basic role in regulating basal metabolic rate. • Constituent of thyroid hormone • Role in regulating basal metabolic rate
Iron, thiamin, riboflavin and niacin to flour www.fao.org/docrep/w2840e/w2840e03.htm#vitamin c	Voluntary enrichement began in an effort to mimic the nutrients lost in flour during processing	Iron • Incorporated in heme complex of red blood cells • Transfers oxygen throughout the bodyessential to all organisms; it is incorporated in the heme complex or red blood cells which is needed to transfer oxygen throughout the body Thiamine • Phosphate derivatives involved in cellular processes and metabolism • Water soluble B Vitamin whose phosphate derivatives are involved in many cellular processes within the body Niacin • Water soluble B vitamin • Is a precursor for metabolism Riboflavin • Water soluble B vitamin that plays a key role in energy metabolism and for metabolism of fats, ketone bodies, carbohydrates and proteins
Folic acid to flour and cereal grains http://ods.od.nih.gov/factsheets/Folate-HealthProfessional/	Mandatory fortification began in 1999 as a strategy to deliver folate to women of childbearing age in general population in response to rise in neural tube defects	• Synthesis and repair of DNA • Water soluble B vitamin essential to numerous body processes including synthesis and repair of DNA. It is important during periods of essential during periods of rapid cell division and growth

Table 4. Types of food ingredients and additives.

Additive purpose	Additive type	How it will appear in the ingredients list	Where are they typically found?
To give foods the texture and consistency that consumers expect	Emulsifers, stabilizers, thickeners and anti-caking agents	• Alginate • Lecithin Monoglyceride/Diglyceride • Methyl, Cellulose • Carrageenan • Glyceride, Pectin • Guar Gum • Sodium Aluminosilicate	• Baked goods • Cake mixes • Salad dressings • Ice cream • Processed cheese • Table salt • Coconut
Improve or Maintain the Nutritional Value and Safety	Vitamins, minerals, fiber, antioxidants (preservatives)	• Vitamin A, D, C • B Vitamins (Thiamine, Niacin, Riboflavin, Pyridoxine, Folic Acid) • Calcium Carbonate • Zinc Oxide • Iron • Propionic Acid (and it's salts) Ascrobic Acid (Vitamin C) • Butylated Hydroxyanisole (BHA) • Butylated Hydroxytoluene (BHT) • Benzoates • Socium Nitrite • Citric Acid	• Flour • Bread • Biscuits • Breakfast cereals • Pasta • Margarine • Milk • Iodized salt • Gelatin • Desserts • Potato chips • Cake mixes • Meat
Produce Light Texture and Control Acidity and Alkalinity	Leaveners	• Yeast • Sodium Bicarbonate • Citric Acid • Fumaric Acid • Phosphoric Acid • Lactic Acid • Tartrates	• Cakes • Cookies • Quick breads • Crackers • Butter • Chocolates • Soft drinks
Enhance taste and appearance of the product	Natural and synthetic flavors Food colors	• Cloves • Ginger • Fructose • Aspartame • Saccharin • FD&C Red No. 40 • Monosodium Glutamate (MSG) • Caramel • Annatoo • Limonene • Turmeric	• Spice cake • Gingerbread • Soft drinks • Yogurt • Soup • Confections • Baked goods • Cheeses • Jams • Gum
Enhance the color of the product	Dye, pigments or substances that impart color when applied to a food	Certified Colors: • FD&C Blue No. 1 and 2 • FD&C Green No. 3 • FD&C Red No. 3 and 40 • FD&C Yellow No. 5 (tartranzine) and No. 6 • Orange B • Citrus Red No. 2	• Soft drinks • Baked goods • Processed cheese and meats • Jams • Gum • Confections • Yogurt

Adapted from: International Food Information Council (IFIC) and U.S. Food and Drug Administration. Food Ingredients and Colors. 2004 November; revised 2010 April.[32]

fatty acids, fiber, and antioxidants. Examples of these fortification efforts can be seen in Table 3.

Food additives

The ingredient list of a manufactured food product today is usually long, and may contain many unfamiliar compounds. The food additives in processed and packaged food products have varying roles in the food supply, such as:

- helping to keep food safe, wholesome, and appealing, especially during shipping (e.g., citric, fumaric acid),
- enhancing nutritional value (e.g., vitamins, minerals), or
- prolonging shelf life to make convenience foods possible (e.g., sulfites, sodium bisulfate, propionic acid).

Table 4 describes in detail the different types of food additives, their purpose, how they are listed on an ingredients label, and where they are most likely to be found.

