NOVA SCOTIA
Health Promotion
and Protection

Nova Scotia Oral Health Review

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Nova Scotia Oral Health Review

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Executive Summary

Objective

The 21st century has brought about an unprecedented awareness of public health issues, including climate change, obesity, and the impending influenza pandemic. The support for the connections between oral health and general health is growing. Oral diseases, such as caries, periodontal disease, oral cancers and sports-related injuries of the craniofacial complex are all preventable. The morbidity, mortality and economic burden associated with these conditions, and subsequently their effects on systemic disorders, can be considerably reduced by programs and interventions aimed at prevention and health promotion.

Across Canada there has been a decrease in the number of full-time dental public health consultants in the provinces and territories and a lack of standardization in the positions that do exist. The reduction of publicly funded provincial oral health care services will most likely continue if the void of dental consultants remains at the provincial level. There needs to be a voice to advocate, support and demonstrate the need for publicly funded dental health programs and services in the provinces and territories or they will continue to decrease their capacity to deliver public oral health care.

Based upon a review of the literature, stakeholder interviews and a feedback session, this document will examine the oral health care system in Canada, dental public health capacity, the relationship between oral health and general health, the rationale and mandate for the creation of a position for a Dental Consultant, the responsibilities and competencies required of this position, and placement and employment options.

Oral Health and General Health

Oral health is an essential component of general health as poor oral health affects growth, development and learning for children, communication, nutrition, self-esteem and various systemic conditions. Because of its effects on daily living, oral health is considered a determinant of quality of life. The majority of oral disease is preventable. Dental caries is the single most common chronic disease of childhood. A severe form of dental decay termed Early Childhood Caries may be a painful condition that affects the child's ability to eat, sleep, communicate and socialize, ultimately influencing optimal growth and development (i.e. failure to thrive). Periodontal diseases can also influence systemic health in numerous ways. Emerging research also reveals potential associations between poor periodontal health and cardiovascular disease, stroke, chronic respiratory disease, aspiration pneumonia in the institutionalized elderly, and adverse pregnancy outcomes such as delivery of pre-term low birth weight babies.

The connection between oral health and overall health is believed to be especially strong when considering the elderly population. Poor oral health and tooth loss in older adults results in a reduction in chewing capacity. Problems with eating can lead to malnutrition

and involuntary weight loss and ultimately can disturb the systemic health of the older patient. This is often further complicated by a decrease in the manual dexterity required to properly clean the oral cavity and the large number of medications taken by seniors that can result in dry mouth, which can in turn lead to periodontal disease and dental caries.

Canadian Oral Health Care System

In Canada, the cost of dental services is primarily the responsibility of the individual, with 94% of the care being financed typically through out-of-pocket payments (41%) or employer-provided insurance (53%). The remaining 6% of the funding for dental services is derived from public sources. The percentage of public funding for dental care in Nova Scotia has steadily declined over the past 20 years. The proportion of dental expenditures paid through public funding has declined from a high of 17.2% in 1990 to 9.2% in 1999 and to 5.1% in 2005. Despite the decrease in governmental support, dental disease expenditures in Canada continue to rise, reaching $6.3 billion in 1998, second only to cardiovascular diseases. It is estimated that the current annual direct dental expenditures in Canada has risen to 9.7 billion dollars.

Federal government funding accounts for 40% of the public dental expenditures with services provided to the First Nations and Inuit populations, Veterans, Canadian Forces, Royal Canadian Mounted Police, refugees and inmates in federal penitentiaries. Provincial governments contribute 59% and the territories 1% of the public funding by providing dental care for children, seniors, persons with handicaps, in-hospital services and vulnerable populations (e.g. individuals receiving income assistance). The oral care services delivered vary by province and territory.

In November 2007, Nova Scotia became the latest province to change their legislation permitting dental hygienists to become a self-regulating profession and to practice independently of dentists. New legislation may facilitate access to care for populations who currently receive little or no oral health care; these populations include the homebound, financially disadvantaged, seniors (especially those in long-term care facilities), patients with physical or mental disabilities, residents of rural communities and anxious dental patients.

Oral Health Disparities and Access to Care

Although the oral health status of Canadians has markedly improved over the past forty years, not all population groups have achieved equal access to dental care. Much of the burden of dental disease is now concentrated in less advantaged individuals, in particular the elderly, low-income individuals, First Nations and Inuit populations, transitional youth and those who experience mental and/or physical disabilities, which are typically the groups with the least access to dental services. These disadvantaged groups often encounter numerous hurdles in accessing dental care including economic, geographic, social and cultural, legislative, medical and educational barriers.

Possessing dental insurance minimizes the financial barriers to dental care as direct costs to patients are reduced. The proportion of Canadians aged 15 or older that reports having dental insurance ranges from 53 to 58%, with coverage being highest among middle-aged individuals. Income and education are two of the strongest predictors of dental insurance coverage.

Visiting a dentist at least once a year is an important measure of dental care utilization. The mean frequency of dental visits increased with age until middle age but visits noticeably dropped among the elderly. The factors that predicted higher utilization of dentists were younger age, higher education, higher household income and having good general health. In contrast, the variables that predicted higher family physician visitation were pregnancy, poor health and use of medications. Due to current organization of the medical and dental health care systems, it is not surprising that increasing age and poor general health predicted the highest use of physicians but the lowest use of dentists.

Dental Public Health in Nova Scotia

In the 1990's, all provinces and territories had a full-time (1 FTE) Dental Director or Consultant; these individuals represented the province or territory regarding oral health issues. Currently, Nova Scotia employs a 0.3 FTE dentist that acts as the Dental Consultant for the province. The employment of public health dental hygienists has also decreased slightly to the current level of 22 positions utilizing approximately 18.43 full-time equivalents.

At present, there are eight public dental programs offered by the government of Nova Scotia. One program is delivered through the Department of Community Services (Employment Support and Income Assistance Dental Program), while the remainder fall under the jurisdiction of the Department of Health. These include the following programs: Children's Oral Health Program, Nova Scotia Cleft Palate/Craniofacial Program, Maxillofacial Prosthodontics Program, Mentally Challenged Program, Dental Surgical (In-Hospital) Program, Oral Pathology Program, and the Atlantic Provinces Special Education Authority (APSEA) Dental Program.

In addition, dental hygienists provide public health dental services in Nova Scotia's District Health Authorities. One of the largest responsibilities of public health dental hygienists is the management of the province's Fluoride Mouthrinse Program. This school-based, supervised weekly program is intended to provide supplemental fluoride to children that have an elevated risk for developing dental caries.

Role and Responsibilities

There is much variation in the oral health leadership positions in the provinces and territories. New Brunswick, for example, does not have any dental personnel in government. Other provinces, like Nova Scotia, have a part-time Dental Consultant that shares his or her time with other commitments such as academia. Five provinces, including Prince Edward Island, have a full-time Dental Consultant/Director, whose duties involve strategic planning and surveillance. The responsibilities of the Dental Consultant could include the following elements:

- Leadership and coordination
- Oral health assessment and surveillance
- Program planning and evaluation
- Knowledge enhancement
- Oral health promotion
- Disease and injury prevention

- Health protection
- Policy
- Advocacy
- Partnership building

Skills and Competencies

It was strongly stressed by many stakeholders that the Dental Consultant needs to embody certain personal qualities such as credibility, vision and passion in addition to demonstrating a broad set of work skills. It was unanimously agreed upon that the skills required for employment as a Dental Consultant should be based on the dental public health discipline competencies in order to satisfy the needs of the position and to satisfy the needs of all interest groups while maintaining a sense of equity.

The discipline competencies are based on the essential functions of dental public health, population health assessment, health surveillance, disease and injury prevention, health promotion and health protection. They are organized under the following eight categories:

- Oral Public Health Sciences
- Oral Health Assessment and Analysis
- Oral Health Program Planning, Implementation and Evaluation
- Oral Health Policy Planning, Implementation and Evaluation
- Partnerships, Collaboration and Advocacy
- Diversity and Inclusiveness
- Communication
- Leadership

Partnerships

An interdisciplinary approach can produce a substantial impact on a number of diseases in a manner that is less costly, more efficient and more effective than the traditional disease-specific approach. In order to improve the population's health, the Dental Consultant must be willing to form partnerships and work collaboratively with a variety of partners at the local, provincial and national levels, including:

- Academia, researchers and training facilities
- Advocacy groups
- Childcare providers
- Dental and other health professional organizations
- Federal, provincial and territorial connections
- Health care workers
- Governmental departments
- Local health regions/municipalities
- Local public health and non-governmental organizations
- Private sector
- Public educators

Development and Implementation

Most stakeholders believed that it would be best to develop a horizontal governmental relationship with linkages to a variety of departments such as Health, Health Promotion and Protection, Community Services, Seniors, Justice, Education and Environment. Because poor oral health shares many of the same risk factors as diabetes and obesity such as smoking, poor eating habits and alcohol use, the majority of key informants stated that the Dental Consultant should be situated within the provincial department associated with chronic disease prevention, health promotion and population health. This would lead the position of Dental Consultant being housed within the Department of Health Promotion and Protection.

Although the Dental Consultant's focus would be more preventive in nature, one cannot exclude the treatment component of dentistry. Undoubtedly, he or she would want to maintain strongly connected to the Department of Health and the Department of Community Services as they deliver the programs pertaining to the provision of oral care services to the public.

A part-time appointment in the Faculty of Dentistry at Dalhousie University was also recommended by several stakeholders. It is believed that some involvement (i.e. 10-20% time commitment) with the university through teaching and/or research would give the position credibility as participation in the faculty would require the individual to remain current with evolving literature and practices.

Options

Two options were developed for consideration by the government of Nova Scotia. The first option would be to staff the Dental Consultant at a part-time equivalent or possibly at a full-time equivalent with the position being shared with another program at the provincial level or with a university faculty. This option would have less of a financial commitment for the province and could allow for interesting partnerships to develop. The drawback to this type of scenario, however, is the management of time, responsibilities and expectations of the shared positions.

This could potentially lead to less progress being achieved in either or both domains if the individual needs to divide and prioritize his or her time between the two assignments.

Nearly all of the key informants suggested the second option which is to develop and maintain a full-time position for a Dental Consultant at the provincial level. This would ensure that momentum is maintained on established oral health programs and networks. Choosing this option increases the ability to integrate oral health into the scope of general health initiatives and to address current oral health issues pertinent to Nova Scotians. In addition, the Dental Consultant could assume responsibility for oral health issues, thus reducing the current responsibilities of the Chief Public Health Officer.

Several of the stakeholders indicated that to adequately address the issues discussed in this report would require a full-time commitment of the Dental Director, if not a small team. Many believed that a shared or part-time position may hinder progress as priorities would be divided between various assignments and thus may lead to a lack of time available to devote to the position. This option requires a strong commitment to change from the outset and it would have financial implications.

1. Objective

The 21st century has brought about an unprecedented awareness of public health issues, including climate change, obesity, and the impending influenza pandemic. Governments quickly came to recognize that great effort and planning was required to prepare for (and deal with) the consequences of such matters in order to maintain a sustainable health care system. As part of the renewal of public health in Nova Scotia, the government embarked on a reorganization of their infrastructure. The Department of Health Promotion and Protection formed from three branches: The Office of Health Promotion, the Public Health Division of the Department of Health and the Office of the Chief Medical Officer of Health.

