CANADIAN DENTAL HYGIENISTS ASSOCIATION

2015–2021 DENTAL HYGIENE RESEARCH AGENDA

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

Contents

1. Executive Summary

The Canadian Dental Hygienists Association (CDHA) recognizes the importance of dental hygiene specific research, both to the profession and to the broader health care system. Profession-specific research adds to the overall body of knowledge, allowing the profession to meet the evolving and complex oral health needs of the public and enhance the oral health and well-being of Canadians.

In 2013, CDHA and its Research Advisory Committee (RAC) acknowledged the need to review and, if necessary, update CDHA's 2009 Dental Hygiene Research Agenda. Using various models and sources, including an environmental scan, stakeholder survey, and prioritization exercise, CDHA identified key research priorities to guide the development of CDHA's 2015-2018 Dental Hygiene Research Agenda. On March 14, 2019, the RAC reviewed the Research Agenda and determined that it is still very relevant and agreed to extend the time horizon to 2020. Development of the next plan is slated to begin in 2020.

The 2015-2021 agenda informs researchers, educators, dental hygienists, other health professions, and members of the public of these updated research priorities, and aims to effect change in the following key areas: risk assessment and management of health conditions; access to care issues and unmet oral health needs of individuals; and capacity building within the dental hygiene profession.

CDHA remains committed to promoting and supporting research to improve the oral health of Canadians for generations to come. CDHA acknowledges that research priority and agenda setting is not a one-time exercise. The research agenda will be reviewed regularly, and priorities may be adapted based on evolving trends and needs of the profession and the public.

CDHA's 2015-2021 Dental Hygiene Research Agenda

RISK ASSESSMENT AND MANAGEMENT	ACCESS TO CARE AND UNMET NEEDS	CAPACITY BUILDING OF THE PROFESSION
• Caries, oral mucosal/cancer, periodontal, quality of life assessments & treatment planning • Inflammation • Impact of aging • Adjunctive therapies • Behaviour change (tobacco cessation, nutritional counselling, motivational interviewing) • Identification of populations at risk	• Healthy public policies to address complex issues • Seniors and aging • First Nations, Métis, Inuit • Low income families • Other unmet oral health population group needs	• DH degree vs. diploma • National standards • Interprofessional collaboration • Optimizing/advancing scope of practice • Higher education • Integration of new knowledge and emerging research

2. Introduction

The purpose of this document is to establish the methods for developing and prioritizing a Canadian dental hygiene research agenda that will guide the research activities of the Canadian Dental Hygienists Association (CDHA). CDHA, together with the Canadian Foundation for Dental Hygiene Research and Education (CFDHRE) will disseminate this document to a broad and diverse range of audiences and will look to use this agenda to fund research consistent with the identified priorities. CDHA undertook a review of its research agenda in order to develop evidence-informed, responsive, and dynamic priorities that are aligned with current and future national and international directions in oral health and health research. These priorities form the research agenda for CDHA and support CDHA's *Professional Knowledge* strategic direction—that its members create, contribute to, and utilize a growing body of professional knowledge and research. However, CDHA also hopes that this agenda will resonate with other health professionals and members of the public, inspiring them to improve access to care, identify risk assessment and management approaches, and build capacity within their professions,

2.1 Background

In 2008, dental hygiene researchers convened to identify and prioritize research topics and arrive at common themes to guide dental hygiene research in Canada. (1) Following a literature review, interviews with leading researchers, and a two-day meeting of national and international stakeholders in dental hygiene, the 2009 *Dental Hygiene Research Agenda* (**Appendix 1**) was developed, articulating thirteen research themes of importance to the dental hygiene profession:

1. Population health
2. Prevention
3. Health literacy
4. Evidence of an oral–systemic link
5. The unique contribution of dental hygiene to oral health and research in oral health
6. Vulnerable or high-priority populations
7. Access issues
8. Technology
9. Researchers in dental hygiene
10. Evidence-based practice
11. Health human resources
12. The public health system in oral health
13. The educational credentialing system for dental hygiene in Canada

These thirteen themes were aligned with the Canadian Institutes of Health Research (CIHR)'s four pillars of research: **1) biomedical research; 2) clinical research; 3) health services research; and 4) social, cultural, environmental, and population health**. (1)

During their meeting on December 3, 2013, CDHA's Research Advisory Committee (RAC) called for a review of the 2009 *Dental Hygiene Research Agenda* for dental hygiene in Canada. The oral health research priorities and themes identified in the 2009 exercise, along with the CIHR's Health Research

Roadmap as outlined in their 2009–10 to 2013–14 Strategic Plan, provided a baseline for the review for the 2015-2021 research agenda. Three of the four CIHR strategic directions were considered as part of the topic prioritization criteria:

1. Invest in world class research
2. Address health and health system priorities
3. Accelerate the translation of knowledge

The RAC met in person on October 15, 2014, in Bethesda, Maryland in conjunction with the North American/Global Dental Hygiene Research Conference. The committee's work included identifying research themes and providing direction for dental hygiene research efforts based on evidence-based priorities. This meeting led to the development of the process for defining the research strategy for 2015-2021, as summarized in the pages that follow.