Food additives in Canada are regulated by Health Products and Food Branch, Health Canada, the Canadian Food Inspection Agency (CFIA) under the *Food and Drugs Act* and the *Food and Drug Regulations* of Justice Canada. In the USA, food additives are regulated by the Food and Drug Administration.[16] Regulations list food additives that may be used in Canada, and specify which foods the additives may be used for and the maximum amounts allowed. There are certain ingredients in foods that are not regulated as food additives including salt, sugar, starch, vitamins, minerals, amino acids that are added to improve the nutritional quality of food, spices, seasonings, flavorings, agricultural chemicals, and food packaging materials.[17] The safety of food additives is also in the hands of Health Canada to ensure that additives do not pose a health hazard, and constantly evaluate the safety of new foods before they are listed in the *Food and Drug Regulations*.[14]

The demand of today's society for quick, convenient, and cheap foods, with a wide variety and availability has become the norm and has fueled the biotechnology industry making these products available.[18] The question of whether they are all necessary and safe for our food supply remains a topic of constant debate.[7,19]

What's new? Functional foods

"Functional foods" is the latest buzz word in the world of food and nutrition. The use of the term "functional food" became popular when it was noted that components of foods other than recognized nutrients may also provide health benefits. In fact, all foods are functional at some physiological level; however, "functional foods" provide additional health benefits beyond basic nutrition.[20] Health Canada states, "A *functional food* is similar in appearance to, or may be, a conventional food, is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions."[21] Functional foods vary in the quantity and quality of evidence based science supporting their health benefits. The evidence for the health benefits of some functional components such as psyllium, soy, or oat products for reducing total and LDL cholesterol is strong. With others, such as the use of ginseng for enhancing energy or physical performance, there is no known efficacy, and others may even be harmful (ma huang).[22]

Many of these "functional" components are already present in conventional foods but are then added to other foods to enhance their purported benefit such as with antioxidant enriched beverages or candies, or snack bars fortified with chromium.

Functional foods are best classified by the strength of the evidence supporting their claims. Much of the evidence for functional foods currently lacks well designed clinical trials. However there may be other substantial evidence to support their health promoting properties. Health claims are scientifically validated claims about specific functional food components that are regulated by Health Canada in Canada,[17] and the FDA in the US according to their intended use. All proposed health claims require a large body of scientific evidence to demonstrate and confirm actual benefit. Functional foods with approved health claims should help consumers decide which choices would most benefit health.

The American Dietetic Association proposes a 5 level classification system:[22]

1. Functional foods that have the strongest scientific evidence of clinical efficacy *and* have substantial scientific agreement of a diet disease relationship *and* warrant an approved health claim by the FDA. Some examples are foods rich in soluble fiber associated with reduced incidence of coronary heart disease, high intake of fruits and vegetables associated with reduced risk of cancers or coronary heart disease.
2. Functional foods that have "qualified health claims" by the FDA or have strong evidence but currently lack an FDA approved health claim, meaning that there is strong data but not conclusive evidence. Some examples are garlic associated with reduced cholesterol levels, or omega-3 fatty acids associated with reduced risk of coronary heart disease.
3. Foods that have been fortified to enhance the level of a specific nutrient or food component associated with the prevention or treatment of a disease or condition. Some, such as calcium fortified orange juice, fiber supplemented snack bars, or folate enriched cereals have authorized health claims. Others such as beverages with added vitamin E for reduced heart disease or salad dressings with n-3 fatty acids to reduce the inflammation of rheumatoid arthritis lack sufficient evidence to warrant a health claim.
4. Whole foods associated with reduced risk of disease. These foods may have evidence to support their health benefits, but no health claims exist due to lack of consensus on the strength of the evidence. Some examples are tomato products with lycopene that has been associated with reduced cancer rates in epidemiological studies; black and green teas with polyphenols that have been associated with cancer prevention and reduced cholesterol; fermented dairy products (probiotics) associated with improved gastrointestinal flora, and cranberry juice to reduce bacteriuria.
5. Functional food components marketed as dietary

Table 5. Functional foods.

Class/components	Food source	Potential benefit under investigation	Allowed health claim?
Carotenoids			
Beta-Carotene	Carrots, pumpkin, sweet potato cantaloupe	Neutralizes free radicals which may damage cells; Bolsters cellular antioxidant defenses; Can be made into vitamin A in the body	No
Lutein, Zeazanthin	Kale, collards, spinach, corn, eggs, citrus	May contribute to maintenance of healthy vision	No
Lycopene	Tomatoes and processed tomato products, watermelon, red/pink grapefruit	May contribute to maintenance of prostate health	No
Dietary (functional and total) fiber			
Insoluble fiber	Wheat bran, corn bran, fruit skins	May contribute to maintenance of a healthy digestive tract; may reduce the risk of some types of cancer	No
Beta glucan	Oat bran, oatmeal, oat flour, barley, rye	May reduce risk of coronary heart disease (CHD)	No
Soluble fiber	Psyllium seed husk peas, beans, apples, citrus fruit	May reduce risk of CHD and some types of cancer	Yes: • Barley soluble fiber • Psyllium seed husk soluble fiber • Whole oat soluble fiber
Whole grains	Cereal grains, whole wheat bread, oatmeal, brown rice	May reduce risk of CHD and some types of cancer; May contribute to maintenance of healthy blood glucose levels	Yes
Fatty acids			
Monounsaturated fatty acids (MUFAs)	Tree nuts, olive oil, canola oil	May reduce risk of CHD	No
Polyunsaturated fatty acids (PUFAs)	Walnuts, flax	May contribute to maintenance of heart health; May contribute to maintenance of mental an visual function	No
PUFAs—Omega-3 fatty acids—DHA/EPA	Salmon, tuna, marine, and other fish oils	May reduce risk of CHD; may contribute to maintenance of mental and visual function	No
Conjugated linoleic acid (CLA)	Beef and lamb; some cheese	May contribute to maintenance of desirable body composition and healthy immune function	No
Flavanoids			
Anthocyanins—Cyanidin, Delphinidin, Lalvidin	Berries, cherries, red grapes	Bolster cellular antioxidant defenses; may contribute to maintenance of brain function	No
Flavanols—Catechins, Epicatechins, Epigallocatechin, Procyanidins	Tea, cocoa, chocolate, apples, grapes	May contribute to maintenance of heart health	No
Flavanones—Hesperetin, aringenin	Citrus foods	Neutralize free radicals, which may damage cells, Bolster cellular antioxidant defense	No