The inspiration behind the development of the new department was to build a stronger and more effective and efficient public health system that would contribute to the health and well-being of all Nova Scotians. The public health renewal has also highlighted the importance of shifting the focus of health care systems from acute care to prevention: "The public health system focuses on preventing disease, promoting and protecting health, prolonging life and improving quality of life through organized efforts of society; it is complementary to, but different from, the personal health services program".[1]

Nova Scotians are faced with a unique and diverse set of public health challenges. The majority of the health status measures are ranked in the lower half of Canadian provinces, including a high prevalence of diabetes and the highest prevalence of high blood pressure.[1] The support for the connections between oral health and general health is growing. Oral diseases, such as caries, periodontal disease, oral cancers and sports-related injuries of the craniofacial complex are all preventable. The morbidity, mortality and economic burden associated with these conditions, and subsequently their effects on systemic disorders, can be considerably reduced by programs and interventions aimed at prevention and health promotion.[2]

Across Canada there has been a decrease in the number of full-time dental public health consultants in the provinces and territories and a lack of standardization in the positions that do exist. The reduction of publicly funded provincial oral health care services will most likely continue if the void of dental consultants remains at the provincial level. There needs to be a voice to advocate, support and demonstrate the need for publicly funded dental health programs and services in the provinces and territories or they will continue to decrease their capacity to deliver public oral health care. With the recent renewal of the public health system in Nova Scotia, the government thought it timely to investigate the required resources to ensure a coordinated, responsive and efficient public health system in Nova Scotia that included oral health.

The Office of the Chief Dental Officer for Health Canada was asked to produce a document that would review the oral health care system in Canada, dental public health capacity, the relationship between oral health and general health, the rationale and mandate for the provincial Dental Consultant position, the responsibilities and competencies required of this position, and placement and employment options (Appendix 14.1).

2. Methodology

2.1 Literature Review

The literature collected for this report was reviewed for information regarding policies, procedures, legislation, skills and competencies, role and responsibilities, and oral health needs within a public health domain. Documents were retrieved from international, national, provincial and municipal sources in relation to public health in general and to oral health specifically. This information was supplemented using electronic searches of PubMed and Google Scholar and a personal collection of journal articles and documents.

2.2 Consultations with Key Informants

The project team identified the stakeholders within Nova Scotia that would have an invested interest in the development of a position for oral health expertise at the provincial level of government. Primary key informants, including representatives from dental and non-dental organizations and departments, were contacted by a member of the project team for face-to-face interviews. Invited members included all dental associations, academia and organizations in Nova Scotia and select departments and individuals within the government associated with public and oral health.

The 23 key informants accepted the request for an interview (Appendix 14.2). They were assured that the content of the interviews would be maintained confidential and that their responses would not be attributed to them in the final report. The consultation was intended to be informal, allowing the key informants to speak openly and freely regarding their opinions on topics such as the need for oral health expertise at the provincial level of government, the perceived role and responsibilities, necessary skills and competencies required to undertake the position and any other concerns they may have in relation to oral health in Nova Scotia. The interviewers prepared open-ended questions to guide the conversations (Appendix 14.3).

One of the limitations of this approach was that there was limited time available for face-to-face consultations. A few key informants were later contacted via telephone interviews; however, there were still groups that may not have been effectively represented in the scan. As such, the information in this report may not completely represent the circumstances regarding oral and public health in Nova Scotia.

2.3 Preliminary Report

A draft report was prepared using the information obtained through the literature review and themes derived from the interviews. The report was circulated to all key informants that were interviewed to ensure accuracy of the information given during the consultation and data collection period.

2.4 Feedback

Key informants were invited to attend a feedback session held in the fall of 2008. The goals of the meeting were to provide an overview of the first draft of the report, to gather comments regarding the findings and suggestions documented in the report and to discuss potential strategies for the possible implementation of oral health expertise in the government of Nova Scotia. Some elements of the report were altered to reflect the responses of the key informants during the feedback session.

2.5 Final Report

This report offers an evaluation of the current literature examining why oral health is important to general health, the current state of dental care in Canada generally and Nova Scotia specifically and why oral health expertise is of value in the context of public health at a government level. It presents the role and responsibilities of a provincial Dental Consultant and the skills and competencies one should possess to effectively promote and advocate for the oral health needs of his or her community. Suggestions for the ideal placement of this appointment were made in light of the need for collaboration of this posting with various departments and organizations both inside and outside the jurisdiction of the provincial government. Finally, recommendations for future action were made with suggestions of possible options for the placement of oral health expertise in the Nova Scotia government.

3. Oral Health and General Health

As defined by the Canadian Dental Association, "oral health is a state of the oral and related tissues and structures that contributes positively to physical, mental and social well-being and the enjoyment of life's possibilities, by allowing the individual to speak, eat and socialize unhindered by pain, discomfort or embarrassment".[3] Most key informants noted the connection between oral health and general health. Oral health is an essential component of general health as poor oral health affects growth, development and learning for children, communication, nutrition, self-esteem and various systemic conditions. Because of its effects on daily living, oral health is considered a determinant of quality of life. It is imperative to realize that obtainment of good oral health is more than just healthy teeth; it requires the absence of disease and disorder of all oral, dental and craniofacial tissues.[4]

3.1 Dental Caries

The majority of oral disease is preventable. There are many safe, easy and effective preventive measures available for preventing dental diseases and thus avoiding the unnecessary effects of poor oral health. In the past four decades, the prevalence of dental decay has reduced significantly, with the rates in children being less than one quarter of what they were in the early 1970's.[5] On average, Canadians profit from good oral health, although not all groups benefit equally. One quarter of the population still suffers from relatively high rates of dental caries, with the added burden of little to no access to preventive and restorative services. These disadvantaged groups include the First Nations and Inuit populations, elderly, recent immigrants to Canada and low-income families.

It was noted in the *Oral Health in America: A Report of the Surgeon General* that dental caries is the single most common chronic disease of childhood, with a prevalence rate five times greater than that of asthma and seven times greater than that of hay fever.[6] Early Childhood Caries (ECC), defined as decay of any primary tooth in a child less than 6 years of age, often requires extensive treatment (e.g. fillings, crowns and extractions) under general anesthesia.[7] ECC may be a painful condition that affects the child's ability to eat, sleep, communicate and socialize, ultimately influencing optimal growth and development (i.e. failure to thrive).

The etiology of ECC is complex and multifactorial; however, it is often associated with inappropriate infant feeding. Approximately 70% of Canadian Aboriginal children living on the reserves have experienced tooth decay by the age of three, and 87% by five years.[8] Unfortunately, children with a history of ECC are at an increased risk for future dental decay throughout childhood.

Pediatric dental surgery associated with the treatment of ECC remains one of the most common day surgeries in many Canadian paediatric hospitals. The cost of dental treatment for a child can be steep as it frequently includes dental treatment, hospital care, transportation and accommodations for the family. It must not be overlooked that although the administration of a general anesthetic is normally associated with low morbidity and mortality, it is not without risk.

3.2 Periodontal Disease

Periodontal diseases can influence systemic health in numerous ways. For example, periodontitis is now commonly referred to as the "sixth complication of diabetes" as there is a bidirectional relationship between it and diabetes mellitus. Diabetes is associated with an increased susceptibility to the development of inflammatory periodontal disease. Also, some evidence suggests that patients with diabetes who have periodontal disease are at a greater risk of developing poor glycemic control, thereby potentially increasing the severity of their diabetic condition.[9] Emerging research also reveals potential associations between poor oral health and cardiovascular disease, stroke, chronic respiratory disease, aspiration pneumonia in the institutionalized elderly, and adverse pregnancy outcomes such as delivery of pre-term low birth weight babies.[10]

3.3 Seniors

Many stakeholders commented that the connection between oral health and overall health is especially strong when considering the elderly population. Poor oral health and tooth loss in older adults results in a reduction in chewing capacity. This influences the types of food that one can chew, thus leading to altered food choices, and possibly a poor diet. A compromised chewing ability may lead an individual to choose foods that are softer and easier to chew, often leading to reduction in the intake of fibre and essential nutrients. Problems with eating can lead to malnutrition and involuntary weight loss and ultimately can disturb the systemic health of the older patient.[11,12] Unfortunately, this can be rather common in the senior population, especially with residents of long-term care facilities. This is often further complicated by a decrease in the manual dexterity required to properly clean the oral cavity and the large number of medications taken by seniors that can result in dry mouth, which can in turn lead to periodontal disease and dental caries.[4]

The delivery of oral health care for seniors needs to be improved given that the Baby Boomers will soon be increasing the demand for services. It is projected that by the year 2026, 25% of the population in Nova Scotia will be seniors. This generation, for the most part, has enjoyed superior oral health due to increased opportunities to care for their teeth and gums. The result being a group of individuals that have maintained more of their natural teeth and received more dental services, including more complex dental treatment. These folks are also more likely to be taking multiple medications, often with dry mouth as a side effect, thereby further complicating their ability to maintain a disease-free oral cavity. Planning for oral care maintenance for this group needs to begin in earnest as Baby Boomers will likely be vocal, demanding that the dental preventive and treatment services that they have become accustomed to receiving be continued.[4]

4. Canadian Oral Health Care

Despite national pride in our collective values of equity and equality for all citizens, the trend does not carry over to oral health care. Oral health disparities and inequities in access to dental services exist in Canada and will likely increase in the current system.

4.1 Dental Expenditures

Although oral health is considered part of general health, it is not considered an insured benefit in Canada. The majority of medical care is provided by physicians in their own offices and thus, the Canadian medical and hospital care system is not considered "socialized". However, the funding and financing of the system is socialized as governments collect funds through taxes and premiums and redistribute them to finance payments to hospitals and physicians. Dental services, much like medical services, are delivered by private, for-profit practitioners.[13] Unlike medical care however, the cost of dental services is primarily the responsibility of the individual, with 94% of the care being financed typically through out-of-pocket payments (41%) or employer-provided insurance (53%).

The remaining 6% of the funding for dental services is derived from public sources, as compared to 13.7% in 1980. In 2005, Nova Scotia spent approximately $255.5 million on total dental expenditures with 5.1% paid through public funds.[14] Although the national percentage of public funds devoted to dental expenditures has decreased over the years, it has remained at the current level of 6% for the past decade. The percentage of public funding for dental care in Nova Scotia has steadily declined over the past 20 years. The proportion of dental expenditures paid through public funding has declined from a high of 17.2% in 1990 to 9.2% in 1999 and to 5.1% in 2005. Appendix 14.4 compares the total expenditures for dental care and the proportion paid through public funds from 1990 to 2005 across Canada.

When comparing the dollars (unadjusted for inflation) spent on public dental care between 1999 and 2005, only Nova Scotia and Newfoundland had decreased the amount of funding allocated to dental expenditures, with Nova Scotia spending approximately $1.2 million less in 2005 than in 1999 (Appendix 14.5). Despite the decrease in governmental support, dental disease expenditures continue to rise, reaching $6.3 billion in 1998, second only to cardiovascular diseases.[15] It is estimated that the current annual direct dental expenditures in Canada has risen to 9.7 billion dollars.

Federal government funding accounts for 40% of the public dental expenditures with services provided to the First Nations and Inuit populations, Veterans, Canadian Forces, Royal Canadian Mounted Police, refugees and inmates in federal penitentiaries. Provincial governments contribute 59% of the public funding by providing dental care for children, seniors, persons with handicaps, in-hospital services and vulnerable populations (e.g. individuals receiving income assistance). The oral care services delivered vary by province. Further information regarding individual programs may be obtained through the Canadian Association of Public Health Dentistry website.[16]

The territories contribute 1% of the public funding through the provision of dental therapy programs, in-hospital services, social allowance and limited senior and children programs. Regrettably, some of the dental services for children and seniors have been reduced or cancelled across Canada due to budgetary constraints. Additionally, there is no dental coverage for the working poor or elderly population and the social assistance programs have particular restrictions depending on the province or territory. These programs are structured to provide emergency care (e.g. extraction, relief of pain) to adults and slightly expanded basic dental services (e.g. restorative, preventive) to children.

