A

Canadian Oral Health Strategy

Federal, Provincial and Territorial
Dental Directors

"The working group comprised of federal, provincial and territorial dental directors and consultants agree that the Canadian Oral Health Strategy is a valuable document that can be used by individuals and organizations as they see fit in the development of their oral health strategies."

Federal, Provincial, Territorial Dental Director's working group meeting- Montreal, August 2005

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Executive Summary

The first Canadian Oral Health Strategy (COHS) has been developed through a wide consultation process involving oral health professionals, health organizations and governments. In the Canadian Oral Health Strategy health issues are discussed and problems are identified; measurable, specific goals and objectives are established for the year 2010; and strategies to help achieve the goals and objectives are recommended.

Although measurement of the oral health status of Canadians in the past has been sporadic it is known that there has been a significant improvement in the overall level of oral health in the past three decades. Most of these improvements have been experienced by middle and higher income Canadians who tend to have lower disease rates and good access to care. Despite this overall improvement, there are 1/4 to 1/3 of Canadians who carry a higher burden of oral diseases and have limited or no access to professional services.

The purpose of the Canadian Oral Health Strategy is to raise the overall oral health of Canadians. This is done mostly through identifying inequities in the system, disparities in health and barriers to achieving optimal oral health. These issues are then addressed through a measurable, systematic approach.

Problems identified in the Canadian Oral Health Strategy include:

- Higher disease rates are concentrated mostly in specific segments of the population: low-income Canadians, Aboriginal citizens, recent immigrants, seniors and the disabled.
- There is a lack of leadership at the federal government level and some provincial and territorial levels in oral health planning, programs and evaluation.
- There are limited oral health promotion activities and/or integration of oral health with other health promotion and services.
- There is a low awareness amongst citizens and governments of the linkages between oral health and general health.
- There is no standardized and consistent approach for measuring oral health.
- A significant percentage of the Canadian population has limited or no access to oral health care services.
- There are difficulties in recruiting oral health professionals into careers in research, academics, public health and into specialties involving services to seniors, and disabled children and adults.

The Canadian Oral Health Strategy outlines the problems and barriers to achieving and maintaining optimal oral health, establishes goals for oral health for the year 2010 and establishes a standardized set of measurements for monitoring oral health and the effects of oral health programs. It also recommends strategies that oral health professionals, oral health organizations, regional health authorities and various levels of governments can use to improve the oral health of Canadian citizens.

The goals of the *Canadian Oral Health Strategy* are:

1. To improve oral health promotion that addresses the determinants of health, and to foster public awareness of the importance of good oral health and the relationship between oral health and general health.

2. To improve the overall oral health of Canadians.

3. To improve access to oral health care services.

4. To establish a country wide, standardized method of monitoring and surveillance of oral health, and to assure that oral health research is appropriately supported.

5. To assure appropriate numbers, distribution and education of oral health professionals.

The Canadian Oral Health Strategy is divided into 5 main themes, relating to the above goals. Each of the themes is developed separately and each is comprised of background information, measurable oral health goals and objectives, and strategies for improving health. The oral health goals and objectives are a mix of health outcome goals and process goals.

There are several strategies recommended for improvement of oral health. Health care in Canada comes under provincial and territorial jurisdiction, however many of the strategies can be applied regardless of location. Responsibilities for health are borne by individuals, assisted by the various levels of government, oral health organizations, oral health practitioners, educational institutions, researchers, employers, community organizations and other health jurisdictions. The strategies are listed such that any of these groups can choose from the list and implement them to improve oral health.

The strategies that permeate throughout the Canadian Oral Health Strategy include an improved leadership role by governments; integration of oral health promotion, prevention and treatment with other aspects of health care; standardization of methods of monitoring oral health and the progress towards the goals of the NOHS; investigation and incorporation of alternate methods of service delivery to address the needs of those who have inadequate access to care; development of a human resources strategic plan; and improved support for oral health research.

The Canadian Oral Health Strategy is the starting point rather than the end point in the process of improvement of oral health. Much work will follow, such as developing standardized monitoring processes, establishing a central location for cataloguing and storing survey results, establishing a process for determining and highlighting 'best practices', and acting on the strategies that are outlined. The development of the next Canadian Oral Health Strategy will have to begin by 2008 in order to take effect in 2010.

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Canadian Oral Health Strategy

Introduction

The Federal/Provincial/Territorial Dental Directors Group[1] (FPTDD) has taken a leadership role in the establishment of a *Canadian Oral Health Strategy (COHS)*. It is important that the *Strategy* belong to all stakeholders and all Canadians, and a process of assuring that is the case has been part of the overall plan. FTPDD has generated a series of draft documents to share with appropriate stakeholders; namely the FTPDD group itself, a wide ranging list of oral health organizations and professionals, and a reference group of Canadian oral health consultants.

The Goals and Objectives reflect the health needs of Canadians in 2004, and address the strategies to achieve them. The goals of the *Canadian Oral Health Strategy* are:

1. To advance oral health promotion, based on the determinants of health, and to foster public awareness of the importance of good oral health and of the relationship between oral health and general health.

2. To improve the overall oral health of Canadians.

3. To improve access to oral health care services.

4. To establish a country wide, standardized method of monitoring and surveillance of oral health, and to assure that oral health research is appropriately supported.