Flavonols—Quercetin, Kaempfero, Isorhamnetin, Myricetin	Onions, apple, tea, broccoli	Neutralize free radicals, which may damage cells, Bolster cellular antioxidant defense	No
Proanthocyanidins	Cranberries, cocoa, apples, strawberries, grapes, wine peanuts, cinnamon	May contribute to maintenance of urinary tract health and heart health	No
Plant Stanols/Sterols			
Free Sterol/Stanols	Corn, soy, wheat, wood oils, fortified foods and beverages	May reduce risk of CHD	No
Stanol/Sterol esters	Fotified table spreads, stanol esters dietary supplements	May reduce risk of CHD	Yes: • Plant sterol esters • Plant stanol esters
Polyols			
Sugar alcohols—Xylitol, Sorbitol, Mannitol, Lactitol	Some chewing gums and other food applications	May reduce risk of dental caries	Yes
Prebiotics			
Inulin, Fructo-oligosaccharies (FOS), Polydextrose	Whole grains, onions, some fruits, garlic, honey, leeks, fortified food ad beverages	May improve gastrointestinal health; may improve calcium absorption	No
Probiotics			
Yeast, *Lactobacilli*, *Bifidobacteria*, and other specific strains of beneficial bacteria	Certain yogurts and other cultured dairy and non dairy applications	May improve gastrointestinal health and systemic immunity; benefits are strain specific	No
Phytoestrogens			
Isoflavones—Daidzein, Genistein	Soybeans and soy based foods	May contribute to maintenance of bone health, healthy brain and immune function; for women, may contribute to maintenance of menopausal health	No
Lignans	Flax, rye, some vegetables	May contribute to maintenance of heart health ahd healthy immune function	No
Soy Protein			
Soy Protein	Soybean and soy based foods	May reuce risk of CHD	Yes

Adapted from: International Food Information Council (IFIC). Background on Functional Foods. 2009 September 29.[33]

supplements. The majority of these products have limited, incomplete, or unsubstantiated health claims.

Today many botanicals are introduced into the food supply as functional foods, "sometimes irresponsibly".[22] Functional components may also be added to low nutrient, high calorie foods in an effort to increase their nutrition credibility such as soda with added vitamins and antioxidants. Table 5 outlines the common functional foods and food components.

The functional food industry continues to grow, especially as consumers increasingly demand foods that promote wellness; and may view food as medicine.[13] As links between poor diet and morbidity and mortality continue to emerge through current health and nutrition research, the market for functional foods will continue to increase.[23]

Dietary supplements

Dietary supplements are products intended to supplement the diet, and contain any of the following dietary ingredients: vitamin, mineral, herb or other botanical, amino acid, dietary substance for use by humans to supplement the

diet by increasing the total dietary intake, or a concentrate, metabolite, constituent, extract, or combination of any ingredient mentioned above, and are not represented for use as a conventional food or as a sole item of a meal or diet. They must also be identified on the label as a dietary supplement.[24] The most common dietary supplements are multivitamins followed by meal replacements, sports nutrition supplements, and individual vitamin and mineral supplements such as calcium, iron, and vitamins E and C.[25] Glucosamine and chondroitin and herbal supplements—

Table 6. Health claims authorized under the Nutrition Labeling and Education Act (NLEA) 1997–2006.

Dietary component	Allowed health claim
Sugar alcohols	Frequent eating of foods high in sugars and sugar starches as between-meal snacks can promote tooth decay. The sugar alcohol used to sweeten this food may reduce the risk of dental carries.
Whole oat soluble fiber	Soluble fiber from foods such as (name of food) as part of a diet low in saturated fat ad cholesterol may reduce the risk of heart disease.
Psyllium seed husk soluble fiber	Soluble fiber from foods such as (name of food) as part of a diet low in saturated fat ad cholesterol may reduce the risk of heart disease.
Barley soluble fiber	Soluble fiber from foods such as (name of food) as part of a diet low in saturated fat ad cholesterol may reduce the risk of heart disease.
Soy protein	Diets low in saturated fat and cholesterol that include 25 grams soy protein a day may reduce the risk of heart disease. One serving of (name of food) provides 6.25g soy protein.
Plant sterol esters	Foods containing at least 0.65g per serving of plant sterols, eater twice a day with meals for a total daily intake of at least 1.3g as part of a diet low in saturated fat and cholesterol may reduce the risk of heart disease.
Plant stanol esters	Foods containing at least 1.7g per serving of plant stanol esters, eaten twice a day with meals for a total daily intake of at least 3.4g, as part of a diet low in saturate fat and cholesterol may reduce the risk of heart disease.