The above figures do not include the indirect costs associated with dental care. Orofacial pain is a major source of diminished quality of life as it is linked with sleep deprivation, depression and adverse psychosocial outcomes. Oral and craniofacial diseases and their treatment place a burden on society in the form of lost days and years of productivity. Acute dental conditions contribute to a range of difficulties, including restricted activity, bed days, work loss and school loss days.6 Currently there is no Canadian data available for lost days due to oral diseases; however, an estimate of 10% of the U.S. figures is often used to illustrate the potential effect.[10]

Productivity cost estimates are as follows:
- Lost school days- 100,000/year
- Lost work days- 270,000/year
- Restricted activity days- 410,000/year

4.2 Inequities in Financing Dental Care

With the exception of Quebec, Canadians are not forced to pay federal or provincial/ territorial income tax on health care premiums paid by employers. In 2002, it was estimated that approximately 3 billion dollars was forgone by governments in not taxing private insurance premiums. This has led to the following consequences:

- Insured Canadians, who are often more affluent, receive tax-free dental care while the uninsured are required to pay for dental services in after-tax dollars unless payments exceed more than 3% of their income.
- All Canadians, including low-income individuals, pay additional taxes (e.g. GST/HST, gasoline taxes, income taxes) to boost revenue from uncollected taxes from health insurance premiums.
- Lower-income, non-insured individuals contribute proportionally more to finance health care for the insured as the tax system becomes increasingly less progressive.[15]

4.3 Dental Legislation

In Canada, Dental Acts are controlled by the Dental Regulatory bodies residing in their respective province or territory. Governments do not directly oversee the practice of dentistry or the practices of any dental professionals, including dentists, dental therapists, dental hygienists, dental assistants, denturists, or dental technicians. Alternatively, these dental professionals are either self-regulated, unregulated, or are subject to the control of another professional body.[17]

In addition, Dental Acts and Regulations are often written considering only the traditional model of dental practice in mind (i.e. private dental office). This can be problematic as many of the individuals needing dental services cannot access care in conventional settings. Outdated acts and regulations may hinder the implementation of essential oral care programs in non-traditional locations, such as long-term care facilities, community clinics, schools and public health settings.[17]

Many of the acts are old and thus do not adequately address issues of delegation, supervision and scope of practice and they can be somewhat restrictive in terms of access to treatment.17 In November 2007, Nova Scotia became the latest province to change their legislation permitting dental hygienists to become a self-regulating profession and to practice independently of dentists.[18] Changes involved the introduction of the Dental Hygienists Act and the formation of a College of Dental Hygienists of Nova Scotia that will govern and regulate the profession of dental hygiene and enforce the standards of its profession in the province.

The new legislation will enable dental hygienists to provide care within their scope of practice in a variety of independent settings other than private dental offices. Dental hygienists will be required to complete a continuing education module approved by the College of Dental Hygienists. This course includes information on the new regulations, containing the contraindications to treatment and provisions for consultations under certain circumstances.[18]

A few key informants noted that the new legislation may facilitate access to care for populations who currently receive little or no oral health care; these populations include the homebound, financially disadvantaged, seniors (especially those in long-term care facilities), patients with physical or mental disabilities, residents of rural communities and anxious dental patients. Dental hygienists, if equipped with mobile equipment, could visit residential care homes, for example, to provide the following services: assessments (e.g. oral cancer screening), oral care plans, referrals to other health care professionals, education and instructions for caregivers, clinical therapy (e.g. scaling and root planing), application of anticariogenic agents (fluoride) and desensitizing agents and denture identification programs.[18]

5. Oral Health Disparities and Access to Care

Although the oral health status of Canadians has markedly improved over the past forty years, not all population groups have achieved equal access to dental care. The inverse care law, in which the availability and provision of adequate health care tends to vary inversely with the need of the population it serves, still remains predominantly true in our nation. Key informants were very much aware that much of the burden of dental disease is now concentrated in less advantaged individuals, in particular the elderly, low-income individuals, First Nations and Inuit populations, transitional youth and those who experience mental and/or physical disabilities, which are typically the groups with the least access to dental services.

5.1 Barriers

There are numerous hurdles that disadvantaged groups encounter in accessing dental care (preventive services and treatment).[6,17]

- **Economic-** under the current fee-for-service delivery system, individuals who can afford services or those who have dental insurance and can afford the co-payments are most often the ones who can access dental services. Economic barriers may also include a loss of income while attending dental appointments during work hours. This may prevent some people from seeking out services as they cannot afford the loss of work income.

- **Geographic-** traditional models of dental service delivery (e.g. private dental offices) are often not available in remote or rural areas. Additionally, many elderly or persons with disabilities are unable to travel to obtain dental services and there are few dental professionals offering services in community institutions such as long-term care facilities.

- **Social and Cultural-** some individuals may feel uncomfortable receiving dental care in a traditional private office setting. Also, Canada is becoming more culturally diverse and thus alternative approaches for dental service delivery may need to be taken into account. Socially and culturally acceptable delivery systems would consider factors such as language, culture and background differences.

- **Legislative-** the current legislation is written with the conventional mode of dental service delivery in mind. This may impede the implementation of alternate service provision systems that provide good quality, cost-efficient oral health care to individuals with unmet dental needs and with little access to traditional forms of dental care delivery.

- **Medical-** some individuals may have mental, physical, or medication-related conditions that may make oral care extremely challenging, whether it be in the home setting or in obtaining professional dental services.

- **Educational-** the lack of awareness of the importance of oral health (health literacy).

5.2 Dental Insurance

Possessing dental insurance minimizes the financial barriers to dental care as direct costs to patients are reduced.[19] The proportion of Canadians aged 15 or older that reports having dental insurance ranges from 53 to 58%, with coverage being highest among middle-aged individuals.[20,21] Not surprisingly, the ability to pay for services determines the frequency of dental visits. Of the respondents of the 1996/97 National Population Health Survey (NPHS), 17% of participants reported cost as the primary reason for not frequenting the dental office in the past three years.[20] Canadians with dental insurance were 2.7 times more likely than non-insured individuals to report visiting the dentist in the past year.[10]

Income and education are two of the strongest predictors of dental insurance coverage.[22] Permanent full-time employees are the most likely holders of dental insurance. However, there is a persistent trend towards non-standard employment, with part-time, temporary, and self-employment becoming increasingly more commonplace in the workforce. With the increasing costs to the employer, making dental insurance coverage unsustainable in the long term, current workforce trends, and the imminent loss of employees due to the retirement of the Baby Boomer Generation, we are likely to see a significant decrease in the number of individuals with dental insurance coverage in the upcoming years.[15,23]

5.3 Dental Care Utilization

Visiting a dentist at least once a year is an important measure of dental care utilization. The 2003 Canadian Community Health Survey indicated that approximately 60% of Nova Scotians 12 years and older had contact with a dental professional in the previous 12 months; this is somewhat lower than the national average of 63%.[4] In their analysis of the 1996/97 NPHS data, Bhatti et al. found that the mean frequency of dental visits increased with age until middle age but that visits noticeably dropped among the elderly and stabilized at about one visit per year after the age of 65 years.[23] This confirmed findings from other studies that dental care utilization is highest among young adults and lowest among seniors.

An article by Sabbah and Leake compared the characteristics of Canadians who visited dentists and physicians.[24] The factors that predicted higher utilization of dentists were younger age, higher education, higher household income and having good general health. Under Canada's universal health care system, the factors identified as determining dental care utilization, namely age, education, employment and income, were not factors in visiting physicians. In contrast, the variables that predicted higher family physician visitation were pregnancy, poor health and use of medications. Due to current organization of the medical and dental health care systems, it is not surprising that increasing age and poor general health predicted the highest use of physicians but the lowest use of dentists.

6. Dental Public Health in Nova Scotia

6.1 Human Resources

In 1974, Nova Scotia introduced a universal children's dental care program with a focus to publicly finance oral health care delivered in private practices. Prior to this development, the province was involved in the provision of dental services to rural areas through a team of salaried dental hygienists and dentists. Dental public health was strong in Nova Scotia during this period as it was reported that 9 dentists and 28 dental hygienists were working in the Department of Health's Dental Division in 1980.[25]

Not unlike the rest of Canada, Nova Scotia also felt the effects of the economic recession of the late 1980's and 1990's with decreasing funds for many programs including dental public health. Because the province offered a universal dental program for children, it was felt that the oral health needs of Nova Scotian children were being met in private offices and thus as public health dentists retired, no one was hired to replace the positions. The employment of public health dental hygienists has also decreased slightly to the current level of 22 positions utilizing approximately 18.43 full-time equivalents (FTE) and currently includes 1 vacancy. Please refer to Appendix 14.6 for further details.

In the 1990's, all provinces and territories had a full-time (1 FTE) Dental Director or Consultant. These individuals represented the province or territory regarding oral health issues both within a provincial/territorial context but also on a national level with the Federal, Provincial and Territorial Dental Directors (FPTDD) Working Group. The purpose of this group is to "enhance the effectiveness of public dental programs in order to improve the oral health of Canadians." Currently, Nova Scotia employs a 0.3 FTE dentist that acts as the Dental Consultant for the province. This posting is held through the Department of Health Promotion and Protection. Maintenance of this position is extremely important as inclusion in the FPTDD Working Group allows for sharing of knowledge and effective practices, as well as communicating and liaising with stakeholder groups on oral health issues across the country.

For the purpose of consistency, the oral health position in Nova Scotia will be referred to as the "Dental Consultant" for the remainder of this document. The title for the position may change as deemed appropriate according to the roles and responsibilities and where the position is situated in government.

6.2 Public Dental Programs

At present, there are eight public dental programs offered by the government of Nova Scotia.[14] One program is delivered through the Department of Community Services, while the remainder fall under the jurisdiction of the Department of Health.

Department of Community Services

1. Employment Support and Income Assistance Dental Program

- *Eligibility:* based on assessment of financial need, household number, and determination of employment
- Services are offered to eligible clients and their dependents
- *Services:* emergency dental care; some diagnostic, preventive, restorative, prosthodontic, endodontic and oral surgery services depending on predetermination
- Assistance pays 80% and patients 20% of the costs
- *Service provision:* dentists and denturists in private practices
- *Administration:* centrally administered
- *Utilization (2005):* 32,262 eligible
- *Expenditures:* not reported

Department of Health

1. Children's Oral Health Program (COHP)

- *Eligibility:* birth to the end of the month of the 10th birthday; clients are required to access private coverage first and the program pays the balance
- *Services:* diagnostic, preventive and treatment services
- *Service provision:* dentists, dental hygienists and dental assistants in private practices, community clinics and schools (e.g. Harbour View Elementary School)
- *Administration:* Medical Services Insurance (MSI) administers the diagnostic, preventive and treatment component, with adjudication and payment contracted to Quikcard Solutions Inc. (QSI)
- *Utilization and expenditures (2007):*

Clients	39,059
Claims	77,727
Expenditures	$3,985,954.19
Cost/client	$102.05

2. Nova Scotia Cleft Palate/Craniofacial Program

- *Eligibility:* Individuals with craniofacial anomalies that directly influence growth and development of dentoalveolar and craniofacial structures
- *Services:* Orthodontic treatment, diagnostic, restorative, periodontal and prosthetic treatment related to, though not necessarily restricted to, the area of the cleft deformity
- *Service provision:* Cleft palate team at the Izaak Walton Killam Children's Hospital (IWK) and dentists/specialist in private practices
- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures (2007):*

Clients	219
Claims	533
Expenditures	$90,978.33
Cost/client	$415.43

3. Maxillofacial Prosthodontics Program

- *Eligibility:* Nova Scotia residents whose maxillofacial prosthodontic needs result from congenital facial disorders, cancer, trauma and neurological deficit
- *Services:* various oral surgery and prosthodontic services
- *Service provision:* dentists and specialists in hospitals and private practices

- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures (2007):*

Clients	524
Claims	1747
Expenditures	$629,334.57
Cost/client	$1201.02

4. Mentally Challenged Program

- *Eligibility:* Nova Scotia residents who are deemed to be mentally challenged by a medical authority, and whose dental needs may necessitate treatment in hospital under general anesthesia.
- *Services:* same as those covered under the COHP (without the age limit), with additional services offered based on predetermination
- Subject to a 10% premium when delivered in private practice, and 30% premium when services are delivered in a hospital setting
- *Service provision:* dentists and specialists in private practices and hospitals
- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures (2007):*

Clients	609
Claims	1174
Expenditures	$207,779.67
Cost/client	$341.18

5. Dental Surgical (In-Hospital) Program

- *Eligibility:* Nova Scotia residents whose condition makes it medically necessary that the required dental surgical procedures are done in a hospital
- *Services:* various oral and surgical dental procedures
- *Service provision:* dentists and specialists in hospitals
- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures (2007):*

Clients	1874
Claims	2642
Expenditures	$1,166,915.48
Cost/client	$622.69

6. Atlantic Provinces Special Education Authority (APSEA) Dental Program

- *Eligibility:* Nova Scotia residents who are blind, visually impaired, deaf or hard of hearing, and residents at the APSEA facility
- *Services:* diagnostic, preventive and treatment services
- *Service provision:* dentists in private practices
- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures:* not reported

(The APSEA facility no longer has a full-time residential program; therefore there are no claims for this program)

7. Oral Pathology Services

- *Eligibility:* Nova Scotia residents who have paid for clinical pathology services by a designated oral pathologist, which show results are cancerous or precancerous; clients are required to access private coverage first and the program pays the balance
- *Services:* clinical pathology services
- *Service provision:* designated oral pathologists
- *Administration:* MSI; QSI responsible for adjudication and payment
- *Utilization and expenditures:* not reported (no claims in 2008)

The total expenditures for 2007, excluding the Department of Community Services dental program but including cases considered "special consideration" ($67,741.47) were $6,148,703.71.

In addition, dental hygienists provide public health dental services in Nova Scotia's District Health Authorities (DHA) under the supervision of the Dental Consultant. The services provided by dental hygienists vary on the DHA in which they work. Work activities tend to fall into the following broad categories: oral health assessment and surveillance, oral and general health promotion and prevention, advocacy and committee involvement.

One of the largest responsibilities of public health dental hygienists is the management of the province's **Fluoride Mouthrinse Program** (FMP), which became a mandated program in the mid 1990's. This program began in the 1980's with the intention of providing a school-based, supervised, weekly program using a concentrated fluoride mouth rinse solution to help reduce dental decay in elementary schoolchildren. Since 2003, the FMP has been revised to include high risk schools selected on the basis of population health indicators (income, education and employment). This program was intended to provide supplemental fluoride to children that have an elevated risk for developing dental caries. According to a scan of the areas in Canada that are fluoridated, completed by the Office of the Chief Dental Officer in 2006, less than half (44.8%) of the Nova Scotia population has access to fluoridated drinking water.[26]

6.3 Research

6.3.1 National Research

Very little data pertaining to issues of oral health exist in Canada with only a small number of surveys and databases in operation. The information produced is often not comparable to other regions of the country due to a lack of standardization in data collection, including which indicators and segments of the population are selected for measurement. Currently, there are two national surveys that will provide some information regarding the oral health status, dental care utilization and dental insurance of the Canadian population.

The Canadian Community Health Survey (CCHS) is a cross-sectional national survey conducted by Statistics Canada, in partnership with Health Canada, the Canadian Institute for Health Information (CIHI) and provincial and territorial ministries of health. There are three core questions relating to oral health that are asked of all respondents across the country. Nova Scotia does not currently partake in the collection of data obtained from the optional sections, of which 11 questions are oral health related, as they must be purchased separately.[27]

The Office of the Chief Dental Officer was involved in getting oral health indicators incorporated into the Canadian Health Measures Survey (CHMS). The oral health module of the CHMS will collect measures from 5,000 to 6,000 people representing 97% of the Canadian population aged 6-79. Data collection, which includes 2 components, a household interview and an oral health examination, will occur between March 2007 and spring of 2009.[28,29]

The three main objectives for adding an oral health module to the CHMS are:

1. To evaluate the association of oral health with major health concerns such as diabetes, respiratory and cardiovascular diseases.
2. To determine relationships between oral health and certain risk factors like poor nutrition and socioeconomic factors related to low income levels and education.
3. To establish a national baseline level of the DMFTs (Decayed, Missing, Filled Teeth) for Canadians.

6.3.2 Provincial Research

Although Nova Scotia was not one of the 15 sites randomly selected for data collection, the results from the CHMS will be used to set policies and guidelines across Canada. In addition, the same survey methodology could later be utilized in Nova Scotia and the provincial results from the survey could be compared to the national data. This will allow policy makers to address specific oral health issues pertaining to Nova Scotians directly as there will be a standard to which a comparison can be made.

The last published report on the oral health status of Nova Scotians was in 1997. The Nova Scotia Oral Health Survey of Children and Adolescents (NSOHS) 1995-96 contacted 4,765 grades 1, 6 and 9 students to estimate their level of tooth decay, fluorosis, gum disease and malocclusion.[30] More recently, an oral health survey of grade 2 children in 115 schools across Nova Scotia was conducted in 2006. Data collection included a parental questionnaire addressing oral health perceptions and behaviours and a clinical examination of the children's teeth and mouth by public health dental hygienists. Several oral health measures were assessed, including caries, malocclusion, gingival health and other pathology. The primary purpose of attaining this information, in addition to establishing baseline data to assist with program planning, was to assess the correlation of caries rates with the socioeconomic measures (i.e. income, education and employment) currently used to target the fluoride mouth rinse program to schools with the highest caries risk. The data are still being analyzed but a preliminary report is tentatively scheduled to be released in July 2008.

In addition to research generated within government, recent research initiatives within the Faculty of Dentistry at Dalhousie University have been directed toward policy and public health outcomes. The Collaboration of Oral Health Researchers (COHR) at Dalhousie have a mission to undertake research to improve the oral health of vulnerable Nova Scotians. Over the past six years, this research group has received over one million dollars in grants and funding to support their research including approximately $400K from the Nova Scotia Health Research Foundation and the Department of Health. Clearly this is already being recognized as a priority issue within Nova Scotia. Researchers within COHR are being recognized as leaders in research in oral health disparities in Canada – specifically in the area of seniors' oral health. COHR has been the beneficiary of a great deal of support from individuals within the NS provincial government interested in addressing health disparities associated with oral disease. The office of the Dental Consultant would be well-positioned to develop and strengthen existing partnerships between government and academia.

7. Oral Health Disparities in Nova Scotia

During the interviews, key informants identified a number of gaps in oral health in Nova Scotia. Their comments were compiled into the following categories:

Oral Health Presence/Profile

- There is little presence of oral health expertise within the government and, therefore, support and expectations are low. The result is that oral health is often not represented as agendas are pushed forward.
- Many organizations and government departments dealing with oral health issues were unaware that a Dental Consultant currently exists (i.e. low profile given to the position).
- With little coordination of dental public health in the government, public health dental hygienists are moving away from oral health activities in some District Health Authorities. Also, dental hygienists are not always replaced promptly as individuals move to alternate postings.
- Oral health components are often missing from educational programs in other professions (e.g. nursing, licensed practical nursing, medicine).
- No provincial oral health strategy in Nova Scotia.

Needs

- Unsure of the oral health needs of Nova Scotians- little assessment has been done for children, adult or senior cohorts.
- Vulnerable populations often have difficulty accessing oral health care (e.g. institutionalized seniors, children 10-19 years, working poor, etc...) as there are no public programs and few outreach clinics available for these groups.
- The private dental profession may be unaware of the true needs of the more vulnerable populations.
- Wait lists for certain treatment programs may be very long (e.g. IWK Children's Hospital).

Current Programs

- There is universal dental coverage for children until the end of the month of their 10th birthday providing basic dental care for its clients.
- The Employment Support and Income Assistance Dental Program covers emergency treatment only; there are no preventive services available for the high risk population that would likely benefit the most from them.
- The Employment Support and Income Assistance Dental Program's reimbursement rate is 60% of the current fee guide and thus there is difficulty getting dental professionals to treat their clients as often payment barely covers overhead costs.

- Conversely, offices are much more willing to see clients of the Children's Oral Health Program as reimbursement is 80% of the fee guide.
- There is no alignment between the services and fees of the various government-sponsored programs which could potentially lead to repeat clients within programs and confusion as to what services are covered and at what rate.
- There are few guidelines or standards pertaining to oral health to assist in developing criteria for public dental programs. For example, there are standards for the Fluoride Mouthrinse Program.
- There are no standards for oral health within the broader health context. For example, there are no explicit oral health standards in medical and continuing care settings.

Relationships

- Lack of cohesiveness within the dental profession.
- Disconnection between public and private dental sectors.
- No connection between the various departments in government providing oral health expertise and services to Nova Scotians (e.g. Departments of Health, Community Services, Health Promotion and Protection, Education, and Justice, the IWK Health Centre and District Health Authorities).
- Lack of collaboration between the dental profession and other health science professions.

8. Role and Responsibilities

8.1 Provincial and Territorial Systems

The Federal, Provincial and Territorial Dental Directors (FPTDD) Working Group suggested in their 2002 submission to the Commission on the Future of Health Care in Canada report that "each province and territory assure that it has dental personnel trained or knowledgeable in policy development and dental public health, and with a reporting mechanism at a high level within the health system, in order to provide planning for oral health improvement within the province or territory".[17]

There is much variation in the oral health leadership positions in the provinces and territories. New Brunswick, for example, does not have any dental personnel in government. Other provinces, like Nova Scotia, have a part-time Dental Consultant that shares his or her time with other commitments such as academia. Five provinces, including Prince Edward Island, have a full-time Dental Consultant/Director, whose duties involve strategic planning and surveillance. Despite the dissimilarities across the country, each province and territory has a representative in the FPTDD Working Group, with training ranging from dental public health specialists to a registered dietician.

A report of the dental public health human resources in Canada, completed in 2006, provides an overview of the dental public health systems in each province and territory.[25] Please refer to Appendix 14.7 for further information.

8.2 Mandate

As the Province of Nova Scotia moves towards greater integration of its approaches in health promotion and community action with health surveillance and disease prevention and control, it is essential that formal recognition be given to addressing and incorporating oral health concerns with general health concerns.

A potential mandate of the position could be to assist Nova Scotians to improve, maintain and protect their oral health and quality of life through awareness and the provision of community programs and services based on health promotion, disease prevention and reduction of barriers to oral care.

8.3 Responsibilities

The key informants remarked that the responsibilities of the Dental Consultant could include the following elements but will likely undergo a review after several years to fine-tune the specifics of the job description. The details relating to the responsibilities will be further developed in the skills and competencies section.

Leadership and coordination

- Champion for oral health.
- Provide guidance and leadership to current oral health staff (e.g. public health dental hygienists).
- Act as a coordinator for oral health groups and activities across the province.

Oral health assessment and surveillance

- Assist in gathering epidemiological information for program planning and establishing priorities for research.
- Assess and monitor oral health status to identify community health needs and disparities.

Program planning and evaluation

- Plan, implement and evaluate oral public health programs.
- Manage current dental health programs (e.g. Children's Oral Health Program) regarding eligibility criteria, guidelines and budgetary details.
- Investigate various models for program development to ensure the needs of the population are being addressed.

Knowledge enhancement

- Maintain and apply a high level of scientific and technical knowledge, issues and problem awareness through self-initiated study, consultation, attendance at scientific meetings and professional exchanges.
- Provide evidence-based oral health perspectives on a wide range of health issues.