5. To assure appropriate numbers, distribution and education of oral health professionals.

Oral health is a very important component of general health. Poor oral health negatively affects growth, development and learning for children, nutrition, communication, self-esteem, and various general health conditions. Poor oral health is also a large economic burden with expenditures exceeding most other health conditions. Very little of oral health care is covered under Medicare, so the costs are borne mostly by individuals or private insurance plans. In Canada there are disparities in oral health, with lower income people having higher disease rates and limited or no access to care. On a population basis, in order to accurately assess needs, monitor outcomes, decrease disparities, improve access to care and ultimately improve oral health, it is necessary to take a strategic planning approach.

The Canadian Oral Health Strategy aims to increase individual and community oral health knowledge and practices by equipping Canadians with the knowledge, skills and resources they need to advance oral health efforts in their communities. It also stresses an 'increased access' approach, placing a particular emphasis on children and youth, low-income families, Aboriginal people, immigrants and refugees, the disabled and seniors. It complements other federal, provincial and territorial government initiatives including:

- Federal/Provincial/Territorial National Child Benefit Initiatives
- Federal/Provincial/Territorial Health Renewal and Early Childhood Development (ECD) Initiatives
- Provincial/Territorial Diabetes Initiatives
- National Children's Agenda
- Community Action Plan for Children
- Canada Prenatal Nutrition Program
- Gathering Strength: Canada's Aboriginal Action Plan and similar or complementary programs in the provinces and territories
- Aboriginal Head Start

Strategies in the Canadian Oral Health Strategy are a listing of actions that can be promoted and undertaken by oral health care professionals or organizations, governments, health regions, dental faculties, or individuals, and as such the COHS was written with all those in mind.

Canada is one of few western industrial nations that until now did not have an oral health strategy. Most European countries have been measuring progress towards the goals developed from national strategies for quite some time, and recently the United States developed a National Call for Action, which combined with the Healthy People 2010 document constitutes an oral health strategy.

The World Health Organization in describing its Global Oral Health Programme[2] states:

"Continuous emphasis by the Oral Health programme is made on:

- Collection of epidemiological data for evaluation of oral health systems and monitoring using WHO standards, and dissemination of results of data analysis;

- Providing for planning of oral health programmes with measurable goals as part of national plans. ……"

This gives further support for the concept of a strategic planning approach to the delivery of oral health services.

What is the Canadian Oral Health Strategy?

The Canadian Oral Health Strategy, developed through a strategic planning process, looks at our current oral health status, establishes goals of where we would like to be by a certain time, and recommends strategies to achieve the goals. More specifically, it contains baseline data on the state of oral health today; it contains specific measurable oral health goals and objectives for the year 2010 including ways of monitoring progress towards them; and, it contains specific recommendations that can be selected and implemented by provinces, territories, health regions, dental organizations, oral health professionals and individuals to achieve the national goals.

In Canada, most of the responsibility for health falls under provincial and territorial jurisdiction. Provinces and territories can use the Canadian Oral Health Strategy to help assess community oral health needs and to guide program development. Accountability will be incorporated into the delivery of oral health services in that there will be a mechanism whereby health outcomes can be monitored and effectiveness of programs can be measured.

The COHS looks at all of society and makes recommendations of what measures can be implemented to enable all people to enjoy the benefits of good oral health. As a result of the disproportionate levels of oral health and disease, many of the strategies, although they apply to all Canadians, need to be directed toward those people who are most in need of care.

The goals and objectives established in this first COHS are based on available evidence and on reasonable assumptions. They are also achievable – while for some segments of society they will already have been achieved, they set a target for other segments to work towards, knowing that they are possible.

The goals are related to the Canadian Dental Association[3] definition of oral health, which is:

> *"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."*

The indicators/objectives for the goals are a combination of subjective, self-report measures of oral health, clinical measures to assess oral health status, and system measures to assess delivery of services.

What the Canadian Oral Health Strategy is not!

As health care continues to evolve in Canada, helped by recommendations from the Commission on the Future of Health Care in Canada[4] (the Romanow Commission - 2002), the COHS will assist in the integration of oral health promotion with other health care services. Hopefully federal and local governments will gradually implement the population based, oral health programs suggested in the COHS. Changes will be made by choice, not by obligation.

The COHS is not policy setting, but rather it offers suggestions or strategies that governments or dental organizations can use to improve the health of their citizens. The intent is to encourage governments to address oral health issues identified in the COHS and act in an organized way in their approach.

The COHS will not change the primary source of oral health care - private dental clinics operating on a fee-for-service basis. It does, however, recommend an increase in alternative delivery systems to complement private oral health delivery, addressing needs that are currently not being met.

Although the COHS addresses many aspects of oral health that tend to receive less recognition than perhaps they deserve, it does not look at all details or disorders. Rather, it looks at the bigger perspective by focusing on the broad range of themes that cover the majority of problems or issues affecting the majority of people. A COHS is not a textbook of dental conditions or their cures.

The COHS is not a Canadian Oral Health Survey. It would be desirable to conduct an epidemiological national oral health survey on a regular basis, however it is not the purpose of the COHS to do so. Instead, the COHS recommends the development of common survey methods so that when provinces or regions wish in future to conduct surveys, they can/will measure the same things and in the same way so that results can be compared with other regions or across the country.

Improvement in Oral Health - How Does it Happen?

The oral health of citizens, like all other aspects of health, is influenced by many different factors. There are lifestyle changes that individuals can implement to improve their own health, activities that oral health professionals can do and programs or policies that health regions or governments can administer. The principle responsibility for oral health rests with individuals, assisted by oral health professionals and organizations, governments, employers, communities and other health jurisdictions. Strategies will be outlined that can be used by each of these sectors.