Source: American Dietetic Association. Position of the American Dietetic Association: *Functional Foods*.[22]

Table 7. Populations among which dietary supplementation may be required.

Population subgroup	Dietary supplementation	Rationale
Elderly	B vitamins Antioxidants Vitamin D	Low intake, anemias Suppressed immunity Poor overall intake, bone health
Adolescents	Micronutrients	Energy dense, but nutrient deficient dietary selections
Adults (adolescents)	Calcium (possibly magnesium, vitamins D and K)	Bone health
Heavy alcohol consumers	Thiamin, folate, other B vitamins, vitamin K	Inadequate diet, altered.metabolism
Risk or history of cardiovascular disease	Vitamin E Folated, B12, riboflavin	Low fat diet can reduce intake Reduce homocysteine among those with elevated levels
Reproductive history of neural tube defect	Folate	Reduced risk for NTD
Risk for prostate cancer	Vitamin E, Selenium	Deficiencies described; reduced risk reported
Risk for colon cancer	Calcium, folate	Reduced DNA damage, favorable bowel pH, reduced risk reported
Patients with hypertension	Calcium, potassium	If diet is inadequate, these nutrients can modulate blood pressure

Adapted from: American Dietetic Association. Position of the American Dietetic Association: *Nutrient Supplementation*.[28]

Table 8. Reliable online resources and organizations.

Center for Disease Control and Prevention (CDC) www.cdc.gov	Branch of the Department of Health and Human Services responsible for monitoring foodborne illness.
Environmental Protection Agency (EPA) www.epa.gov	The federal agency responsible for regulating pesticides an establishing water quality standards.
Food and Drug Administration (FDA) www.fda.gov	Branch of the US Department of Health & Human Services responsible for ensuring the safety and wholesomeness of all foods except meat, poultry and eggs; regulation of food and drug labeling claims.
U.S. Department of Agriculture (USDA) www.usda.gov	Federal agency responsible for enforcing standards for the wholesomeness and quality of meat, poultry, and eggs produced in the United States; conducting nutrition research; and educating the public about nutrition.
World Health Organization (WHO) www.who.int	WHO is the directing and coordinating authority for health within the United Nations system. Its responsibilities include: global leadership on health matters, shaping the health research agenda, setting standards and norms, providing technical support to countries and assessing health trends.
International Food Information Council (IFIC) http://www.foodinsight.org/Home.aspx	An international organization that acts as a public education foundation to effectively communicate science based information about health, food safety and nutrition food for the public good.
Office of Dietary Supplements http://dietary-supplements.info.nih.gov/index.aspx	Branch of the National Institutes of Health (NIH) that evaluates and interprets scientific research, and educates the public about research results to foster enhanced quality of life for the population.
Health Canada; Food and Nutrition http://www.hc-sc.gc.ca/fn-an/index-eng.php	Federal department of Health Canada responsible for maintaining/improving the health of Canadians; establishing policies and standards for foods; and for providing food safety standards and advice.
Council for Responsible Nutrition (CRN) http://www.crnusa.org/	Trade association representing dietary supplementation manufacturers that produces a large portion of dietary supplements marketed globally.
National Center for Complementary and Alternative Medicine (NCCAM) http://nccam.nih.gov	Branch of the National Institutes of Health (NIH) that conducts and supports research, trains researchers and provides information about complementary and alternative medicine.

ginkgo biloba, garlic, ginseng, echinacea—also top dietary supplement sales.[26]

Consumers may take supplements for many reasons ranging from belief that they will help improve health[27] to recommendation from a physician to help in a particular life stage or health condition such as folic acid in women of gestational age for prevention of neural tube defects.

Supplements, used appropriately can play an important role in health.[28] Table 6 shows the currently authorized health claims, and Table 7 shows the specific dietary supplements that are indicated or prescribed based on age group or health condition.

Safety issues relating to functional foods and supplements

Consumers may find it an easy solution to take supplements and foods augmented with supplements for "nutrition insurance", or to embrace the misconception that diet is not important if they take their supplements.[29] However, the inappropriate use of functional foods and supplements can result in potentially life threatening health risks. For example, intake of vitamins or minerals in excess of the upper limit of safety can have harmful health consequences.[30] Many popular dietary supplements and herbals can interact with prescription medications with harmful consequences. For example, fish oil and coenzyme Q10 (CoQ10) interact with warfarin and can result in increased bleeding and stroke risk.[31] For many biologically active components of interest today, safe limits have yet to be determined. Some of the same phytochemicals, e.g., allyl isothiocyanate, that have cancer preventing properties can also be carcinogenic at high concentrations. Thus, the statement by Paracelsus in the 15th century, "All substances are poisons … the right dose differentiates a poison from a remedy", is highly relevant today given society's interest in dietary supplements.[5] Table 8 provides sound resources for navigating dietary supplements.