Evidence-Informed Decision Making (2)

Evidence-informed decision making is the purposeful and systematic use of the best available evidence to inform the assessment of various options and related decision making in practice, program development, and policy making. This process involves searching for, accessing, assessing the relevance and quality of evidence; interpreting this evidence and identifying associated implications for practice, program, and policy decisions; adapting this evidence in light of the local context; implementing this evidence; and evaluating its impact.

2.2 Evidence-Informed Decision Making

CDHA recognizes the value and importance of using evidence and theory to inform both the decision-making process and knowledge translation strategies to promote optimal uptake, reach, and impact of research results. At the same time, CDHA acknowledges that the context guiding the research agenda setting process will change over time and may affect the approach used. For example, within any topic area, studies may focus on specific diseases, conditions, risk factors and/or interventions, or they may be cross cutting and study populations or interventions across multiple related diseases and conditions. CDHA recognizes the importance and possibility of partnering with stakeholders representing a range of research areas. These partnerships will inform and drive the practical application of professional knowledge and contribute to the improvement of client outcomes.

3. Approach

The following steps, depicted in **Figure 1,** were undertaken to produce the 2015–2021 CDHA *Dental Hygiene Research Agenda***.**

Phase 1

1) **Identify national priorities for research and assemble stakeholders**
    a. An **environmental scan** of research priorities set by key national and international health and health service organizations was performed to compare priorities and identify research gaps.

b. Research gaps were refined through a **stakeholder survey** of dental hygiene regulators, CDHA members, provincial associations, and educators to solicit suggestions for dental hygiene research priorities/gaps.

2) Develop a prioritization framework

a. RAC members were oriented to the **key research themes** and the **prioritization criteria** uncovered by the organizational scan.
b. A **consensus-building** exercise (pre-workshop and workshop) was undertaken to identify a core list of future research needs.
c. **CDHA's 2015-2021** ***Dental Hygiene Research Agenda*** was developed based on these research needs.

Phase 2

3) Publish and disseminate dental hygiene research agenda

a. CDHA and the Canadian Foundation for Dental Hygiene Research and Education will fund research consistent with the research agenda and disseminate the research agenda to various stakeholders.

4) Apply Research Results/Knowledge Translation

a. Knowledge translation of the research undertaken in support of the agenda will be promoted.
b. Research will help to improve client care, professional and interprofessional practice, and public awareness of oral health.

Ongoing

5) Monitor and Evaluate

a. Continuous monitoring and quality improvement strategies will be integrated throughout the cycle.

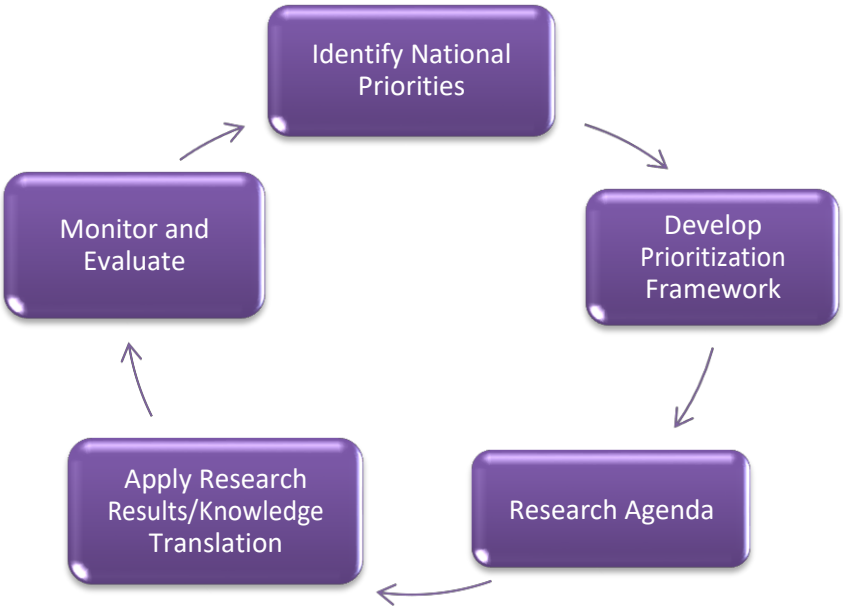

Figure 1. CDHA's Agenda Setting and Application Process

3.1 National and International Research Priorities

Environmental Scan

The purpose of the environmental scan was to ensure that CDHA's research agenda priorities would align with current national and international priorities. This scan was limited in scope, as it only included a select group of relevant organizations (**Appendix 2**). It was not a comprehensive systematic review. The scan, therefore, provided a "snapshot" of existing research priorities of specific national and international organizations. In order to focus the scan, only national and international health and oral health organizations, and Canadian research granting bodies with clearly articulated research priorities were reviewed.