Oral health promotion

- Increase awareness of oral health issues.
- Integrate oral health promotion with general health initiatives.
- Increase access to oral health information, including oral care best practices.
- Shift the focus from a curative to a preventive approach for service and message delivery.

Disease and injury prevention

- Recommend integrated collaborative approaches to prevent and control oral and associated diseases.
- Increase public and professional awareness about the prevention of oral diseases.
- Assist in the delivery of preventive measures to high risk groups.

Health protection

- Address and advise regarding emerging dental issues (e.g. fluoridation, mercury, dental waste management, Bisphenol A, biofilms, radiation, xylitol).
- Incorporate the oral health infrastructure in emergency preparedness planning (e.g. influenza pandemic strategy planning).

Policy

- Provide evidence-based oral health perspectives on a wide range of policy issues.
- Develop and implement policy in all areas related to oral health of the community.

Advocacy

- Advocate effectively for oral public health programs.
- Work toward improving the access to oral care services.

Partnership building

- Participate and represent the governmental department on issues pertaining to oral health on a number of committees and task forces as required.
- Liaise with various dental and non-dental organizations and provincial departments to work towards common goals.

The job description of a new Chief Dental Officer of Health Promotion and Protection (Dental Consultant) may be best summarized having a mandate to improve the oral health status of Nova Scotians and to increase awareness about the prevention of oral diseases. This will be achieved by working to:

- Provide evidence-based oral health perspectives on a wide range of health policy and program development issues.
- Provide expert oral health advice, consultation and information.
- Integrate oral health promotion with general health (wellness) initiatives.
- Assist in gathering epidemiological information for program planning on federal/provincial/community levels and establish priorities for research.
- Develop integrated collaborative approaches to preventing and controlling oral and associated diseases.
- Provide a point of contact/liaison with professional associations, other provinces, academic institutions, and other non-government organizations on oral health issues.[31]

9. Skills and Competencies

It was unanimously agreed upon by the key informants that the skills required for employment as a Dental Consultant should be based on the dental public health discipline competencies in order to satisfy the needs of the position and to satisfy the needs of all interest groups while maintaining a sense of equity. Each domain of the competencies is described in section 9.2. A practice example is included with each competency to support clarity of the statement.

9.1 Personal characteristics

It was strongly stressed by many stakeholders that the individual needs to embody certain personal qualities in addition to demonstrating a broad set of work skills. The following are a sample of the desired traits of a Dental Consultant: credible, sense of integrity, well-respected, leader, good communicator, collaborative, decision-maker, energetic, visionary, passionate, positive, enthusiastic, knowledgeable about the government system, and understanding and respect for the local culture (public and associations).

9.2 Discipline competencies

All the information used in this section has been extracted from "Discipline Competencies for Dental Public Health in Canada".[32]

"Discipline competencies are the essential knowledge, skills and attitudes necessary for the practice of dental public health. They provide the building blocks or effective dental public health practice, and the use of an overall public health approach. They provide a baseline for what is required to fulfill dental public health system functions that include population health assessment, surveillance, disease and injury prevention, health promotion and health protection".

The discipline competencies are intended to be comprehensive and thus identify the abilities required by various dental public health members of staff. This was supported by stratifying the competencies into four layers (basic shared, foundation, advanced and expert), with each layer building on the previous one. The 'advanced' and 'expert' competencies are typically possessed by an individual that has undergone advanced education and training in dentistry, public health, and preventive dentistry. These skills were thought to be most appropriate for someone in the position of leading and coordinating oral health endeavours at a provincial or territorial level. It is unlikely that a single person will possess all the skills in these levels and thus is more appropriately considered as team abilities.

The discipline competencies are based on the essential functions of dental public health, population health assessment, health surveillance, disease and injury prevention, health promotion and health protection. They are organized under the eight categories. Only the expert competencies will be listed in this section as they embody the desirable

skills of a provincial Dental Consultant. Having achieved proficiency in the 'expert' competencies, he or she will likely possess the skills listed under the other three levels (i.e. basic shared, foundation and advanced). These skills may be referenced in Appendix 14.8.

1. Oral Public Health Sciences

This category includes key knowledge and critical thinking skills related to the dental public health sciences: behavioural and social sciences, biostatistics, epidemiology, environmental public health, demography, workplace health, and the prevention of chronic diseases, psychosocial problems and injuries. Competency in this category requires the ability to apply knowledge in practice.

Expert:

- Apply specialized knowledge of behavioural, social and biological sciences to dental public health practice.
  Example: Apply BMI, median income data from census, and children's hypertension evaluations to determine relationships and linkages to dental disease.

- Apply in-depth knowledge of oral diseases and conditions to the measurement of such in individuals and communities.
  Example: Use DMFT/deft and Fluorosis indices to monitor progression of outcomes of interest and establish year over year trends.

- Apply in-depth knowledge of etiologic factors and preventive or therapeutic agents in the selection of interventions and programs.
  Example: Explain why current science supports oral health interventions in the periodontal disease/diabetes relationship rather than others such as periodontal disease/preterm, low birth weight babies.

- Apply knowledge of qualitative and quantitative research to the development and evaluation of oral health programs and policies.
  Example: Use respondents' views on appearance of mild fluorosis as well as the Fluorosis and DMFT/deft indices to determine the appropriateness of a fluoride intervention and which potential modality may be most appropriate.

- Apply knowledge of economics and financial management to the development, implementation and evaluation of oral health programs and policies.
  Example: Compare oral health outcome, and human and fiscal resources necessary to deliver a fluoride mouth rinse program vs. a pit and fissure sealant program.

2. Oral Health Assessment and Analysis

This category describes the competencies needed to collect, assess, analyze and apply information (including data, facts, ideas and concepts). These competencies are required to make evidence-based decisions, prepare budgets, and make recommendations for policy and program development.

Expert:

- Apply knowledge regarding application and limitations of statistics when planing oral health studies.
  Example: Consult with researchers on the design of oral health studies.

- Interpret oral health information, considering the current ethical, political, legislative, scientific, socio-cultural and economic contexts.
  Example: Plan and implement an oral health status surveillance system.

- Translate study findings into relevant conclusions and recommendations.
  Example: Recommend an oral health intervention based upon the analysis and interpretation of oral health data, and socioeconomic and demographic data.

3. Oral Health Program Planning, Implementation and Evaluation

This category describes the competencies needed to effectively choose options, and to plan, implement and evaluate programs in dental public health. This also includes the management of stressful incidents such as outbreaks and emergencies.

Expert:

- Conduct strategic planning related to population of oral health issues.
  Example: Partner with nutrition and pediatric professionals to address childhood obesity and dental caries.

- Conduct population-based studies to answer oral health questions.
  Example: Conduct a study to assess whether oral hygiene services in nursing homes will decrease the risk of respiratory infections.

- Design systems to evaluate oral health programs.
  Example: Incorporate oral health-related quality of life measures in the design of systems to evaluate oral health programs.

4. Oral Health Policy Planning, Implementation and Evaluation

This category describes the competencies needed to effectively choose options, and to plan, implement and evaluate policies in dental public health for the improvement and protection of oral and general health, and well-being.

Expert:

- Analyze current policies and legislation related to oral health issues.
  Example: Prepare a council report recommending new policies and procedures in response to a change in legislation around dental hygienists' scope of practice.

- Initiate healthy public policy and legislation in collaboration with others.
  Example: Develop a policy statement and procedure regarding the application of fluoride varnish by public health nurses and family home visitors.

- Work with diverse professions, groups and organizations to implement policies.
  Example: Work with dental and government organizations to implement policies for expanded functions for dental and non-dental professionals.

5. Partnerships, Collaboration and Advocacy

This category captures the competencies required to influence and work with others to improve the health and well-being of the public through the pursuit of a common goal. Partnership and collaboration optimizes performance through shared resources and responsibilities. Advocacy- speaking, writing or acting in favour of a particular cause, policy or group of people- often aims to reduce inequities in health status or access to health services.

Expert:

- Facilitate dialogue among governments, community partners and other stakeholders to support healthier communities.
  Example: Initiate briefings and town hall meetings on selected topics that will provide a platform for governments and other stakeholders to present their views on current oral health issues of particular communities.

- Work within interprofessional and intersectoral teams to integrate oral health promotion interventions with related health promotion interventions.
  Example: Organize a health care symposium focusing on the integration of various health care services.

- Reconcile differences between unions and decision-makers.
  Example: Utilize evidence from community health needs and professional interests to facilitate constrictive negotiation process.

- Manage stakeholder relationships.
  Example: Bring together representatives from government, education and frontline health care providers to formulate an oral health plan for a specific high priority community.

6. Diversity and Inclusiveness

This category identifies the socio-cultural competencies required to interact effectively with diverse individuals, groups and communities. It is the embodiment of attitudes and practices that result in inclusive behaviours, practices, programs and policies.

Expert:

- Create culturally safe and supportive environments within public health programs and organizations.
  Example: Monitor and address sexual harassment policies within the working environment.

- Support the development of a diverse public health workforce.
  Example: Participate in a staff orientation workshop to discuss diversity issues.

7. Communication

Communication involves an interchange of ideas, opinions and information. This category addresses numerous dimensions of communication including: internal and external exchanges, written, verbal, non-verbal and listening skills, computer literacy,

providing appropriate information to different audiences, working with the media and social marketing techniques.

Expert:

- Design management information systems to support oral health programs.
  Example: Use quality assurance strategies to evaluate internal and external communication.

- Transfer knowledge of effective oral health promotion interventions and policy development to key stakeholders.
  Example: Translate the results of oral health studies into recommendations for Ministry of Health decision-makers.

8. Leadership

This category focuses on leadership competencies that build capacity, improve performance and enhance the quality of the working environment. They also enable organizations and communities to create, communicate and apply shared visions, missions and values.

Expert:

- Develop a strategic vision for oral health within the organization.
  Example: Engage staff in developing an oral health strategy within the organization's mission and vision.

- Evaluate organizational performance in relationship to recognized standards.
  Example: Evaluate dental public health human resources using the organization's standards and guidelines.

- Build alliances and partnerships within changing political environments.
  Example: Initiate communication with key leaders in the changing environment.

- Manage resources to achieve optimal oral health and well-being.
  Example: Demonstrate accountability to the organization's leadership.

- Build the capabilities of the dental public health workforce.
  Example: Support continuing competence through participation in dental public health conferences.

- Build on successes to increase the capacity of the system.
  Example: Critique evaluations of dental programs to identify successes and failures.

10. Partnerships

10.1 Common Risk Factor Approach

Oral health has long been regarded as being outside of mainstream health; however, it is a critical component of overall health and should be included in the provision of health care and community programs.[6] As the risk factors (e.g. diet, tobacco, stress) of oral diseases are common to a number of other prevalent chronic diseases such as cardiovascular diseases, cancers and diabetes, it is rational to use a common risk factor approach.[33]

The underlying principle of the common risk factor approach is the promotion of general health through the control of a few key risk factors. It is proposed that an interdisciplinary approach can produce a substantial impact on a number of diseases in a manner that is less costly, more efficient and more effective than the traditional disease-specific approach. Another reason to partner with other sectors is to avoid duplication of effort, conflicting messages and the isolation of the professions.[33]

10.2 Affiliations

The same broad determinants of health that affect general health also influence oral health. Oral health, like all aspects of health, extends well beyond any single profession and thus partnerships are essential if public health is to influence upstream determinants of health such as social support and the conditions for healthy child development.[1,17]

In order to improve the population's health, the key informants indicated the Dental Consultant must be willing to form partnerships and work collaboratively with a variety of partners at the local, provincial and national levels, including:

- Academia, researchers and training facilities
- Advocacy groups
- Childcare providers
- Dental and other health professional organizations
- Federal, provincial and territorial connections through the Office of the Chief Dental Officer, FPTDD Working Group and the Canadian Association of Public Health Dentistry
- Health care workers
- Governmental departments (e.g. Departments of Health Promotion and Protection, Health, and Community Services, Seniors, Education, Environment, Justice)
- Local health regions/municipalities (e.g. District Health Authorities)
- Local public health and non-governmental organizations
- Private sector
- Public educators

11. Development and Implementation

11.1 Location

The majority of key informants stated that the Dental Consultant should be situated within the provincial department associated with chronic disease prevention, health promotion and population health. Poor oral health shares many of the same risk factors as diabetes and obesity such as smoking, poor eating habits and alcohol use thus locating the position with these disciplines would enable greater integrated approaches to health promotion programs. It is essential that formal recognition be given to addressing and to incorporating oral health concerns with general health concerns thus allowing the development of collaborative and horizontal preventive strategies with the mutual aim of minimizing diseases.