Oral health is influenced by the same broad determinants of health as other aspects of general health. Improvement in oral health can therefore be achieved if the broad determinants of health such as income and social status, education, social supports, health services and employment can be improved. Although the extent to which oral health professionals working in private practice can impact on the broad determinants of health is limited, it must be realized that oral health, like all aspects of health, goes well beyond any single profession and that a more integrated approach is necessary. Health professionals such as public health nurses, physicians and social workers often see individuals earlier or more frequently than dentists or dental hygienists. Therefore, a multifaceted approach may reach out to more people and be more effective than the traditional, independent approach.

For too long, oral health has been regarded as being outside of mainstream health. It is time to realize that diseases in the mouth have similar risk factors, causes and treatments as diseases elsewhere in the body. Good health promotion, taking into consideration the determinants of health, the risk factors and the causes of disease in general will help improve oral health in the same way that it can improve other aspects of health.

Improvement in oral health can occur when people have a better understanding of the ways of preventing disease, can apply these measures for themselves, and can access professional diagnostic, preventive and therapeutic care. In addition, community based supports and activities (for example fluoridation of water supplies) and the way in which health care services are organized, integrated and delivered can be major factors in the effectiveness of the health care system.

How Do We Know Oral Health is Improving as a Result of the Strategy?

In order to justify expenditures in health services, it is essential to be able to demonstrate that they are necessary and that they are in fact improving health outcomes for those using them. It is essential to advocate programs and services that can be accountable to the governments and society as a whole in terms of benefit for the expenditures made. In other words, the different aspects of oral health need to be put into meaningful and measurable health indicators and must be monitored on an ongoing basis.

Part of the COHS is recognizing the importance of standardized measuring and monitoring health outcomes. Since we are starting with no nation-wide epidemiological data collected in a comprehensive standard format, it is necessary to identify whatever data are available from regional, provincial and health district surveys that have been conducted in recent years and have a central database where they are accessible to policy makers and dental organizations. This is in part being carried out in a cooperative effort with the Community Dental Health Services Research Unit of the University of Toronto. As much as possible, these data will be used in developing the

first series of measurable oral health goals. It is realized, however, that in the first round of goal setting, some data will need to be extrapolated from other countries' data and experiences. One of the foremost aims will be to establish a database system that will facilitate future updates of the COHS. As more regional or local survey results are made accessible, future Canadian Oral Health Strategies can be more specific than the first one.

In addition to gathering together initial data, in future it will be most helpful if oral health indicators are measured in the same way. For example dental decay rates should be measured using the same indicators and similar age cohorts so that results can be compared between regions and against a national average.

The COHS will identify the indicators to be used in the future and will recommend collaboration on setting guidelines for surveys that health regions, governments or dental organizations can use to measure oral health.

Disparities in Oral Diseases and in Access to Care.

Like many diseases, oral diseases such as dental decay, periodontal disease and oral cancer are more prevalent among people of lower socioeconomic levels.[5] Not only do the disadvantaged groups in society have higher disease rates, they also have less access to dental care**.**

The highest dental decay rates are amongst low-income people, recent immigrants, Aboriginal peoples, and those with compromised health conditions. Studies have shown that people on the lower end of the economic scale have decay rates and treatment needs that are 2½ to 3 times that of people in the higher income levels.[6] The dental decay rates for First Nations and Inuit people of all ages range from three to five times greater than the non-Aboriginal population.[7]

The Canadian Oral Health Strategy looks at ways to both reduce the disease rates in the disadvantaged segments of the population and improve their access to care. There are four main types of barriers to access to care that need to be addressed: financial barriers, geographic barriers, social/cultural barriers and legislative barriers. If oral health is to improve in more at-risk people, it is necessary to reduce or eliminate the barriers that restrict access to health care.

The Oral Health, General Health Connection

There is a growing body of evidence that indicates that oral health is directly linked to general health. As was stated in the first Surgeon General's Report on Oral Health in the United States[8] "… oral health and general health should not be interpreted as separate entities."

In order to recognize and enhance the integration of oral health to general health, it is necessary to integrate health promotion activities, health services and the measurement of health outcomes.

> **"…. oral health and general health should not be interpreted as separate entities."**
>
> - Surgeon General's Report on Oral Health of America

For further discussion of the links between oral health and general health, readers are referred to Appendix 1 of this document.

Themes of a Canadian Oral Health Strategy

The Canadian Oral Health Strategy is developed using five main themes:

- Oral Health Promotion and Public Awareness;
- Oral Health, and Oral Disease and Disabilities;
- Improving Access to Care and Reducing Barriers to Oral Health Care;
- Monitoring, Surveillance and Research; and
- Human Resources

For each of the theme areas, problems are identified, objectives and indicators are established and strategies are developed to help to work toward achieving the goals. The strategies list activities that individuals, oral health professionals, oral health organizations, and governments or regional health authorities can do to address the challenges.

Development of a Canadian Oral Health Strategy is a continuous process. Canada's first COHS is simply the start of the process. We should think of the process as a continuously evolving, continuously changing series of ideas that are evidence based and measurable.

The target date to achieve the goals within the first COHS will be the year 2010, which gives enough time to initiate strategies but less time to see improvements in oral health outcomes that can be attributed to them. The next COHS will need to be started before the target end date of this one, and the time frame of future strategies will need to be established.

1. Oral Health Promotion and Public Awareness

The greatest improvements in the oral health of Canadians will be achieved through health promotion, education and awareness activities involving the public, health professionals and policy makers. The key to good oral health is to enable and empower citizens to take control of, and responsibility for, their own oral health. To do this they need to have the personal skills, knowledge and desire to practice good oral health behavior plus easy access to professional care when required. This needs to be supplemented with social policy that creates healthy, supportive environments and strengthens community action.