During the development process for CDHA's research priorities, CIHR also updated their health and health system research priorities for 2014–15 to 2018–19, thus both CIHR documents were consulted throughout CDHA's process.

Stakeholder Survey

In order to support the consensus-building process, a survey was developed to identify research gaps and priorities (**Appendix 3**). The survey asked participants: "In your opinion, what are the top 3 research priorities for the dental hygiene profession in the upcoming three years?" Participants input their responses in the free-text fields adjacent to "First Priority," "Second Priority," and "Third Priority" to allow for open-ended responses. The survey was developed through SurveyMonkey, and the hyperlink to participate in this survey was distributed via email to Canadian dental hygiene researchers, provincial dental hygiene associations, regulatory authorities, educators, Canada's chief dental officer, CDHA's

board of directors, the editorial board of the *Canadian Journal of Dental Hygiene,* and the board of directors of the Canadian Foundation for Dental Hygiene Research and Education. The survey tool was available from August 1 to August 22, 2014.

Together, the environmental scan and stakeholder survey results provided a well-informed basis for a consensus-building exercise to identify, review, and rate research gaps and priorities for the dental hygiene community.

3.2 Research Utilization

To address the knowledge-to-practice gap, the priority-setting process incorporated the research utilization approach into the topic prioritization checklist. The research utilization approach refers to the application of evidence to policies, programs, and practice in order to improve outcomes. It involves various strategies, including stakeholder engagement and collaborative research, the use of champions, the use of knowledge brokers, advocacy and communication, and is bi-directional. (3) At the same time, the approach encourages the incorporation of experience from programs, policies, and practice to inform new research agendas (**Figure 2**).

The research utilization approach narrows the gap between knowledge production and knowledge application in practice, while facilitating a greater understanding of the following:

- how to identify and assess evidence that may be helpful to our professional and client outcomes
- how to incorporate evidence into the decision-making process
- how to find resources and tools to help advocate for evidence-informed research priorities

Ultimately, applying an evidence-informed approach that focuses on research utilization and uptake while building those principles into the priority-setting process increases the likelihood that research results will be applied to practice.

Figure 2. Research Agenda Development: A Four-Step Process (3)

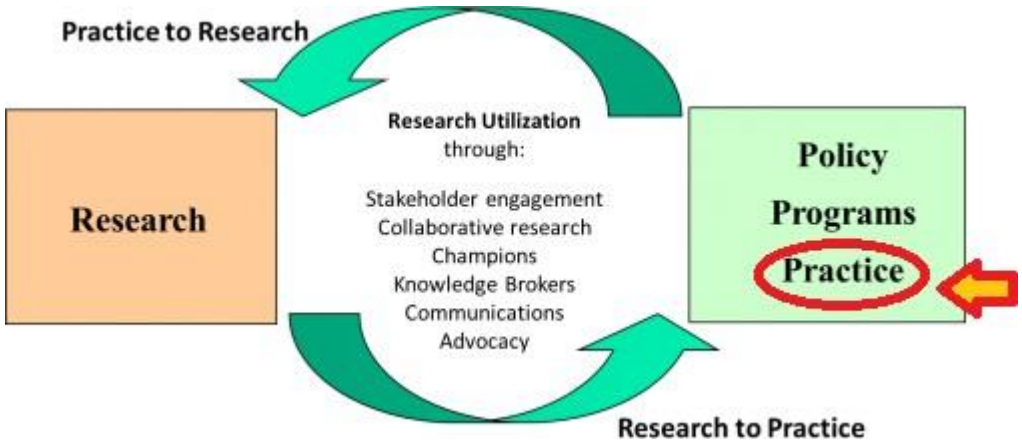

Image adapted with permission from the Research Utilization Toolkit [online], developed by FHI 360, 2013. Available from http://www.k4health.org/toolkits/research-utilization

3.3 Topic Prioritization Methods

Viergever et al.'s *Checklist for Health Research Priority Setting* (4) was used to guide the dental hygiene research priority-setting process, as shown in **Table 1**. In addition to the organizational scan and stakeholder survey, the RAC hosted a one-day workshop in order to identify research themes and provide direction for dental hygiene research efforts based on evidence-based priorities.