Conclusions

Consumer interest in the benefits of food for helping reduce disease risks and for other health concerns is increasing.[18] At the same time, the plethora of food products available in today's marketplace, and the ever changing nutrition recommendations touted in the popular media can lead to consumer confusion regarding appropriate food choices. Modern technology has provided the food industry with the ability to modify foods in many ways. However, the re-

sponsibility is with the consumer to determine the benefits and/or potential risks of the choices they make, particularly in the area of supplements and physiologically active functional foods.[19]

Dental hygienists and other health professionals can and should help consumers become more informed about the appropriate and inappropriate use functional foods and supplements in the pursuit of optimal health. The following tips may be helpful:

- Direct consumers to reliable online resources. In an era where technology allows us to have information at our fingertips, it is important that consumers have direction to online resources to provide sound information and guidance backed by science. Table 8 provides a list of nutrition related resources.
- Become a more engaged and informed consumer. Read the ingredients list of packaged foods—the longer the list, the more processed and additives. Do not be fooled by claims on the front of the package, it does not always indicate a healthy choice. Stick primarily to whole foods from the *Food Guide*.[11]
- When in doubt, turn to health professionals such as a physician or a registered dietitian.

In summary, the dental hygienist is an important ally in directing patients to sound and consistent nutrition and health information. In addition to referring patients to credible resources, the dental hygienist can also aid in directing patients to dietitians to facilitate further nutrition education and provide consistent and truthful guidance in this complicated area.

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Highlights of the CDHA Board of Directors Meeting 3–5 March 2011

Ondina Love, *Executive Director* CDHA.

Ottawa – Palmer Nelson, *President*, commenced the Board meeting with a welcome to Ondina Love, the new Executive Director of CDHA whose appointment is effective 4 April this year; this brings to a close the Executive Director Search Committee. Palmer also welcomed Louise Bourassa, the representative replacing Anna Maria Cuzzolini on the Board of Directors from Quebec for the remaining term. New confidentiality agreements have been accepted for board members.

The Board is moving forward with the addition of a member from the North (Northwest Territories, Nunavat, and Yukon) for the October 2011 meeting.

At the previous Board meeting in October 2010, the Board had adopted an Ownership Linkage plan to raise awareness that our members are proud owners of CDHA, and that members participate in the development of their profession. Furthermore, CDHA is accountable to its members as owners of their profession. To assist the Board with its Ownership Linkage plan, it was decided that an annual opportunity would be given to all CDHA members to provide input for the development of the Board's strategic direction. Accordingly, a survey was sent to all members earlier this year. The Board reviewed the results of the survey and the members' comments. Primary among these, were concerns regarding the lack of standardized dental hygiene education across Canada, desire to have increased public awareness and recognition of our profession, and concerns around employment issues. The Board was pleased to note that most of the concerns were already addressed in the Ends (future goals) of the Association, and the feedback assisted the Board to revise some of the Ends. Thank you to all of the dental hygienists across the country who participated in the survey!

One component for the comprehensive review of the Ends was to receive feedback from two advisory committees—Education Advisory Committee and Research Advisory Committee. Therefore, the Chairs of both of these committees were invited to the Board meeting to discuss issues on education and research in relation to the strategic goals of the profession of dental hygiene in Canada. Thank you Dr. Sharon Compton and Dr. Shafik Dharamsi for your presentations!

Palmer Nelson, *President*, and Ann E. Wright, *Acting Executive Director*, shared their continued efforts to negotiate an affiliation agreement with the Ontario Dental Hygienists Association.

Ondina Love and Arlynn Brodie attended a breakfast meeting on Parliament Hill as invitees of the Canadian Medical Association on Canadian healthcare initiatives. The Board invited Colleen Dunlop, of *Emond Harnden* law firm, for a training session on the legal duties and obligations of the Board of Directors and of the employees.

Nominations for the Distinguished Service Award were reviewed and a member selected. No nominations were received for the Life Membership Award, and therefore the deadline to receive applications was extended.

Congratulations to Sandra Lawlor, the incoming *President-Elect* for CDHA. Sandra will be officially installed at the CDHA Annual General Meeting in Winnipeg, Manitoba, on 1 October 2011.

The Board focused its attention on Ownership Linkage and our national conference, *Advancing Dental Hygiene Practice*, taking place 9–11 June 2011 in Halifax, Nova Scotia. The conference is quickly filling up and spaces are limited. Our website, www.cdha.ca, provides details on the conference programme. The Board looks forward to meeting and engaging in dialogue with its members this June!

▲ Shafik, *Chair* of RAC, and Sharon, *Chair* of EAC, make their presentations to the Board.

▲ Arlynn, CDHA *President-Elect*, represents CDHA on the Hill.

▲ Colleen, of Emond Harnden, addresses the Board's queries.

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The CDHA ACHD Partners' Circle 2011

Colgate

CDHA is pleased to welcome COLGATE as the newest member of the CDHA Partners' Circle. As a **Silver Member** of CDHA's Partners' Circle, COLGATE understands and appreciates the important role dental hygienists play in the overall oral health team. This Spring, COLGATE sponsored a highly successful webinar on *Dentin Hypersensitivity* exclusively for CDHA members. COLGATE will also be showcasing one of their many oral health products through CDHA's Product Showcase this coming Fall. We thank COLGATE for their commitment to and their support of the profession and CDHA. We look forward to growing our partnership with COLGATE over the next few years.