Oral health promotion will be most successful if it becomes an integral component of general health promotion strategies aimed at the reduction of common health risk factors. More than ever, there is a need for strategic alliances with other programs, providers and projects, and to focus on healthy living and healthy choices. Oral health will improve as a result of individuals practicing overall healthy life styles. Oral health professionals need to be participants in the health determinants landscape recognizing the impact such determinants have on the overall health of our community including oral health. We should be seeking opportunities for collaborative partnerships with agencies offering health promotion activities (such as diabetes programs, Heart and Stroke, child development programs, smoking cessation programs, community development programs, etc.), and other professional groups (such as physicians, nurses, dieticians, child caregivers and others) to get our messages across as a part of promoting good health in general.

In order to carry out coordinated oral health promotion activities across the country, Canada needs good leadership at the federal level. Other than those administering and delivering the First Nations and Inuit Health Branch programs, currently there are no oral health personnel within Health Canada. There needs to be a Chief Oral Health Officer within Health Canada, with the mandate to address oral health issues from a national perspective. A strong advocate who is in a position to help integrate oral health promotion into mainstream health promotion is essential if oral health is to be recognized as a component of general health.

In the United States in 2000 oral health promotion received a major boost through the Surgeon General's First Report on Oral Health of America. This report documented many of the inequities and deficiencies in oral health and lead to a 'National Call to Action to Promote Oral Health'[9] to improve the oral health of American citizens. An initiative similar to the U.S. Surgeon General's Report is required in Canada to emphasize the importance of good oral health, its impact on general health and the inequitable access to oral health care that currently exists.

While many Canadians are benefiting from relatively good oral health, gross inequities and inequalities in oral health do exist. It is therefore important that cooperative initiatives between governments and oral health care organizations are undertaken to promote good oral health for all people. As more evidence is gained about oral diseases and conditions, and as concepts that challenge traditional beliefs and misconceptions about oral health come forth, it is the dental professionals who are best suited to advance this information. Health promotion, however, needs collaborative efforts from all health providers, governments and community leaders, with the oral health professionals playing a leading, and integrating role for oral health. Canadians also need to be informed of the impact oral health has on general health and their overall quality of life. Because the accepted determinants of health are common to both general health and oral health, multidisciplinary initiatives addressing the determinants are more likely to be effective in improving the oral health of Canadians. Initiatives addressing issues such as nutrition, child development, maternal health and smoking cessation are amongst those that are more likely to be effective from a multilateral approach.

The Ottawa Charter[10] and Jakarta Declaration[11] are excellent documents describing collaborative approaches in health promotion. The Ottawa Charter provides a framework for implementing, directing and coordinating health promotion activities, and focuses on:

- Building healthy public policy
- Creating supportive environments
- Strengthening community action
- Developing personal skills
- Reorienting Health services

There are oral health inequalities in Canada, with certain segments of the population demonstrating higher disease rates and being at higher risk of disease than others. Although there can be high-risk individuals within any segment of society, there are particular groups that tend to be at higher risk than the general population. As stated by Watt and Sheiham[12]; "A reduction in oral health inequalities will only be achieved through the implementation of effective and appropriate health promotion policies which focus action on the underlying social, economic and environmental causes of dental disease." The total population approach of health promotion directed by the Ottawa Charter does not, however, preclude targeting some promotion and prevention activities toward high-risk segments of society.

"A reduction in oral health inequalities will only be achieved through the implementation of effective and appropriate health promotion policies which focus action on the underlying social, economic and environmental causes of dental disease."

- Watt & Sheiham

Increased education and awareness of oral health is necessary in the following areas:

- Population based oral health promotion, education and awareness for the general population.
    - Importance of oral health for general health.
    - Evidence based information on oral health including the relationship between oral health and general health.
    - The economic and social costs of poor oral health on the health care system, education and employment.
    - The effects of tobacco and smokeless tobacco on oral health.
    - The role of good nutrition and good oral health practices on oral health.
- Targeted oral health promotion, education and awareness for higher risk populations.
    - Oral health promotional activities targeted to low-income people and other at-risk groups.
    - Culturally sensitive oral health promotion for immigrant populations and Aboriginal peoples.
    - Oral health promotion that addresses the barriers to good health, and the psychological barriers to accessing care such as perceived need and fear.
    - Early childhood tooth decay prevention programs for high-risk groups (integrated with other health issues for infants).
- Oral health promotion, education and awareness for oral health practitioners
    - Clinical Practice Guidelines developed on evidence based information for oral health practitioners.
    - Training and education on cultural sensitivity.
    - Training and education on collaborative approaches to oral health.
    - Awareness of periodontal disease in terms of overall health, wound management and infection control.
    - Training and education in the provision of care for special needs groups including the elderly.
- Oral health education and awareness for non-dental health professionals.
    - Evidence based information and education for caregivers, physicians, nurse practitioners, public health nurses, nutritionists, social workers, etc.
    - Links and partnerships for collaborative health promotion activities.
- Oral health promotion, education and awareness for policy makers.
    - The importance of good oral health as part of general health.
    - The inequities in access to care and the burden of disease.

- The importance of comprehensive education and prevention programs for children and adolescents

Evidence based dentistry is just in its infancy and lags behind some other health fields such as medicine. In Canada, however, there have been evidence-based initiatives for about 15 years, mainly for specific programs in the public sector[13]. A relatively new organization, the Canadian Collaboration on Clinical Practice Guidelines in Dentistry[14] (CCCD), has established an excellent process for the development of evidence-based guidelines. Identifying practices and procedures with proven effectiveness are important for directing clinical activities, daily home practices and oral health promotion activities. Organizations involved in developing evidence based guidelines such as the CCCD, the Cochrane Collaboration[15] and the Campbell Collaboration[16], must receive adequate support from governments and organized dentistry.