Table 1. Checklist for Health Research Priority Setting

CHECKLIST FOR HEALTH RESEARCH PRIORITY SETTING		Completion Status
PREPARATORY WORK	**1. Context** Decide which contextual factors underpin the process: What resources are available for the exercise? What is the focus of the exercise (i.e., what is the exercise about and who is it for?)? What are the underlying values or principles? What is the health, research, and political environment in which the process will take place?	
	2. Use of a comprehensive approach Decide if use of a comprehensive approach is appropriate, or if development of own methods is the preferred choice. These approaches provide structured, detailed, step-by-step guidance for health research priority-setting processes from beginning to end.	
	3. Inclusiveness Decide who should be involved in setting the health research priorities and why. Is there appropriate representation of expertise and balanced gender and regional participation? Have important health sectors and other constituencies been included?	
	4. Information gathering Choose what information should be gathered to inform the exercise, such as literature reviews, collection of technical data (e.g., burden of disease or cost-effectiveness data), assessment of broader stakeholder views, reviews or impact analyses of previous priority-setting exercises or exercises from other geographical levels.	
	5. Planning for implementation Establish plans for translation of the priorities to actual research (via policies and funding) at the beginning of the process. Who will implement the research priorities? And how?	
DECIDING ON PRIORITIES	**6. Criteria** Select relevant criteria to focus discussion around setting priorities.	
	7. Ranking process/Method for deciding on priorities Choose a method for deciding on priorities. Decide whether to use a consensus-based approach, a metrics-based approach (pooling individual rankings), or a combination of both.	
AFTER PRIORITIES HAVE BEEN SET	**8. Transparency** Write a clear report that discusses the approach used: Who set the priorities? How exactly were the priorities set?	
	9. Evaluation Define when and how evaluation of the established priorities and the priority-setting process will take place. Health research priority setting should not be a one-time exercise.	

Adapted with permission from Viergever et al.: A checklist for health research priority setting: nine common themes of good practice. *Health Research Policy and Systems* 2010 8:36. (4)

3.4 Topic Prioritization Criteria

The outcomes generated from the stakeholder survey and organizational scan provided the basis for rating the research gaps according to the predetermined prioritization criteria: 1) current importance; 2) potential for significant health impact; 3) policy interest; 4) potential for knowledge translation; 5) sufficiency of the existing evidence; and 6) new evidence in the field (**Appendix 4**). The fourth criteria, potential for knowledge translation, is included as part of the prioritization framework in order to ensure that research can be translated in such a way as to have the greatest positive impact on both clients and practitioners.

4. Outcomes

4.1 Outcome of Environmental Scan of Research Priorities

A list of some of the organizations whose research priorities were reviewed is provided in **Appendix 2**. There were overlapping research priorities and gaps among the various organizations, which presents potential opportunities for engaging in collaborative research. CDHA, the American Dental Hygienists' Association, and the National Center for Dental Hygiene Research and Practice have scheduled ongoing meetings to discuss their research priorities and potential opportunities for collaboration.

4.2 Outcome of Stakeholder Survey

During the three weeks that the Stakeholder Survey was available, 38 participants provided open-ended responses as to what they perceived as the three main priorities for dental hygiene research. Because of the nature of open-ended survey questions, responses varied in breadth and scope; however, they aligned with at least one of the four pillars identified by CIHR. Dental hygiene education, regulation, as well as aging demographics as it relates to oral health emerged as first-priority research areas for the dental hygiene profession in the coming years. While access to care for seniors was reported most frequently for the first priority, regulation and education tallied the highest number of responses among all three priority fields. Clinical and biomedical research priorities were common in the second and third priority responses, following education and regulation. A summary of these themes is provided in **Table 2**.

Table 2. Summary of Stakeholder Survey Themes

CDHA – NATIONAL DENTAL HYGIENE RESEARCH AGENDA STAKEHOLDER SURVEY 2014			
CATEGORIES	**SUBCATEGORIES**	**SPECIFIC TOPIC**	**EXPECTED OUTCOME/IMPACT**
Health Systems, Policy & Education	Education	Dental hygiene degree vs. diploma	Improved client care, safety; changes to entry-to-practice (ETP) requirements
		National education standards	Consistent curriculum; changes to ETP
		Higher education	DH baccalaureate degree, post-degree certificate/diploma
	Regulation	Optimizing scope of practice	Consistent scope of practice across Canada
			Prescribing authority for medications, x-rays, local anesthesia
			Improved client care, safety
	Profession	Professionalism	
		Interprofessional collaboration	
Population Health	Access to care	Seniors & the aging population	Oral care in long-term care (LTC) facilities
	Unmet oral health needs	All Canadians	Applying interventions to different communities
	Public health	Community water fluoridation	Prevention of oral diseases and inequities
Clinical Dental Hygiene Care	Assessments	Oral cancer screening	Prevention, early detection and referral
		Caries diagnosis	Salivary testing, RAI-MDS in LTC homes
	Interventions	Periodontal treatment and prevention	Use of lasers, low-dose antibiotic therapy, irrigation
		Caries prevention	Use of fluoride, pit and fissure sealants
		Adjunctive therapies Including but not limited to whitening and desensitization	
Biomedical	Oral–systemic link	Inflammation and systemic disease	Reduction of oral systemic disease
		Impact of aging and the impact on oral tissues, cells, circulation	Improved or specialized oral care for older adults
		Respiratory infections	Reduced morbidity