SUNSTAR

SUNSTAR is a proud **Gold Member** of CDHA's Partners' Circle. SUNSTAR believes in recognizing the achievements of dental hygiene professionals across Canada with their longstanding awards program through the CDHA. In addition, SUNSTAR keeps CDHA members up to date on new oral health innovation through Product Showcase listings, and adverts in the *Canadian Journal of Dental Hygiene*. For complete details of the awards and programs which SUNSTAR supports, visit the "Awards and Recognition" section of the CDHA website.

P&G Oral Health

P&G is the only **Elite Member** of the CDHA Partners' Circle. The Elite Member status represents the highest level of financial commitment possible. P&G is committed to supporting the achievements of oral health professionals and students, by funding a selection of awards through CDHA's *Dental Hygiene Recognition Program*. Each year, in celebration of *Oral Health Month*, P&G donates up to 500 oral health promotion kits to CDHA members to promote oral health education to Canadians. For complete details of the awards and programs which P&G support, visit the "Awards and Recognition" section of the CDHA website. www.cdha.ca

CDHA wishes to thank its Elite Partner

P&G Oral Health

for generously donating 500 *Crest Oral-B Oral Health Promotion* kits to our members during *Oral Health Month,* April 2011

Crest Oral-B

2011 *Dental Hygiene Programs Recognition Award*

Prix de reconnaissance 2011 *pour les programmes en hygiène dentaire*

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

University of Alberta, Edmonton, AB

University of the Fraser Valley, Chilliwack, BC

Vancouver Community College, BC

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

CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
CDHA ACHD

www.cdha.ca/ElderAbuse

Facing Abuse of Older Adults

The Canadian Dental Hygienists Association is pleased to introduce "Facing Abuse of Older Adults" as an addition to its collection of online professional development courses. This professional development initiative was established to raise awareness of older adult abuse and neglect issues. It was made possible with the support and financial contribution of Human Resources and Skills Development.

Dental hygienists are uniquely positioned to make a difference.

Take the Online Course

CDHA's online course will provide you with knowledge in detecting, and increase your confidence in advocating against abuse and neglect of older adults. It has tips for communicating, community resources that can assist you and information about reporting abuse situations. The four-module course is presented in an audio and video format:

- **Module 1:** Awareness of Older Adult Abuse
- **Module 2:** Contributing Factors to Older Adult Abuse
- **Module 3:** Recognizing Abuse of Older Adults
- **Module 4:** Taking Action Against Older Adult Abuse

Visit www.cdha.ca/ElderAbuse today!

Refer to the Chairside Resource

The chairside resource is an ideal reference for you. The fact sheet provides a wealth of pertinent information at your fingertips including types of abuse, communication tips, contact information to resources and so much more.

Attend the Webinars

Participating in CDHA's three live and on-demand webinars and the discussion forums is an excellent way to update your knowledge on older adult abuse and neglect.

Attend the Conference Presentation

Participating in onsite presentation at CDHA's national conference – Advancing Dental Hygiene Practice – in Halifax on 10 June 2011. This session focuses on older adult abuse indicators, communications with your client, and how to liaise with other professionals; to be safe, effective and ethical in working with this complex topic.

- Dental hygienists should be alert to suspicious injuries to clients' head areas along with bruises in different stages of healing.
- Two-thirds of the injuries sustained in abuse of older adults can be easily found during a routine oral examination and over one-half of these injuries occur in the head and neck region. [i]
- Research shows that prior to training only 40% of dental hygienists definitely knew that they would report abuse and only 5% stated that they knew how to complete a report.
- After training, 100% stated that they would report the abuse and 96% indicated that they knew how to complete a report. [ii]

[i] *Maalouf AA, Jurasic MM. Elder Abuse. J Mass Dent Assoc 1993;42(1):47-9.*

[ii] *Harmer-Beem M. The perceived likelihood of dental hygienists to report abuse before and after a training program. J Dent Hygiene 2005; Jan: 7.*

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
www.cdha.ca/LesAînés

Faire face aux mauvais traitements envers les aînés

L'Association canadienne des hygiénistes dentaires est heureuse de présenter « Faire face aux mauvais traitements envers les aînés » à titre d'ajout à sa série de cours de perfectionnement professionnel en ligne. Cette initiative de perfectionnement professionnel a été mise sur pied pour accroître la sensibilisation aux problèmes de la violence et de la négligence à l'égard des personnes âgées. Elle a été rendue possible grâce au soutien et à la contribution financière de Ressources humaines et Développement des compétences Canada.

Par leur position unique, les hygiénistes dentaires peuvent faire une différence.

Suivre le cours en ligne

Le cours en ligne de l'ACHD vous fournira les connaissances nécessaires pour détecter les mauvais traitements et la négligence envers les aînés et augmentera votre confiance en votre capacité de défendre les intérêts de vos clients qui en sont victimes. Des conseils en matière de communication y sont fournis, de même que des liens à des ressources communautaires et de l'information sur la dénonciation des situations de mauvais traitements. Le cours compte quatre modules et est présenté en format audio et vidéo :

- Module 1: Sensibilisation aux mauvais traitements envers les aînés
- Module 2: Facteurs contribuant aux mauvais traitements envers les aînés
- Module 3: Reconnaître les mauvais traitements envers les aînés
- Module 4: Passer à l'action

Participer aux webinaires

Participer aux trois webinaires de l'ACHD en direct ou sur demande et aux forums de discussion est une excellente façon de parfaire vos connaissances et de vous tenir à jour sur les mauvais traitements et la négligence envers les aînés.