In a multidisciplinary, collaborative approach of health delivery, organizations can learn from each other and can advance similar concepts together. Dentistry and the population at large can benefit from the strengths that many different health, social services and health promotion professionals can offer. The potential benefit from community coalitions of allied groups and agencies for the overall improvement in health and quality of life needs to be recognized and utilized.

Policy makers need to be knowledgeable about the importance of good oral health and of the effects of poor oral health on general health, the health care system, child development and education and the local and national economy through lost workdays. Senior government dental consultants and dental organizations should work together in order to provide policy makers with the best information in a timely and effective manner. This cooperative effort should also include other health professionals such as family physicians, public health nurses, nutritionists, etc. It is important for organized dentistry to appreciate that such interdisciplinary cooperation is necessary for the benefit of the public. It should not be seen as a professional threat and no conflict of interest should result.

Goal 1. To improve oral health promotion and public awareness of the importance of good oral health

Objectives for Oral health Promotion and Public Awareness

1. The establishment of an Oral Health Secretariat within Health Canada with the mandate of:
   - Establishing a major Oral Health Promotion initiative.
   - Integrating of oral health promotion with other health professional organizations.
   - Developing evidence-based resources for oral health promotion.
   - Assisting in the process of Evidence Based Clinical Practice Guidelines, along with the Canadian Collaboration of Clinical Practice Guidelines in Dentistry.
   - Implementing initiatives developed through the Canadian Oral Health Strategy.

2. A major national oral health promotion campaign coordinated cooperatively by the Canadian Dental Association, the Canadian Dental Hygienist Association, Health Canada and other health organizations.

3. A national report on the oral health of Canadians, equivalent to the U.S. Surgeon General's First Report on the Oral Health of Americans.

Strategies for Improving Oral Health Promotion and Awareness

What can oral health professionals do to improve public education and awareness?

- Remain knowledgeable on contemporary dentistry and dental hygiene through continuing education.
- Understand and practice the scientific principles of health promotion.
- Provide information on oral health including its impact on general health within their professional setting.
- Become familiar with and participate in, social and health initiatives within their local community, in which oral health promotion is or could be included.
- Establish multidisciplinary coalitions of health care providers for the promotion of general health, including oral health, to the public and to facilitate the education of other health professionals on oral health and its impact on general health.
- Establish local coalitions of oral health care professionals from both the private and public sectors, to organize and deliver oral health promotion initiatives within their area.
- Seek opportunities to raise the awareness of local, provincial and federal politicians on the inequities and inequalities that exist within the dental health care system.
- Support the national oral health promotion events sponsored by the Canadian Dental Association and the Canadian Dental Hygienist Association.
- Seek opportunities to raise the profile of oral health within their own social environment.

What can dental organizations and/or regional health authorities do?

- Be a reliable source of current oral health information for the public and health professionals.
- Provide assistance and consultation to school boards to review and implement oral health related curricula
- Undertake multimedia initiatives to educate the public on oral health issues including developing a web site with public access.
- Support the development of evidence based dentistry and clinical practice guidelines.
- Participate in coalitions of dental and other health professional groups to ensure accurate and consistent oral health information is provided to the public and health care practitioners.
- Establish multidisciplinary coalitions of health professional organizations for the promotion of general health, including oral health, to the public and to facilitate the education of other health professionals on oral health and its impact on general health.
- Support oral health promotion events sponsored by organizations such as the Canadian Dental Association and the Canadian Dental Hygienists Association.
- Provide training for dental professionals on cultural sensitivities and diversity.
- Seek opportunities to raise the awareness of local, provincial and federal politicians on the inequities and inequalities that exist within the dental health care system.
- Promote oral health issues as integral components of general health issues.

What Governments can do to improve oral health promotion

- There is an urgent need for a federal leadership role on oral health promotion and access to care. A Senior Dental Consultant or Chief Oral Health Officer position needs to be created and filled. The mandate of this position in part should be to move forward on
    - Country wide oral health promotion and prevention initiatives.
    - Advice to all branches of Federal government departments with programs or needs related to oral health.
    - Coordination of government programs.
    - Supporting the development of evidence based clinical practice guidelines, evidence based health information and evidence based public health initiatives.
    - Integrating the dental health care system into the general health care system.

- At the provincial/territorial level, the importance of oral health needs to be recognized by the presence of a full time Senior Dental Consultant dedicated only to oral health issues.
- Along with national, provincial and territorial oral health organizations, support national oral health promotion campaigns.
- Fund research on such topics as the oral health status of Canadians and the links between oral health and general health.
- Provide comprehensive public oral health awareness and education programs, including programs in schools, health units, community health centres and long term care facilities.
- Provide school based oral health education and preventive dental services.
- Undertake multimedia initiatives to educate the public on oral health issues including oral health topics being on their health information web sites.
- Assure information provided on various agencies' websites is accurate and provides the same oral health messages.
- Recognize the relationship between oral health and general health by raising the profile of oral health in programs addressing such issues as child development, maternity care, support for the frail elderly, etc.
- Improve integration between oral health and other health sectors.
- Ensure oral health representation on health related committees.
- Create a website location of health promotion resources or increase content on oral health promotion in existing health promotion websites.
- Development of oral health promotion policy (e.g. – product labeling)

2. Oral Health, and Oral Disease and Disabilities

Oral Health Status and its Significance

Oral health, as defined by the Canadian Dental Association, includes the concept of well-being, not just the concept of absence of infirmity: "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." The Canadian Dental Hygienists Association[17] emphasizes the integral link between oral health and general health in its statement "Oral health is essential for overall wellness."