There was much discussion as to the most appropriate location for the position of the provincial Dental Consultant. Most stakeholders believed that it would be best to develop a horizontal governmental relationship with linkages to a variety of departments such as Health, Health Promotion and Protection, Community Services, Seniors, Justice, Education and Environment. Ultimately creating the strongest relationship with the department working with chronic disease prevention and strengthening the connection between oral health and general health would be of primary concern. This would lead the position of Dental Consultant being housed within the Department of Health Promotion and Protection with its roots firmly based in public and population health. It was also perceived by the informant group that in order to have some influence in the government for issues concerning oral health, it would be most advantageous to have the Dental Consultant report to the Chief Public Health Officer, who reports directly to the Deputy Minister of Health Promotion and Protection.

The Department of Health Promotion and Protection comprises focal areas that could also involve collaboration with an individual with oral health expertise, some of which include Healthy Eating, Tobacco Control, Chronic Disease Prevention, Injury Prevention and Health Disparities. Although a concerted effort must be made to shift the mindset to be more preventive in nature, one cannot exclude the treatment component of dentistry. Undoubtedly, the Dental Consultant would want to maintain strongly connected to the Department of Health and the Department of Community Services as they deliver the programs pertaining to the provision of oral care services to the public.

It was proposed by many key informants that the Dental Consultant should also maintain a part-time appointment in the Faculty of Dentistry at Dalhousie University. It is believed that some involvement (i.e. 10-20% time commitment) with the university through teaching and/or research would give the position credibility as participation in the faculty would require the individual to remain current with evolving literature and practices.

Presently, there is pressure to restore dental public health capacity in Nova Scotia to meet the existing and future oral health needs of the population. There was some discussion as to whether there should be one or two positions created, one in government and the other in academia or one position (part-time at both the university and in the government) that would eventually evolve into two positions. A few key informants felt that it may be difficult to have a split position in both academia and government as the skills are very different for each of the assignments with skills being more practice-based for government and more research,

theory-based for academia. Another informant noted that equal sharing of the position between the government and the university has not had a good history as politically he/she may need to address issues from opposing views.

It was felt by stakeholders that in an ideal world, the position would eventually progress to employ a workforce similar to the federal team at the Office of the Chief Dental Officer. The office would consist of personnel exemplifying a variety of skills outlined in the competencies. As previously mentioned, it is impossible to find an individual that encompasses all the desired skills. It is much more realistic to envision a team of skilled personnel that brings together a wealth of expertise to advance the oral health agenda in the government.

11.2 Barriers

A number of barriers that may be encountered in the implementation of a position for a Dental Consultant were identified by key informants during the interviews:

- Maintaining a balance of interests between the dental professions (i.e. dentists, dental hygienists, dental assistants, denturists, dental therapists and dental technicians).
- Achieving a balance between the potential conflicting agendas of the government and external organizations.
- Promoting relationships between the various professions.
- Communicating the importance of oral health and having it considered as part of general health.
- Obtaining the necessary funds to finance the position of a Dental Consultant and possibly support staff that may be required.
- Finding an individual with the necessary training and personal qualities that would be suitable to be a Dental Consultant.
- Providing rationale as to why a position for oral health was created rather than providing resources for another discipline (e.g. epidemiology).
- Presenting a rationale as to why public funds should be directed towards oral health when dentistry is a private industry.

11.3 Facilitators

Key informants indicated several factors that would facilitate the promotion of oral health in the government:

- Awareness of the linkages between oral health and general health is growing stronger.
- Renewal of the public health system is supportive of a preventive approach that includes oral health.
- Because various partners were contacted for the development of the position for a Dental Consultant, it may foster ongoing relationships between these groups beyond the completion of this project.
- There is a public health system infrastructure already in place with approximately 19 FTE public health dental hygienists working across the province that could assist in promoting the mandate of the position.
- Timing is excellent with an aging cohort of politicians. Many are Baby Boomers and/or they may be caring for an elderly parent and thus they are becoming more aware of the connections between oral health and general health, as well as the issues concerning access to care for this cohort.
- Important partnerships already exist between academia (the research community) and the provincial government.

12. Options

The primary purpose of this document is to discuss the need for some type of dental public health infrastructure in the Nova Scotia government. Most stakeholders felt that there is an immense need for guidance, leadership and expertise in oral health in the provincial government. The main concerns stem from the desire to maintain current oral health programs and dental public health infrastructure while enhancing the public health focus and addressing existing and future unmet needs of Nova Scotians. In respect of the differences in the management and delivery of oral health services and programs across the provinces and territories, two options were developed for consideration by the government of Nova Scotia.

1. Shared Part-time Dental Consultant Position

The first option would be to staff the Dental Consultant at a part-time equivalent or possibly at a full-time equivalent with the position being shared with another program at the provincial level or with a university faculty. This option would have less of a financial commitment for the province and could allow for interesting partnerships to develop. The drawback to this type of scenario, however, is the management of time, responsibilities and expectations of the shared positions. This could potentially lead to less progress being achieved in either or both domains if the individual needs to divide and prioritize his or her time between the two assignments.

2. Full-time Dental Consultant Position

Nearly all of the key informants suggested the second option which is to develop and maintain a full-time position for a Dental Consultant at the provincial level. This would ensure that momentum is maintained on established oral health programs and networks. Choosing this option increases the ability to integrate oral health into the scope of general health initiatives and to address current oral health issues pertinent to Nova Scotians. In addition, the Dental Consultant could assume responsibility for oral health issues that are presently managed by the Chief Public Health Officer, including fluoride and product safety.

Several of the stakeholders indicated that to adequately address the issues discussed in this report would require a full-time commitment of the Dental Consultant, if not a small team. Many believed that a shared or part-time position may hinder progress as priorities would be divided between various assignments and thus may lead to a lack of time available to devote to the position. This option requires a strong commitment to change from the outset and it would have financial implications.

The proposed total for the implementation of such a position would be approximately $233,000. Upon initial consideration, the cost of implementing a position for a Dental Consultant in Nova Scotia appears costly. However, the expense is less than 0.01% of the total currently spent on dental expenditures in the province (i.e. $255.5 million). Please see Appendix 14.9 for details of the potential budgetary considerations in the implementation of a full-time position.

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14. Appendices

14.1 Terms of Reference

Review of Oral Health Expertise for the NS Dept. of Health Promotion and Protection
Terms of Reference
May 5, 2008

Background:

Over the past number of years, the position of provincial Dental Consultant has been filled on a part-time basis. Prior to having a part-time position, a permanent, full-time Dental Consultant resided within the Department of Health and that position provided the legal framework for the supervision of public health dental hygienists. With the District Health Authority Act, public health services have been devolved to the District Health Authorities and public health dental hygienists no longer provide individual prophylactic treatment.

When the Department of Health Promotion and Protection (HPP) was created in 2006, the Dental Consultant position was moved into HPP. With the approval of The Renewal of Public Health in Nova Scotia: Building a system to meet the needs of Nova Scotians in 2006 and the reorientation/reorganization of HPP, it is timely to look at the required resources to ensure a coordinated, responsive and efficient public health system in Nova Scotia including oral health.

Objective: To review the need, role, responsibilities, and mandate of oral health expertise (primarily from a public health perspective) within the new NS Department of Health Promotion and Protection.

Process:

Data gathering:
1. Review the legislation, policy documents and reports related to public health, oral health and public health oral health needs.
2. Review the current public health system structure and resources (people, programs, and funding) that support oral health promotion and prevention.

Consultation:
3. Consult with key stakeholders including but not limited to: Department of Health Promotion and Protection, Public Health dental hygienists, Public Health Directors from District Health Authorities, Dalhousie University (Faculty of Dentistry and School of Dental Hygiene), Department of Seniors, Department of Health, the Nova Scotia Dental Association, the Nova Scotia Dental Hygienist Association, DHA Senior management

Analysis and Synthesis:

4. Develop an overview of the results of the data gathering and consultation phase.
5. Provide feedback to the stakeholders group to present the overview and gather further input (September 2008)
6. Develop the final report: The path forward
7. Present the final report to the Chief Public Health Officer for Nova Scotia and the stakeholders.

Timeframe:

Summer 2008-Fall 2008

Sponsor:

Dr. Robert Strang, Chief Public Health Officer

Project Lead:

Heather Christian, Director - Healthy Development

Project Team:

Dr. Peter Cooney, Chief Dental Health Officer (Lead External Reviewer)
Amanda Gillis, Health Canada
Dr. Ferne Kraglund, Dental Public Health student, Health Canada
Helen Pitman, Healthy Development, HPP
Dr. Carl Canning, Healthy Development, HPP
Norma McIntyre, PH Dental Hygienist DHA 4,5,6

Budget:

The external consultant (Chief Dental Health Officer) and Health Canada staff is participating in this review as part of their mandate with Health Canada. Their travel costs will be the responsibility of Health Canada.
The Nova Scotia Department of Health Promotion and Protection will cover meeting expenses, printing and communication costs.

14.2 Stakeholders

The following is a list of individuals that were interviewed and/or provided feedback during the development of the *Nova Scotia Oral Health Review* document:

- Dr. Bill Adams; Dental Consultant, NS Department Community Services (Quikcard)
- Abe Almeda; Director, Acute Care, NS Department of Health
- Dr. Tom Boran; Dean, Faculty of Dentistry, Dalhousie University
- Janet Braunstein-Moody; Senior Director, Public Health
- Dr. Carl Canning; Healthy Development, HPP; Assistant Professor, Dalhousie University
- Dianne Chambers; Public Health Dental Hygienist, Capital District
- Heather Christian; Director, Healthy Development, Health Promotion and Protection
- Dr. Joanne Clovis; Associate Professor, Dalhousie University
- Bev Corbin; Director of Business and Integrated Services, Dept. of Community Services
- Dr. Greg Jones; Regional Dental Officer for the Atlantic Region
- Curtis Karrel; Manager of Government Programs & Business Development, Quikcard
- Lynn Langille; Coordinator, Health Disparities, Health Promotion and Protection
- Dr. Terrie Logue; Vice-President, Nova Scotia Dental Association
- Joyce MacDonald; Public Health Dental Hygienist; Cape Breton Health Authority
- Dr. Bill MacInnis; Registrar, Provincial Dental Board of Nova Scotia
- Sue MacIntosh; Nova Scotia Dental Hygienists Association
- Carol MacKinnon; Director, Public Health Services, DHA 1, 2 and 3
- Norma McIntyre; Public health dental hygienist, District Health Authorities 4, 5 and 6
- Dr. Mary McNally; Associate Professor, Dalhousie University
- Nancy Neish; Director, School of Dental Hygiene, Dalhousie University
- Don Pamenter; Executive Director, Nova Scotia Dental Association
- Helen Pitman; Healthy Development, Health Promotion and Protection
- Dr. Rob Strang; Chief Public Health Officer, HPP
- Valerie White; Chief Executive Officer, Department of Seniors
- Karen Wolfe; President, Nova Scotia Dental Hygienists Association

14.3 Interview Questions

Rationale

1. Identify any gaps or issues you see relating to oral health in Nova Scotia.

2. Do you feel there is a need for oral health expertise at the level of the provincial government? Why or why not?

3. (For non-dental representatives): What issues have you encountered in your work/ organization relating to oral health?