Consulter la ressource à l'intention des hygiénistes dentaires

La ressource à l'intention des hygiénistes dentaires est pour vous une référence idéale. Le feuillet d'information fournit instantanément une mine de renseignements pertinents, dont les types de mauvais traitements, des conseils en matière de communication, les coordonnées de ressources à joindre et beaucoup plus.

Assister à la présentation à la conférence nationale

Il sera possible de participer à une présentation qui aura lieu à la conférence nationale de l'ACHD – L'avancement de la pratique de l'hygiène dentaire – à Halifax le 10 juin 2011. Pour agir de façon sécuritaire, efficace et éthique dans les situations liées à ce sujet complexe, cette séance mettra l'accent sur les indicateurs de mauvais traitements envers les aînés, sur les communications avec vos clients et sur la façon d'établir des liens avec les autres professionnels.

Rendez-vous à
www.cdha.ca/LesAînés
dès aujourd'hui!

- Les hygiénistes dentaires devraient faire preuve de vigilance quand elles constatent des blessures suspectes dans la région de la tête des clients, de même que des ecchymoses à différentes étapes de guérison.
- Deux tiers des blessures découlant des mauvais traitements envers les aînés peuvent facilement être constatées durant un examen buccal de routine et plus de la moitié de ces blessures se présentent dans la région de la tête et du cou. [i]
- La recherche révèle qu'avant la formation, seulement 40 % des hygiénistes dentaires disaient qu'elles dénonceraient les mauvais traitements et seulement 5 % affirmaient savoir comment remplir un rapport.
- Après la formation, 100 % ont affirmé qu'elles dénonceraient les mauvais traitements et 96 % ont dit savoir comment remplir un rapport. [ii]

[i] *Maalouf AA, Jurasic MM. Elder Abuse. J Mass Dent Assoc 1993;42(1):47-9.*
[ii] *Harmer-Beem M. The perceived likelihood of dental hygienists to report abuse before and after a training program. J Dent Hygiene 2005; Jan: 7.*

Recognizing excellence in 2010

The CDHA is once again proud to announce the recipients of the *Dental Hygiene Recognition Program* awards for 2010. This program annually acknowledges dental hygienists and dental hygiene students from across Canada who promote oral health and overall wellness, and who advance the dental hygiene profession. Congratulations to all participants and winners!

1. CDHA Achievement Award 2010 in participation with Sunstar G.U.M. for a student who has overcome a major personal challenge during her dental hygiene education.

This honour, with a $2,000 prize, is presented to **Andrea Laltoo from Oulton College, Moncton, New Brunswick**.

2. CDHA Global Health Initiative 2010 in participation with Sunstar G.U.M. for a dental hygienist who has committed to volunteering as part of initiative to provide oral health related services to a disadvantaged community or country.

This honour, with a $3,000 prize, is presented to **Leanne Rodine of Calgary, Alberta**.

3. CDHA Leadership Award 2010 in participation with P&G for a dental hygiene student who has made a significant contribution to the local, academic, or professional community through involvement and leadership.

This honour, with a $2,000 prize, is presented to **Shannon Collins of Victoria, British Columbia**.

4. CDHA Symposium Bursary 2011 in participation with P&G is for a CDHA member who is enrolled in, or a graduate of, a master, doctoral, or post doctoral program.

This honour with a maximum prize of $1,500 is awarded to **Sherry Priebe of Kelowna, British Columbia** to support her attendance at the Canadian Cochrane Network and Centre Symposium in Vancouver, British Columbia, on 16–17 February 2011.

5. CDHA Visionary Award 2010, in participation with TD Insurance Meloche Monnex, is for a student currently enrolled in a master or doctoral program related to dental hygiene.

This honour, with a $2,000 prize, is presented to **Zul Kanji, a master's student at the Faculty of Dentistry, University of British Columbia**.

6. CDHA Oral Health Promotion Award 2010 in participation with Crest Oral-B is for a registered dental hygienist, students in a dental hygiene program, and a clinic team who have been promoting the dental hygiene profession and oral health in their practice, school, or community through creative initiatives.

1. Individual Award of $1,000* to Henrietta Kew of Vancouver, British Columbia.
2. Clinic Team Award of $2,000* to Dominique Berard and the Community Dental Access Program of Vernon and the North Okanagan, British Columbia.
3. Dental Hygiene School Award of $2,000* to the College of New Caledonia Dental Hygiene Program, Prince George, British Columbia.

**Half of each prize money is shared with the recipient's local dental hygiene society.*

7. CDHA Dental Hygiene Diploma Student Award 2010 in participation with Crest Oral-B is for a dental hygiene student in a diploma program for his or her contributions to the advancement of the dental hygiene profession within the context of their educational and volunteer activities.

This honour, with a $1,000 prize, is awarded to **Shannon Collins, of Victoria, British Columbia**.