The CDA definition leads to a subjective measurement of oral health status. Although people may have suffered from dental diseases in the past, if they are now able to function well, are satisfied with their oral appearance and are free from pain, they meet the definition of good oral health and they respond positively to self-report oral health surveys.

Good oral health contributes to Quality of Life. Quality of life is closely related to oral health status, and also depends on access to care, freedom from disease and discomfort, and satisfactory appearance. There are two types of measurement tools for oral health status and quality of life. One provides subjective, qualitative information that is gathered using self-report type measures which may measure quality of life and is more appropriate for adults or pre-school children. The second is clinical surveys, which tend to be easier and more accurate for children and adolescents, since it is easier to survey a representative sample of children through conducting the surveys in schools. There is value in both types of measurements, and a blend of the two should be used for monitoring oral health of both children and adults.

Functioning of the oral cavity is important for general health. In order to be able to chew and digest a variety of foods and to maintain good nutrition, healthy teeth and periodontal tissues are required. In terms of employment, self-esteem and social functions, appearance of the teeth is of prime importance. The literature is sparse regarding Canadian statistics on oral function and quality of life. With questions directed to these concerns now being included in the core and optional sets of the 2003 Canadian Community Health Survey, it will help to form a baseline for future monitoring[18].

The negative effects of oral pain in terms of suffering, missed workdays and school days, and expenditures for treatment are enormous. Canada does not yet have statistics on these effects, however a reasonable estimate can be derived from a proportional comparison of United States statistics. In the U.S. it is estimated that 2,700,000 workdays and 1,000,000 school days were missed in 1989 due to dental reasons[19]. A reasonable assumption is that in Canada one tenth of these numbers (270,000 workdays and 100,000 school days) is a working baseline. Oral pain also has devastating effects on pre-school children, through lost sleep, failure to thrive, malnourishment and poor learning.[5]

Other areas of oral health status where there is a lack of information in Canada are craniofacial malformations, acquired orofacial dysfunctions and mucosal diseases. These are areas where more research is needed in the causes, connections with general health, associated costs and methods of improvement. Some of these conditions include:

- Morphological orofacial malformations such as cleft lip and palate;
- Chronic orofacial pain and masticatory dysfunction: (6-8 % of population);
- Orofacial conditions in institutionalized populations (Psychiatric hospitals, chronic hospital wards);
- Oral management of sleep apnea;
- Oral auto-immune conditions (such as Lichen Planus); and
- HIV related conditions.

Edentulism (the loss of all permanent teeth) has decreased in the past four decades due to the improvements in preventive and restorative modalities. Many investigators predict there will be a major problem looming in the next two or three decades, however, as more and more people will enter their senior years with more of their own natural teeth in varying degrees of periodontal health and restorations. Many of these people may have reduced capacity to provide self-care and prevent further oral disease. The breakdown of heavily restored teeth at a time when other medical conditions and access to care issues preclude further restoration will be a major concern.

Dental Decay

In Canada oral health expenditures rank third in 1993 in all health care expenditures for diagnostic categories behind only cardiovascular and mental health care[20]. Seven percent of all health care expenditures are for oral health, amounting in 2003 to approximately $7 billion. The great bulk of these expenditures are for the prevention of decay and the treatment of the effects of decay.

In the past three decades, decay prevalence has reduced significantly, with rates in children today being less than one quarter of what they were in the early 1970's.[21] This reduction, however, has not been even across the population and the decay incidence has become very polarized. One quarter of the population still suffers from relatively high decay rates, and many of these people have little or no access to preventive and restorative care. The highest prevalence of dental decay in children occurs in Aboriginal children, recent immigrants to Canada and low-income families. At age 12, decay rates in permanent teeth vary from an average of 0.8 decayed, missing (due to decay) or filled teeth (DMFT) in some parts of the country, to greater than 5.0 in some First Nations communities. A recent study in one Canadian city demonstrated that children from the lowest income families have decay rates that are 2½ times those of children from the higher income levels[6]. Although decay rates declined significantly in the 1970's and 1980's, there is some evidence that this reduction bottomed out in the mid-1990s and there may even be some rebounding of decay rates in primary teeth and perhaps in permanent teeth as well.[22]

Even with the great decline in dental decay rates, early childhood dental decay is still the most prevalent childhood disease, being seven times more common than asthma. In many parts of the country, the number one reason for general anaesthetics in hospitals for pre-school children is for the treatment of the effects of dental decay. Early Childhood Tooth Decay (ECTD) is a particularly rapidly developing form of tooth decay, where decay occurs on teeth shortly after they erupt into the mouth and progresses quickly. The prevalence of ECTD is anywhere from 5% in low risk areas to 60% in some First Nations populations[23].

For the most part dental decay is preventable through simple, effective and safe methods including tooth brushing (using a fluoride containing tooth paste), targeted professionally applied topical fluoride (for higher risk individuals), fluoridation of community water supplies, dental sealants and diet control (amount, texture and frequency of sugars, carbohydrates, etc.). In order to reduce decay rates in the future, particularly in the higher-risk individuals, it will be necessary to increase health promotion and prevention activities, and also to enable those who have little or no access to dental care to be able to access preventive and treatment services. On the whole, the current dental delivery system has enabled the majority of Canadians to retain most of their teeth and meet the criteria of the CDA definition of good oral health, but is failing those who do not have access to care for various reasons that are explored further in the next theme.