Role and Responsibilities

4. What do you believe will be the role of the Dental Consultant?

5. What responsibilities do you feel would be associated with this appointment?

Skills and Competencies

6. What skills and/or competencies should one have to adequately carry out this appointment?

Partnerships

7. What partnerships do you see this position helping to develop?

8. How do you see yourself or your organization working with this individual?

Development and Implementation

9. Who do you think should be involved in the development of this position?

10. In what department of the government should this position be placed?

11. What barriers do think may be faced with implementing a Dental Consultant position?

12. What elements currently in place do you think will facilitate the implementation of this position?

13. Any other concerns or comments?

14.4 Total and Public Dental Expenditures

The total expenditures for dental care and the proportion paid through public funds in Canada from 1990-2005.[a]

	1990		1995		1999		2005[b]	
Province	$ million	% public	$ million	% public	$ million	% public	$ million	% public
BC	644.5	6.9	875.6	7.9	1,099.3	6.0	1,689.6	3.9
AB	476.8	18.6	567.9	10.1	739.0	8.5	1,068.7	6.6
SK	109.2	22.1	140.8	18.7	142.4	17.5	215.7	13.8
MB	155.9	11.8	199.2	14.7	216.3	11.5	302.7	9.0
ON	1,741.6	2.0	2,410.5	2.1	2,927.8	1.6	4,109.0	1.5
QC	770.0	16.7	981.7	15.4	1,287.7	10.2	1,741.4	8.8
NB	65.2	8.6	83.6	8.1	105.0	6.2	162.5	4.6
NS	106.2	17.2	129.9	11.4	153.6	9.2	255.5	5.1
PEI	15.2	15.1	22.3	10.3	21.3	11.8	34.1	9.0
NL	40.2	21.9	55.9	12.8	59.0	11.5	87.1	7.4
YT	2.6	54.8	5.1	46.0	6.9	44.1	10.5	30.3
NWT	11.2	47.8	13.1	54.7	12.0	56.9	13.2	56.2
NU	-	-	-	-	3.6	64.6	12.2	79.1
Canada	**4,138.9**	**9.2**	**5,485**	**7.7**	**6,773.9**	**5.8**	**9,702.1**	**6.0**

a The figures from the 1990's are taken from Baldota et al. and the 2005 figures are courtesy of the Community Dental Health Services Research Unit, Faculty of Dentistry, University of Toronto.

b Estimated figures

14.5 Comparison of Public Dental Expenditures (1999 and 2005)

The comparison of dollars (unadjusted for inflation) allocated to public dental expenditures in Canada in 1999 and 2005.[a]

	Public dental expenditures 1999 ($000)	Public dental expenditures 2005 ($000)[b]	Difference ($000)
British Columbia	65,958	65,975	17
Alberta	62,815	71,188	8,373
Saskatchewan	24,290	29,766	4,846
Manitoba	24,875	27,379	2,504
Ontario	46,845	62,476	15,631
Quebec	131,345	152,832	21,487
New Brunswick	6,510	7,549	1,039
Nova Scotia	14,131	12,934	-1,197
Prince Edward Island	2,513	3,087	574
Newfoundland	6,785	6,487	-298
Yukon	3,043	3,181	138
Northwest Territories	6,828	7,400	572
Nunavut	2,326	9,681	7,355
Canada	**392,886**	**459,935**	**67,049**

a Figures from 1999 are taken from Baldota et al. and the 2005 figures are courtesy of the Community Dental Health Services Research Unit, Faculty of Dentistry, University of Toronto.

b Estimated figures

14.6 Public Health Dental Hygienists in Nova Scotia

District Health Authority	Number of Positions	Full-time Equivalents	Status
1- South Shore Health	2	2	Occupied
2- South West Health	3	3	Occupied
3- Annapolis Valley Health	2	1 (2 x 0.5)	Occupied
4- Colcheste East Hants Health	2	1.6 (1 + 0.6)	Occupied
5- Cumberland Health Authority	1	1	Occupied
6- Pictou County Health Authority	1	0.6	Occupied
7- Guysborough Antigonish Strait Health Authority	1	1	Occupied
8- Cape Breton District Health Authority	4	4	Occupied
9- Capital Health	6	4.23	Occupied (3.4) Vacant (0.83)
Total	**22**	**18.43**	

14.7 Dental Public Health Human Resources

The following table was taken from *Health Human Resources in Canada: Dental Public Health (Dental Public Health Specialists and Dentists in Community Practice)* by Quiñonez *et al.*

	Dental Director/ Consultant (FTE)		FPTDD representation[d]	DPH training	Years to retirement	Ability to move oral health agenda	Responsible for oral health staff	Dental public health programs		Safety net program	Total DPH expenditures ($000)[f]
	2006	1990						Prov/Terr	Regional		
BC	1	1	DDPH	Yes	<5	Yes	No	No	Yes	Yes	3,500
AB	0a	1	DDS/MPH	Yes				No	Yes	Yes	6,000g
SK	0b	1	DT/DH	No				No	Yes	Yes	2,467
MB	1	1	DMD	No	10-15	No	No	Yes	Yes	Yes	1,800[g]
ON	1	1	DDPH	Yes	15-20	No	No	Yes	Yes	Yes	22,000g
QC	1	1	DMD	Yes	15-20	Yes	No	No	Yes	Yes	16,000g
NB	0	1	RD	No				No	Yes	Yes	50
NS	0.3	1	DDS	No	10-15	No	No	No	Yes	Yes	1,000
PEI	1	1	DDS	No	<5	Yes	Yes	Yes	Yes	Yes	1,600g
NL	0.4	1	DDS	No	<1[e]	No	No	No	Yes	Yes	2,541
NU	0c	1	DT	No				Yes	Yes	Yes	1,400
NWT	0		DDS	No				No	Yes	Yes	1,067
YT	0	1	DDS	No				Yes	Yes	Yes	1,063

a Alberta has two dental consultants and one manager (all dentists) spread throughout its health regions
b Dual trained dental therapist/hygienist acts as a provincial level dental consultant
c Dental therapist manages territorial programming, officially known as the Dental Health Specialist
d Qualifications of those on FPTDD working group: Diploma in Dental Public Health, Doctor of Dental Surgery, Doctor of Medical Dentistry, Masters in Public Health, Dental Therapist, Dental Hygienist, Registered Dietician
e Position is now being advertised
f Preventive and clinical dental public health services, excluding public third party payments to private practitioners and NGOs
g Estimations

14.8 Dental Public Health Competencies

1. Oral Public Health Sciences

This category includes key knowledge and critical thinking skills related to the dental public health sciences: behavioural and social sciences, biostatistics, epidemiology, environmental public health, demography, workplace health, and the prevention of chronic diseases, psychosocial problems and injuries. Competency in this category requires the ability to apply knowledge in practice.

Basic Shared:

- Recognize that oral health sciences are the foundation of dental public health.
  Example: Identify to children how cavities develop using explanations grounded in science.

- Demonstrate a willingness to pursue learning opportunities in dental public health.
  Example: Attend regional lectures and conferences.

Foundation:

- Demonstrate knowledge about the following concepts: the health status of populations, inequities in health, the determinants of health and illness, strategies for health promotion, disease and injury prevention, health protection and emergency preparedness, as well as the factors that influence the use of health services.
  Example: Access work-related resources that keep you informed about your community(ies).

- Demonstrate knowledge about the history, concepts, values, structure and interaction of public health, health care services and oral health services at local, provincial/ territorial and national levels.
  Example: Investigate the history of dental health services in the province including the start and stop dates for specific programs.

- Use research recommendations to support health programs.
  Example: Provide the public with information on the value of community water fluoridation.

- Demonstrate the ability to pursue lifelong learning opportunities in dental public health.
  Example: Access systematic reviews comparing manual and powered toothbrushes.

Advanced:

- Apply knowledge in behavioural, social and biological sciences to dental public health practice.
  Example: Apply the epidemiology triangle (host, environment and agent) to the issue of Early Childhood Caries.

- Use evidence and research to support dental health policies and programs.
  Example: Support breastfeeding programs based on scientific evidence that breastfeeding does not cause Early Childhood Caries.

- Apply knowledge of program evaluation to oral health interventions and programs.
  Example: Recognize a gap in program services and develop a plan to implement program changes to address this

.

- Apply knowledge of political action to support oral health policies and programs.
  Example: Initiate a dialogue about water fluoridation research with community groups.

2. Oral Health Assessment and Analysis

This category describes the competencies needed to collect, assess, analyze and apply information (including data, facts, ideas and concepts). These competencies are required to make evidence-based decisions, prepare budgets, and make recommendations for policy and program development.

Basic Shared:

- Recognize an oral health concern or issue.
  Example: Recognize that a child has red and swollen gums.

- Recognize that internal and external factors may impact oral health programs.
  Example: Identify that something is not working with the toothbrushing program.

- Recognize sources of oral health information, including community resources.
  Example: Be familiar with all written resources available through your dental program.

- Collect, store and retrieve information about dental public health services.
  Example: Collect and input information into a universal data collection program.

Foundation:

- Recognize the relationship between oral health and general health.
  Example: Provide information to a community group about the relationship between periodontal disease and diabetes.

- Identify oral health sources of information, including community assets and resources.
  Example: Review internet websites to access pamphlets about self-care instructions in different languages.

- Identify internal and external factors that may impact oral health services.
  Example: Recognize reasons why a Public Health Dental Clinic has declining attendance.

Advanced:

- Assess population oral health and its determinants.
  Example: Investigate the demographic characteristics of the children in schools in your area.

- Collect, store and retrieve information on dental public health issues.
  Example: Use data collection tools to document practice.

- Analyze oral health information to determine implications, uses, gaps and limitations.
  Example: Identify at risk segments of the school-aged population who would most benefit from oral health preventive programs.

- Identify options for next steps based on the review of oral health information.
  Example: Work collaboratively with management to determine the best allocation of resources for oral health programs.

- Use an evidence-based approach and other sources of information to inform oral health decisions.
  Example: Conduct a literature search about the presence of Bisphenol A in dental materials.

- Apply research methods used in dental public health including biostatistics and epidemiology.
  Example: Use non-parametric tests to explore the differences between the oral health needs of well seniors over a 10 year span using data collected annually at a seniors centre.

- Recommend specific actions based on the analysis of information.
  Example: Recommend removal of unhealthy food from schools given the increasing caries rate in school populations.

3. Oral Health Program Planning, Implementation and Evaluation

This category describes the competencies needed to effectively choose options, and to plan, implement and evaluate programs in dental public health. This also includes the management of stressful incidents such as outbreaks and emergencies.

Basic Shared:

- Describe oral health programs.
  Example: Respond to a telephone request for information about a school screening program.

- Assist in collecting information to support planning and evaluation.
  Example: Create a list of long-term care homes for the implementation of a survey.

- Assist in the implementation of oral health interventions.
  Example: Schedule appointments for dental screening.

Foundation:

- Describe selected program options to address specific oral health issues.
  Example: Identify the potential of a school fluoride mouthrinse program to address increasing rates of caries in school-aged children.

- Assist in planning of oral health programs.
  Example: Conduct interviews with new mothers about their top 3 oral health concerns for their baby as part of the planning process for a new prenatal program.