4.3 Outcome of Prioritization Exercise

Prior to the one-day in-person workshop, the RAC completed an individualized prioritization exercise using the Topic Prioritization Criteria Matrix (Appendix 3), combined with the identified research gaps from the organizational scan and stakeholder survey. During the in-person component led by a group facilitator, the seven RAC members and two CDHA staff present shared the results from their matrices and participated in a consensus-building exercise to develop a new set of research priorities. The objectives were to prioritize the research agenda and, secondarily, to discuss possible means for operationalizing the agenda.

Three key priority areas emerged: capacity building of the profession; risk assessment and management; and addressing access to care/unmet needs (**Table 3**). Because these three areas of priority research are equally important, no relative priority was assigned. Subcategories and examples of each key priority are listed below the associated heading.

In addition, the RAC acknowledged the importance of interprofessional collaboration and interdisciplinary teams to enhance professional practice and the oral and overall health of Canadians. Given the overlap between CDHA's key priorities and those of the CIHR (**Appendix 5**), the RAC noted great potential for collaborative research among Canadian researchers. The RAC also stated that the application of the research results and knowledge translation strategies must incorporate an interprofessional client-centred approach.

4.4 CDHA's 2015-2021 Dental Hygiene Research Agenda

Based on the outcomes of the prioritization exercise, the *2015-2021 Dental Hygiene Research Agenda* was developed (**Table 3**). Ultimately, the research agenda aims to effect change in the following key areas: risk assessment and management of health conditions; access to care issues and unmet oral health needs of individuals; and capacity building within the dental hygiene profession. Some key concepts and topics have been identified and listed under each heading.

Table 3. CDHA 2015-2021 Dental Hygiene Research Agenda

RISK ASSESSMENT AND MANAGEMENT	ACCESS TO CARE AND UNMET NEEDS	CAPACITY BUILDING OF THE PROFESSION
• Caries, oral mucosal/cancer, periodontal, quality of life assessments & treatment planning • Inflammation • Impact of aging • Adjunctive therapies • Behaviour change (tobacco cessation, nutritional counselling, motivational interviewing) • Identification of populations at risk	• Healthy public policies to address complex issues • Seniors and aging • First Nations, Métis, Inuit • Low income families • Other unmet oral health population group needs	• DH degree vs. diploma • National standards • Interprofessional collaboration • Optimizing/advancing scope of practice • Higher education • Integration of new knowledge and emerging research

5. Phase 2: Publish and Disseminate the Research Agenda

This profession-specific research adds to the overall body of knowledge, allowing the profession to meet the evolving and complex needs of the public and enhance the oral health and well-being of Canadians. The communication and dissemination of research results, both to health care professionals and the public, is essential. CDHA's research agenda is intended to inform researchers, educators, dental hygienists, other health professions, government and key decision makers, as well as members of the public of key priorities of the profession. It will also be used to encourage and enhance collaborative research partnerships.

5.1 Developing and Updating Knowledge Translation Tools

During the one-day workshop the group identified knowledge translation tools, such as position papers, statements, and clinical guidelines, as essential to the progress of the profession and improved oral health of Canadians. It is critical that CDHA's positions and clinical resources be based on the best available evidence; however, the process of reviewing and updating resources can be as costly and time consuming as the work to develop the original review or clinical guideline. As a result, CDHA has adapted the National Institute of Clinical Excellence (NICE)'s Guidelines Manual (5) to inform CDHA's review and revision process going forward. A summary of these guidelines is provided in **Table 4**. CDHA will consider the need to update an existing resource every 3 to 5 years however, will continue to monitor new evidence for signals that a review is warranted sooner than the 3- to 5-year threshold.

In addition, CDHA will offer professional development opportunities in the form of conferences and webinars that integrate the research agenda themes. For example, offering a webinar on critically appraising research articles, or offering a conference session on evidence-based caries control methods are some of the ways of building capacity and knowledge amongst participants.

The outcomes of this research prioritization exercise will be integrated into CDHA's overall strategic plan for 2015–2021, and will be revisited regularly by staff, committees, and the board of directors. During these reviews, priorities may be adapted based on emerging trends, resources, and funding opportunities.