Measuring Dental Decay

The most common way of measuring dental decay rates is to conduct clinical surveys to measure the average number of decayed, missing or filled teeth (DMFT) or tooth surfaces (DMFS) per child, or in primary teeth, the average number of decayed, extracted (due to decay) or filled teeth (deft) or surfaces (defs) (Note: the lower the number, the better). Although this index has served us very well in the past, it is becoming more difficult to measure today – the problems being:

- Because of the number and quality of tooth coloured dental fillings (and dental sealants, which may or may not be combined with fillings), the fillings are much more difficult to detect in a visual survey.
- The polarization of dental decay rates makes overall percentages less relevant. It over states the decay rates of the majority of children who are at low risk of decay and under-states the children who are at high risk of decay. To overcome this discrepancy, some jurisdictions also measure the 'Significant Caries Index[24]' (SiC index – Bratthall, 2000) which involves two measurements: the average DMFT of the population at a given age, as well as the DMFT of the 1/3 of the sample group with the highest decay rates. For example in 2002-03 in Prince Edward Island, the DMFT of grade 6 and 7 children was 0.7, while the SiC index of the worst third of these adolescents was 3.0

- The DMF index, although being very understandable to oral health professionals, is difficult to explain to and be understood by policy makers and lay people.

Despite the increasing difficulty of using the DMF index, it is still an excellent type of measuring tool and is the standard used by the World Health Organization for international comparisons[25], and therefore should still be used as one of the indicators in the Canadian Oral Health Strategy.

Easier and perhaps equally valid and useful measurements are to determine the percentage of individuals at a given age who have never experienced decay, and also the percentage of children who have 'unmet treatment needs'. For example, in various jurisdictions the percentage of six year old children with unmet treatment needs exceeds 20%, and 50% of children or greater have experienced dental decay by this age. Some areas are quantifying the measure of unmet treatment needs by also counting the number of quadrants or sextants with treatment needs per child needing dental treatment.

As previously mentioned, for adults, including seniors (and for preschool children), clinical surveys are less used and less reliable, due to the difficulty in getting a truly representative sample of sufficient size to be an accurate reflection of the population as a whole. For this reason, self-report surveys tend to be the preferred survey methods for quality of life issues and perceptions of oral health status. Clinical surveys for adults should still be used, however, to measure the aspects of oral health that are part of the WHO goals in order to get international comparisons. (DMFT at ages 35-44; CPITN at ages 35-44 and 65+; edentulism; fixed and/or removable prosthesis).

Periodontal Diseases

The 'periodontium' is the soft tissue and bone that surrounds and supports the teeth. Periodontal disease (or more specifically, periodontitis) is diagnosed when the soft tissue (gingiva or gums) becomes inflamed and the periodontal ligaments (which attach the root of the tooth to bone) break down, reducing the level of support for the teeth. In advanced periodontal disease, the teeth become loose, since there is no longer adequate bone support for them. If bone support for the teeth is lost, it is not able to regenerate itself.

When the periodontal tissues are healthy, the teeth have good support and the gums seal off the oral environment from the systemic system. When they are diseased, however, the gums bleed and bacteria and bi-products are able to gain access to the blood stream. Periodontal tissues become diseased when bacterial plaque collects on the teeth and goes unchecked, inducing an inflammatory response. To varying degrees, people accumulate calculus (tartar) on their teeth, which forms a mechanical barrier and makes it more difficult to remove the bacterial plaque on a regular basis.

The inflamed, bleeding tissues are in many ways a chronic wound and should be treated as such. Periodontal disease can be prevented by thorough home care (brushing and flossing) complemented by oral health professionals' preventive care on a regular basis. Where there is periodontal disease it is necessary to clear up the infection and enable the individual to prevent future occurrence of it. Treatment of periodontal disease sometimes requires antimicrobial (rinses or medications that kill germs) therapy and/or surgical intervention.[26] Untreated periodontal disease can lead to tooth loss and may be a factor in systemic diseases and conditions.

As a chronic wound, periodontal disease sites permit access from the oral environment to the blood stream. Thus it is understandable that there are links between periodontal health and diseases, and general health. There are known links between periodontal disease and cardiovascular disease[27], diabetes[28], pre-term low birth weight babies[29], as well as suspected links with aspirational pneumonia in the elderly[30]. Further research is necessary to investigate the type of links that exist between periodontal disease and systemic conditions to determine if they are causal (a cause and effect relationship - periodontal disease being a cause of systemic disease) or coincidental (periodontal disease being found in the same people who have other systemic disease because the risk factors are the same for both).

Prevention of periodontal disease is best accomplished through health promotion, addressing the determinants of health, education on the causes and effects of periodontal disease, reduction of the contributing factors such as tobacco and alcohol, and preventive professional care with a frequency based on the individual's needs.

Clinical measurement and statistical monitoring of periodontal disease is easiest done using the Community Periodontal Index of Treatment Needs[31] (CPITN), or the Periodontal Screening and Recording[32] (PSR). These measures are similar in nature and can be used in surveys to determine the prevalence of periodontal disease, or by practitioners for the use of informing clients of their periodontal status, for treatment and/or for referral to periodontal specialists. The CPITN is a standard measure used by the World Health Organization[33].