- Implement oral health interventions taking into consideration differing social, cultural and economic factors.
  Example: Meet with a local multicultural group to provide information about oral care and nutrition for pre-school children.

Advanced:

- Incorporate clinical epidemiology and clinical practice guidelines into planning of oral health interventions.
  Example: Use local statistical information to develop a fluoride varnish pilot project for 4 year olds.

- Select evidence informed strategies and interventions for the promotion of oral health, and the prevention and control of disease.
  Example: Develop a presentation for pregnant women to inform them about the transfer of oral bacteria between mother and newborn.

- Describe the implications of options as they apply to the social determinants of health.
  Example: Explore how a fluoride varnish program could provide increased access and decrease caries in children from low socioeconomic backgrounds.

- Plan a course of action taking into account relevant legislation, emergency planning procedures, regulations, policies and evidence.
  Example: While conducting a presentation for staff at a retirement home you observe several people wandering around dressed inappropriately and the home smells strongly of urine. A worker distributing medication cannot understand what you are asking. You determine a course of action that will ensure these issues are addressed.

- Set priorities to maximize outcomes based on available resources.
  Example: Determine which grades will be screened over a school year when one dental hygienist has to go off on extended leave.

- Implement a program to address the oral health priorities.
  Example: Review screening data to determine high, moderate and low risk portions of the community in order to sequence services so that those with highest need are guaranteed service.

- Manage the budget and available resources to support program sustainability.
  Example: Review monthly budget reports that outline contract Children Oral Health Initiative Programming and collectively determine work plans.

- Evaluate oral health programs using evaluation approaches and standards.
  Example: Collect information about client services provided, DMFT scores and client demographics during the course of an enamel sealant program.

- Implement continuing quality assurance.
  Example: Conduct calibration of all examiners on an ongoing basis.

- Assist in early identification, prevention and management of incidents, outbreaks and emergencies.
  Example: Identify a possible increase in the incidence of fluorosis in an area that might lead to an investigation of fluoride levels in the water supply.

4. Oral Health Policy Planning, Implementation and Evaluation

This category describes the competencies needed to effectively choose options, and to plan, implement and evaluate policies in dental public health for the improvement and protection of oral and general health, and well-being.

Basic Shared:

- Implement policies within the dental public health work environment.
  Example: Describe to teachers why screening service is only provided in inner city schools.

- Provide feedback regarding the impact and outcomes of oral health policies.
  Example: Report feedback received from the public about the steps required to apply for financial assistance.

Foundation:

- Work with others to implement oral health policies.
  Example: Collaborate with other community partners to implement a universal 1-year dental screening program.

- Collect data about oral health policies to support their evaluation.
  Example: Collect screening outcomes for a regional and/or provincial kindergarten survey.

- Identify gaps in oral health policies to relevant decision-makers.
  Example: Identify the need for an information protocol to assist clients screened in public health clinics who do not qualify for financial assistance.

- Make suggestions to improve oral health policies.
  Example: Identify to your manager the need to provide clients with information about low cost dental clinics.

Advanced:

- Analyze policy options related to oral health issues.
  Example: Consult with colleagues from Health Protection to integrate the provincial infection control protocols that were developed for hospital and private practice context into dental public health programs.

- Interpret and communicate information about policies within organizational context.
  Example: Explain a new immunization policy introduced for front line workers interacting with the public to the office based staff members who do not agree with its elements.

- Develop recommendations related to oral health policy issues.
  Example: Adapt policies related to monthly biological monitoring of sterilizers to accommodate to the frequency of use parameters of the dental program.

- Write policy statements related to oral health programs.
  Example: Write a policy and procedure manual.

- Assist with the development and application of legislation related to oral health issues.
  Example: Participate in the consultation process related to a provincial review of public health program standards.

5. Partnerships, Collaboration and Advocacy

This category captures the competencies required to influence and work with others to improve the health and well-being of the public through the pursuit of a common goal. Partnership and collaboration optimizes performance through shared resources and responsibilities. Advocacy- speaking, writing or acting in favour of a particular cause, policy or group of people- often aims to reduce inequities in health status or access to health services.

Basic Shared:

- Respect the varied roles and scopes of practice of public health workers and community partners.
  Example: Identify the need to refer a client to a dietician when questions are beyond your scope of knowledge.

- Promote the value of oral health with the public and other health professionals.
  Example: Identify the importance of primary teeth to teachers.

- Work effectively with others to improve, support and promote oral and overall health.
  Example: Provide contact information related to low cost dental services.

Foundation:

- Clarify own role with the public and others as it pertains to oral health promotion.
  Example: Explain the role of dental public health workers to public health nurses.

- Work with related professions and communities on oral health initiatives.
  Example: Work with professionals and policy makers in long-term care facilities to include oral health assessments for residents.

- Build capacity for oral health and general well-being through community development strategies.
  Example: Work with community agencies, organizations, groups and individuals to problem solve access to care issues for high priority community groups.

Advanced:

- Collaborate with partners in addressing oral health issues.
  Example: Collaborate with social, medical, dental sectors when addressing access to dental care issues.

- Use skills such as team building, negotiation, conflict management and group facilitation to build partnerships.
  Example: Work with community groups to identify oral health issues and develop collaborative strategies together.

- Facilitate an equitable allocation of resources.
  Example: Work within management decision-making process to ensure oral health receive sufficient funding reflecting the needs of the community.

- Contribute oral health input into other programs and organizations.
  Example: Provide oral health input into general health assessments for clients entering long-term care facilities.

- Maintain linkages with community leaders and other key stakeholders.
  Example: Facilitate the development of a partnership between a community clinic and a dental hygiene program to provide oral self-care education for new immigrants.

6. Diversity and Inclusiveness

This category identifies the socio-cultural competencies required to interact effectively with diverse individuals, groups and communities. It is the embodiment of attitudes and practices that result in inclusive behaviours, practices, programs and policies.

Basic Shared:

- Recognize that the determinants of health influence health and well-being.
  Example: Recognize that income influences the ability to access dental care.

- Work with others to implement culturally sensitive health interventions for diverse populations.
  Example: Implement a culturally appropriate oral health session to an Aboriginal parenting group.

- Make suggestions to improve oral health interventions from a diversity and inclusiveness perspective.
  Example: Suggest having an interpreter present during an oral health session for new immigrants.

Foundation:

- Recognize how the determinants of health influence the health and well-being of specific population groups.
  Example: Identify how cultural beliefs about health and illness influence the oral health habits of individuals and groups.

- Apply culturally-relevant and appropriate approaches with people from diverse cultural, socioeconomic and educational backgrounds, and persons of all ages, genders, health status, sexual orientations and abilities.
  Example: Use examples of culturally relevant food choices when providing information about healthy food choices.

- Address population diversity in implementing oral health programs and policies.
  Example: Consult with community prior to developing oral health programs and policies to ensure they reflect the needs of its diverse groups.

Advanced:

- Apply knowledge of oral health inequities and inequalities in designing oral health programs and policies.
  Example: Negotiate with administrators of a homeless shelter to provide oral cancer screening clinics.

- Adapt oral health policies and program delivery and evaluation to respond to diversity population characteristics.
  Example: Gain information about a specific immigrant population to adapt an oral health program for the targeted group.

7. Communication

Communication involves an interchange of ideas, opinions and information. This category addresses numerous dimensions of communication including: internal and external exchanges, written, verbal, non-verbal and listening skills, computer literacy, providing appropriate information to different audiences, working with the media and social marketing techniques.

Basic Shared:

- Recognize the need to provide health information to non-professional community members.
  Example: Refer oral health inquiries from individuals, families, groups, coworkers and colleagues to appropriate sources of information.

- Communicate with individuals, families, groups, coworkers and colleagues about oral health.
  Example: Use plain language to explain key dental concepts to participants in an inner-city oral screening program.

- Use current technology to communicate about oral health issues.
  Example: Use email to communicate with others in the program.

Foundation:

- Interpret information for non-professional and community audiences related to oral health issues.
  Example: Describe the influence of caries on children's ability to eat, sleep and learn.

- Provide learning opportunities for clients to explore values, and to gain knowledge and skills about oral health.
  Example: Identify gaps in clients' oral health knowledge.

- Provide resources and information to the community and other professionals about oral health issues.
  Example: Develop facts sheets for residential care aids to help them support residents with dry mouth.

Advanced:

- Mobilize individuals and communities by using appropriate media, community resources and social marketing techniques.
  Example: Create public health announcements to promote oral health month.

- Create safe and supportive learning environments for clients to explore oral and general health issues and practices.
  Example: Develop oral health curricula in partnership with educational authorities/ jurisdictions.

- Use management information systems to improve oral health programs.
  Example: Use project management software to manage program cycles.

- Provide programmatic and scientific information tailored to professional and community audiences.
  Example: Develop a referenced table to highlight changes in antibiotic premedication related to dental services for the regional dental staff.

- Support the development of social marketing messages directed to oral health issues.
  Example: Work with communication consultants to shape a message related to smokeless tobacco.

8. Leadership

This category focuses on leadership competencies that build capacity, improve performance and enhance the quality of the working environment. They also enable organizations and communities to create, communicate and apply shared visions, missions and values.

Basic Shared:

- Support the mission and priorities of the public health organization where one works.
  Example: Identify the priorities of the programs to clients.

- Contribute to developing key values and a shared vision.
  Example: Participate in a staff meeting focused on the revision of program goals.

- Act ethically with clients, information and resources.
  Example: Protect the identity of clients when communicating information.

- Contribute to team and organizational learning.
  Example: Help new workers understand the importance of record keeping.

- Contribute to maintaining performance standards in oral health.
  Example: Report infractions of infection control guidelines.

Foundation:

- Contribute to implementing public health programs and policies in the community.
  Example: Support parents and community people to establish a low-cost dental clinic in a local community centre.

- Manage self, information and resources in a way that honours public health ethics.
  Example: Maintain confidentiality of identified internal processes.

- Contribute to team and organizational learning to advance public health goals.
  Example: Participate in the development of guidelines for end-of-life oral care in residential care facilities.

- Demonstrate an ability to share knowledge, tools, expertise and experience.
  Example: Contribute to collective knowledge on topics discussed at staff meetings.

Advanced:

- Operationalize the mission of the organization within the unit's scope of work.
  Example: Organize a workshop to develop a plan for making the mission obvious within the literature describing a new program.

- Create learning opportunities and build strong oral health teams with different skill sets.
  Example: Establish policies to support regular learning opportunities.

- Mentor others in their professional development initiatives.
  Example: Assist others to identify their performance goals and objectives.

- Advocate for and secure resources to promote oral health.
  Example: Work with community groups to gain grants from charitable organizations.

14.9 Budgetary Considerations of Implementation

The following are estimations only for the implementation of Dental Consultant on a full-time basis.

Personal	Salary[a] Benefits (20%)	$120,000 $24,000	$144,000
Office	Furnishings Supplies Equipment rental(s)	$15,000 $3,000 $4,500	$22,500
Continuing Education	Travel Training Membership fees Conference- Fees Travel Seminars/workshops Books/publications	$10,000 $4,000 $5,000 $3,500 $10,000 $500 $300	$33,300
Technology	Computer Printer Laptop Wireless handheld device Cell Audio-visual equipment Software	$2,500 $3,600 $2,600 $600 $2,000 $500 $500	$12,300
Services	Printing Courier/postage Translation Repairs/maintenance	$800 $1,000 $2,000 $500	$4,300
Miscellaneous	Contracts Hospitality Facility rentals Transportation	$12,500 $750 $2,000 $1,000	$16,500
Proposed Grand Total:			**$232,650**

a Based on regional review.

Notes:

- A team approach is recommended and can be identified from within current structures.
- The cost of implementing a position for a Dental Consultant in Nova Scotia is less than 0.01% of the total spent on dental expenditures in the province (i.e. $255.5 million).

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