Table 4. Criteria for Updating Resources

Update Decision	Criteria	Actions	Comments
Full Update	• Major sections of the guideline need updating • Many of the recommendations are no longer necessary • New key areas have been identified	• Prepare a new scope • Consult on the scope	If decision is made to conduct a full update of a clinical guideline, the committee prepares a new scope. The guideline is developed using the same process as for a new guideline.
Partial Update	• Some recommendations need updating in light of new evidence or because they are unclear • No new key areas that need to be covered in the guideline have been identified	• Use the original scope • Do not consult on the scope • Inform stakeholders	There are 2 possible scenarios: 1. Some recommendations need updating but no new key areas have been identified. The original scope is used and stakeholders informed of partial update.
	• New key areas have been identified that need to be covered in the guideline	• Prepare a new scope • Consult on the scope	2. New key areas have been identified that need to be included in the guideline. A new scope is prepared and consultation with stakeholders takes place through the usual process.
No Update	• No new evidence has been identified that would overturn any of the recommendations • There is no evidence from clinical practice to indicate that any of the recommendations need to be changed • There is no evidence from clinical practice that the original scope needs to be changed	• The guideline is not updated • The guideline is reviewed after a further 3-5 years to determine its update status	If a decision is made that a clinical guideline does not need updating, the guideline will be reviewed after a further 3-5 years, and the same process for deciding its update status will be followed.
Refreshing the Guideline	• Amendments to the wording of recommendations are needed to reflect current practice context and standards	• The guideline is minimally revised to address feedback on clarity and interpretation; changes relate to the availability of a medicine, legislation, etc.	• Changes should be kept to a minimum and should not alter the intent of the recommendation.
Transfer to "Static List"	• The recommendations are unlikely to change in the foreseeable future	• No further update planned • May be reviewed if new evidence emerges	The topic may not need to be considered for updating. Guideline is transferred to "static list" and no further update required. Guidelines on static list transferred to "active list" for review if new evidence from clinical practice that is likely to change the recommendations is identified.
Withdraw Guideline	• The guideline no longer applies	• Consult with stakeholders	Upon reviewing the guideline, its recommendations no longer apply, or it is not of sufficient priority for updating. In this case the guideline will be withdrawn.

Source: National Institute for Health and Care Excellence (2015). Adapted from Developing NICE guidelines: the manual. Manchester: NICE. Available from: http://www.nice.org.uk/article/pmg20. Reproduced with permission and accurate as of May 27, 2015.(5)

6. Conclusions

The role of CDHA in fostering research is central to the progress of dental hygiene research in Canada. (1) National priorities for dental hygiene research in Canada were identified through a prioritization exercise, Phase 1, and form the basis for CDHA's 2015-2021 Research Agenda. Phase 2 will involve the publication and dissemination of the dental hygiene research agenda, and the application of research priorities through targeted funding and knowledge translation strategies to improve client care, professional practice, and public awareness of oral health. CDHA and the *Canadian Journal of Dental Hygiene* will play key roles in disseminating the results of research undertaken in support of these priorities.

Ultimately, Canada's 2015–2021 dental hygiene research agenda aims to effect change in the following key areas: access to care issues and unmet oral health needs of individuals; risk assessment and management of health conditions; and capacity-building within the dental hygiene profession. CDHA remains committed to promoting and supporting research to improve the oral health of Canadians for generations to come.

Appendix 1: 2009 Canadian Dental Hygiene Research Agenda

Vision (CDHA):	**Provide quality preventive and therapeutic oral health care as well as health promotion for all members of the Canadian public.**	
Research Topics:	**Dental Hygiene Research Priorities**	
BIOMEDICAL	• Immunology related to periodontology, oral cancer, and dental caries • Relationship between periodontal and systemic diseases • Genetic conditions that influence oral health • Hormonal relationships with oral disease • Relationship between nutritional intake and oral conditions • Pharmacological preparations that improve oral conditions such as xerostomia • Tissue response in vulnerable populations	
CLINICAL	• Risk assessment for oral disease and disability of individuals • Identification of clinical signs of oral health and illness • Testing of measurement tools for assessment of clinical signs • Impact of ergonomics on client care • Effectiveness of topical antimicrobial and anticariogenic agents • Testing the efficacy, effectiveness, and efficiency of dental hygiene clinical interventions, such as non-surgical periodontal therapy; pain, fear, and anxiety strategies and techniques; and counselling to reduce risk for oral disease • Evaluating the outcomes of dental hygiene care	
HEALTH SERVICES	• Clinical decision making in dental hygiene practice • Analysis of gaps between research and dental hygiene practice • Clinical practice guidelines/standards • Cost-effectiveness and cost-benefit of all dental hygiene services • Testing of models of dental hygiene practice informed by different theories • Financing of oral care, particularly dental hygiene services • Health policy related to access to oral care, particularly dental hygiene • Alternative settings and providers for the delivery of oral care • Relationship between oral care services and quality of life • Dental hygienist satisfaction with work and career • Dental hygiene resources, education, and lifelong learning	
Social, Cultural, Environmental & Pop. Health	• Distribution of oral disease and care • Social and economic impact of oral health and disease on populations • Barriers and opportunities for oral care for all populations • Equity and social justice reflected in the provision of oral care for populations • Need and demand for dental hygiene services for groups throughout their lifecycle • Cultural and linguistic relevance of dental hygiene services • Dental hygiene services related to quality of life of populations	
Research Objectives /Themes	**Increase research capacity** **Transfer knowledge at all levels** **Enhance all research activity through collaboration and partnership**	
Guiding Principles/ Values	• Ethical issues underpin all areas, and ethical conduct is the first consideration • Acceptable evidence from research includes both qualitative and quantitative approaches • Interprofessional and intersectoral partnerships are preferred	• Cultural and linguistic sensitivity is requisite • Participatory research is essential for the empowerment of individuals and communities • Vulnerable populations should be considered as a cross-cutting theme whenever possible