Read the bilingual stories of our winners posted on our website at www.cdha.ca/AM/Template.cfm?Section=Awards_and_Recognition

Advertisers' index

About the cover

The front covers of the journal in 2011 will feature the visual theme, *Advocacy efforts of individual dental hygienists in our communities*. *CJDH* lauds their efforts and those of other dental hygienists who contribute so much to community. ©CDHA. Printed with permission.

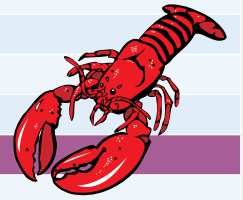
Ladies in Red come together, at Penny Casey's initiative each February, to celebrate their birthdays by supporting and advocating a selected cause. Dental hygienists from Bow Valley, Calgary, AB, were invited. This year was their fourth annual celebration, and *Ladies in Red* raised $1,740 for the *Hearts and Hands* (www.heartshands.ca) dental mission to Guatemala. Arleah Bloxam, RDH, is joining Dr. Lloyd Evans and Tamara Hinger on this dental mission.

Conference Calendar

Lord Nelson Hotel, Halifax, 9–11 June 2011

Advancing Dental Hygiene Practice
HALIFAX
2011 CDHA Conference, Halifax, NS

Thursday, 9 June 2011		
11:00 a.m. – 9:00 p.m.	Registration	
11:30 a.m. – 5:00 p.m.	Educator's Workshop	
5:00 p.m. – 9:00 p.m.	Welcome Reception and Exhibitors	
5:00 p.m. – 7:00 p.m.	Guided Walking Tour of Dalhousie Faculty of Dentistry	
7:00 p.m. – 9:00 p.m.	Research Seminar	
Friday, 10 June 2011		
7:00 a.m. – 5:00 p.m.	Registration	
7:30 a.m. – 8:30 a.m.	Continental Breakfast	
8:30 a.m. – 9:30 a.m.	Opening Ceremony	
9:30 a.m. – 10:00 a.m.	**Key Note Address: *Terry Mitchell,*** *BSc, DipDH, MEd, CGN*	
10:00 a.m. – 10:30 a.m.	Exhibitors, Networking and Nutritional Break	
10:30 a.m. – 11:30 a.m.	Comparing the oral health findings from *CMHS* to those of Inuit Oral Health Survey *by Lisette Dufour*	
11:30 a.m. – 12:30 p.m.	Facing abuse of older adults *by Alison Leaney and April Struthers*	
12:30 p.m. – 2:00 p.m.	Exhibitors, Networking and Buffet Lunch	
2:00 p.m. – 2:30 p.m.	Motivational Interviewing: Improving patient compliance *by Wendy Bebey*	
2:30 p.m. – 3:30 p.m.	Shedding new light on oral cancer *by Jo-Anne Jones*	
3:30 p.m. – 4:00 p.m.	Exhibitors, Networking and Nutritional Break	
4:00 p.m. – 4:30 p.m.	Dentin hypersensitivity: Effective clinical management *by Dr. Brian Feldman*	
4:30 p.m. – 5:00 p.m.	The long and winding road to Private Practice *by Ann Wright*	
6:00 p.m. – midnight	***Down East Kitchen Party***	
Saturday, 11 June 2011	**Scientific Programme 1**	**Scientific Programme 2**
7:00 a.m. – 8:30 a.m.	Continental Breakfast	
7:00 a.m. – 7:30 a.m.	Report on CDHA Educators' Survey *by Linda Jamieson and Judy Lux*	
7:30 a.m. – 8:30 a.m.	CHDA Board Ownership Linkage	
8:30 a.m. – 9:30 a.m.	Early intervention strategy to improve the oral health of young children *by Karl Gunderson*	Going on your own: Results of a survey of dental hygienists with own practices *by Fran Richardson*
9:30 a.m. – 10:00 a.m.	Nutritional Break	
9:30 a.m. – 2:00 p.m.	Poster Presentations	
10:00 a.m. – 11:00 a.m.	Study on mouthwashes and their effect on global health *by Louise Bourassa and Nadia Dubreuil*	Characteristics that place dental hygienists at risk of providing substandard client care: Findings from Ontario's Quality Assurance Program *by Jane Keir*
11:00 a.m. – Noon	Meeting the challenge of responding to abuse of older adults - Survey of tools being used by diverse front line responders *by Alison Leaney*	Dental hygienists in interdisciplinary health care for the homeless *by Ruth McMullan*
Noon – 2:00 p.m.	**Lunch and Laugh with Cathy Jones** of *This Hour has 22 Minutes* · · · · · · · · · ▶	
2:00 p.m. – 3:00 p.m.	Interprofessional Collaboration: Community of practice and research capacity building *by Laura MacDonald*	To be announced
3:00 p.m. – 4:00 p.m.	Oral care for adult survivors of childhood violence: Research based guidelines *by Candice Schachter*	Dental Hygiene Curriculum: Investigation of novice DHs' assessment for the transition from student to clinical practice *by Lisa Taylor*
4:00 p.m. – 5:00 p.m.	Closing Ceremony	



CDHA Conference Programme* — Details of presenters and their presentations are available online at www.cdha.ca/AM/Template.cfm?Section=Conferences_for_Dental_Hygienists **The programme may be subject to change without prior notice.*