Appendix 2: Environmental Scan of Organizational Research Agendas

The scan of research priorities included but was not limited to the following organizations:

- American Dental Hygienists' Association
- Canadian Academy of Health Sciences
- Canadian Association for Dental Research
- Canadian Association of Public Health Dentistry
- Canadian Institutes of Health Research
- Federal, Provincial and Territorial Dental Working Group
- International Association for Dental Research
- International Federation of Dental Hygienists
- National Center for Dental Hygiene Research and Practice
- Network for Canadian Oral Health Research
- National Institute of Dental and Craniofacial Research
- Organization for Economic Co-operation and Development

Appendix 3: Stakeholder Survey

National Dental Hygiene Research Agenda

In 2004, The Canadian Dental Hygienists Association (CDHA) formed a Research Advisory Committee (RAC) to advance the knowledge base of the dental hygiene profession to positively impact the health of the Canadian public. In support of this goal and to maintain an understanding of gaps in the Canadian dental hygiene research community, CDHA is conducting an upcoming strategic planning session with the RAC to identify key priorities for the National Dental Hygiene Research Agenda.

CDHA values your input to help guide the research activities of the profession. Your participation in this survey will allow CDHA to focus its research efforts to ensure an evidence-informed, responsive, and dynamic research agenda, while aligning with current and future national and international directions in oral hygiene research.

1. In your opinion, what are the top 3 research priorities for the dental hygiene profession in the upcoming three years?

Priority 1:

Priority 2:

Priority 3:

Appendix 4: Prioritization Matrix

Criteria **Potential topics**	Current importance to CDHA	Potential for significant health impact	Public, provider, or policy interest	Potential for knowledge transferability	Sufficiency of the existing evidence	Development of new evidence in the field
National Education Standards						
DH Degree vs Diploma						
Higher Education for Dental Hygienists						
Optimizing Scope of Practice						
Professionalism						
Interprofessional Collaboration						
Access to Care for Seniors						
Unmet Oral Health Needs of All Canadians						
Community Water Fluoridation						
Oral Cancer Screening						
Caries Diagnosis and Prevention						
Adjunctive Therapies						
Inflammation						
Impact of Aging on Oral Health						
Respiratory Infections						

Appendix 5: CIHR's health and health system research priorities for 2014–15 to 2018–19

Research Priority	Description
A- Enhanced patient experiences and outcomes through health innovation	This research priority focuses on accelerating the discovery, development, evaluation, and integration of health innovation into practice so that patients receive the right treatment at the right time.
B- Health and wellness for Aboriginal peoples	This research priority focuses on supporting the health and wellness goals of Aboriginal peoples through shared research leadership and the establishment of culturally sensitive policies and interventions.
C- Promoting a healthier future through preventive action	This research priority focuses on a proactive approach to understanding and addressing the causes of ill health, and on supporting physical and mental wellness at the individual, population. and system levels.
D- Improved quality of life for persons living with chronic conditions	This research priority focuses on understanding multiple, co-existing chronic conditions, and on supporting integrated solutions that enable Canadians to continue to participate actively in society.

Appendix 6: Milestones in Dental Hygiene Research in Canada

1950s

In the 1950s, individual dental hygienists began to participate in research endeavours, applying their interest and knowledge in dental hygiene to other areas such as nutrition, epidemiology, education, behavioural sciences, periodontology, and dental materials.(1)

1980

In April 1980, the Canadian Dental Hygienists Association (CDHA) presented a brief to the Health Services Review Commission under the chairmanship of Justice Emmett Hall. One of the 14 recommendations was that "further research be conducted concerning dental care delivery systems in Canada."(2)

1982

From September 30 to October 1, 1982, the School of Dental Hygiene at the University of Manitoba and the Working Group on the Practice of Dental Hygiene, Department of National Health and Welfare, Canada, sponsored a Conference on Dental Hygiene Research in Winnipeg, Manitoba.(3) Fourteen distinguished researchers and consultants from across Canada and the United States served as conference leaders. Forty-two dental hygienists representing education, public health, hospital, and private practice settings registered as participants. The conference format was designed to facilitate small group discussion and individual consultations with leaders, as well as to provide for presentation of papers.

1988

CDHA published a national survey of dental hygienists, "Dental Hygiene in Canada, 1987 National Survey of Dental Hygienists: A Demographic, Educational and Employment Profile."

The Working Group on the Practice of Dental Hygiene, Department of National Health and Welfare, Canada, published a report, "The Practice of Dental Hygiene in Canada: Description, Guidelines and Recommendations." The report highlighted a need for more research in such areas as the epidemiology of dental diseases, methods of preventing dental diseases, factors affecting the use of preventive measures, cost-effectiveness of preventive measures, different human resources configurations in dental health care, and innovations in delivery systems for dental health care.

1990

In 1990, in Edmonton, Alberta, CDHA held a Symposium on Clinical Dental Hygiene: Directions for Research, Teaching and Evaluation.(4,5) The purpose of the symposium was to emphasize the relationship among clinical dental hygiene research, education, and dental hygiene practice; to explore ways of participating in collaborative research; and to investigate a conceptual framework for the dental hygiene profession. The program included keynote addresses, panel discussions, and workshops.

1993–1998

From October 15 to 17, 1993, in Niagara Falls, Ontario, CDHA held the fourth annual professional conference, "North American Research Conference: An Exploration into the Future."(6)

The American Dental Hygienists' Association (ADHA) participated in the development of the conference workshops. Some of the presentation topics included common flaws in research, development of the dental hygiene research curriculum learning outcomes, qualitative research, using research in dental hygiene practice, survey research, and dental hygiene research in the United States.

In 1993, CDHA struck a Board Council on Education and Research, which existed until 1998. In 1995, the Council, as part of CDHA's goal to promote quality dental hygiene research, offered the first research grant/award to members. Other research grants/awards followed in 1997, 2000, and 2001. In May 1997, the CDHA Council published the Educators Directory, which included a listing of researchers and their areas of expertise.

In 1994, Dentistry Canada Fund (DCF) was formed when the following three funds were merged: Canadian Dental Research Fund, Canadian Fund for Dental Education, and Canadian Dental Foundation.

1999

CDHA published an inaugural edition of *Probe Scientific*, which offered a forum for Canadian dental hygienists to publish their own research. The journal was also open to publishing international research.

2001–2002

In 2001 and 2002, CDHA submitted briefs calling for increased oral health research to Commissioner Romanow, Commission on the Future of Health Care in Canada, and to Senator Kirby, Chairperson of the Standing Senate Committee on Social Affairs, Science and Technology. (7,8)

In September 2002, CDHA submitted a brief to the House of Commons Standing Committee on Finance, calling for oral health research that would contribute to the development of a national report on Canada's oral health status and also calling for an increase in the total health spending for the federal health research budget. (9)

In September 2002, CDHA also published "Dental Hygiene Practice in Canada 2001: Report No. 3: Findings," a report on a national survey of dental hygienists. The purpose of the study was to identify and investigate current practice patterns of dental hygienists and to examine trends and changes over the previous 12 years. The primary focus was dental hygiene clinical practice.

2003

In May 2003, the Canadian Dental Hygienists Association held a National Dental Hygiene Research Agenda Workshop. Eleven individuals from across Canada were brought together to develop the first CDHA National Dental Hygiene Research Agenda.

2009

In August 2009, CDHA held a workshop with leading dental hygiene researchers, representing a broad range of research activity and expertise in oral health, to make recommendations for a renewed focus on dental hygiene research in Canada. As a result of the workshop, a revised CDHA National Dental Hygiene Research Agenda was developed with the following key amendments:

- Addition of the Proposed CDHA Research Themes section
- Addition of one additional Guiding Principle for Research

2013
CDHA identified the need to review and update the Dental Hygiene Research Agenda. The prioritization activities began.

2014
In April 2014, the University of Alberta launched Canada's first master's degree program in dental hygiene: MSc in Medical Sciences (Dental Hygiene).

2015
The *Canadian Journal of Dental Hygiene* (CJDH) was accepted for inclusion in Scopus, an abstract and citation database of more than 21,000 peer-reviewed journal titles in medicine, science, technology, social sciences, and humanities. CJDH articles will now be readily available to thousands of oral health researchers, educators, students, and funding agencies worldwide, who rely on Scopus as their source of timely, high-quality research. The journal was commended, in particular, for the quality of its ethics policy and the clarity of its articles.

Endnotes

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Acknowledgements

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