Oral Cancer

In Canada there are approximately 3,000 cases of oral cancer diagnosed per year, and 1,000 deaths due to oral cancer[34]. It is estimated that 75% of these cancers are directly related to tobacco and/or alcohol abuse. Where both smoking and alcohol abuse are present, the risk of oral cancer increases dramatically.

There are many different types of oral cancer, with different etiologies, affecting different oral tissues and having different outcomes and survival rates. For the Canadian Oral Health Strategy, however, they are grouped together in general terms as 'oral cancer'. Although oral cancer is not widespread, it is still one of the more common forms of cancer[35]. The effects are devastating in terms of mortality and disfigurement. Since the majority of oral cancer cases are attributable to smoking and alcohol abuse, reduction of these causes has the best chance of preventing and reducing the disease. Like any type of cancer, early diagnosis and treatment of oral cancer is important to reduce the impacts of the disease. More research into the causes, effects and treatments of the various forms of oral cancer is necessary.

Oral/Dental Injuries.

There are no reliable statistics in Canada of the prevalence of oral and dental injuries. The two main reasons for this are:

- Injuries are not classified and defined.
- Oral and dental injuries are under reported when they occur along with more serious injuries. For example, if one is involved in an automobile accident and suffers multiple, more serious injuries, in addition to minor dental injuries, the dental injury may not be reported.

Since the degree to which oral injuries is a public health concern is not demonstrated one way or the other, it would be good to have a database of the frequencies of oral/dental injuries, along with their classifications and the effectiveness of methods of preventing injuries. Most dental injuries, like general injuries, are preventable. Sports injuries can be prevented through awareness, advocacy, regulation and enforcement of mouth guards and helmets. This has been a demonstrated success in most hockey and football leagues in recent years in Canada. Also, there is evidence to show that automobile accident injuries could be reduced with a graduated licensing system.

Acquired Developmental Anomalies

Dental Fluorosis

Dental fluorosis in permanent teeth is caused by uptake of excessive fluoride during tooth formation (mostly when the children are under three years of age). It is a developmental anomaly of tooth formation resulting in discolouration and, in severe cases, pitting of the tooth surface or enamel hypoplasia. In mild forms it may be barely detectable white markings on the tooth surface. In moderate cases, it manifests itself as bilateral frosted white appearance extending from the cusps and may demonstrate some pitting on the enamel surface. In severe cases the tooth might be noticeably brown or might be poorly formed or broken down, impacting on the ability to speak, eat and socialize unhindered by pain, discomfort or embarrassment and may require complex restorative procedures to correct.

There is debate whether dental fluorosis is an isolated dental aesthetic factor or if it is a marker for systemic fluorosis with other health ramifications. The most thorough studies tend to side on the dental aspect and do not show clear evidence of systemic health effects of mild to moderate fluorosis[36].

In the 1940's with the work of Dean, it was found that the addition of fluoride to potable water systems at the rate of 1 part per million was the best balance of

reducing the prevalence of dental decay while at the same time limiting the risk of the development of dental fluorosis. Many communities in Canada introduced fluoridation of their water systems in the 1950's and 1960's. In the 1970's, use of toothpaste containing fluoride came into widespread use. Today people are ingesting fluoride from many different sources and the daily intake of fluoride from all sources may very well exceed the ideal levels. This has prompted some areas of the country to reduce the level of fluoride in the water to between 0.6 and 0.8ppm. Health Canada recommends that for communities that do not have naturally occurring fluoride in their water to add fluoride at the rate of between 0.8 and 1.0 ppm[37].

In parts of the country it is suspected that there are increasing rates of dental fluorosis, though there are little in the way of studies on the prevalence of fluorosis in Canada to properly document this. If informed decisions are to be made about the amounts of fluoride that should be in water systems or in products, it is important to establish a database of fluorosis rates and severity by measuring it using a common measuring protocol. It would also be advantageous to have the results of various studies available from an easily accessible location.

By having a common database of dental decay rates and fluorosis rates, more information would be available to communities that are contemplating the values of introducing fluoridation to their water systems.

Hypoplastic/hypocalcified teeth

There is speculation, based on anecdotal evidence only, that there is an increase in the prevalence of hypoplastic (or hypocalcified) permanent teeth, particularly molar teeth. Whether there is an increase or not is not documented, due to the lack of a database and monitoring of this anomaly. Any tracking of hypoplastic teeth will necessitate a decision regarding definitions and classifications of the disorder, and a method of surveying for it. If, in fact, there is an increase in the prevalence of hypoplastic teeth, it is important to know this so that research can be directed into the causes and the most effective prevention and treatment modalities.

Goal 2. To improve the overall oral health of Canadians.

Objectives for Improvement of Oral Health and Reduction of Dental Disease (by the year 2010)

1. **Improvement of Oral health status**

- In self-report surveys, at age 17, at least 75% of the population report that they are satisfied with the appearance of their teeth.
- In self-report surveys, at age 35-44, at least 75% of population report that the state of their oral health is Very Good or better.
- At age 35-44, 45% of the population has never lost a permanent tooth due to dental caries or periodontal disease.
- In self-report surveys, at age 35-44, no more than 20% of the population report that they are impacted by difficulties in chewing.
- In self-report surveys, at age 35-44, at least 75% of the population report that they are satisfied with the appearance of their teeth.
- In self-report surveys, at age 35-44, no more than 20% of the population report that they have been impacted by peri-oral pain within the last month.
- In self-report surveys, at age 65+, at least 70% of population report that the state of their oral health is Very Good or better.
- In self-report surveys, at age 65+, no more than 35% of the population report that they are impacted by difficulties in chewing.
- In self-report surveys, at age 65+, no more than 35% of the population report that they have been impacted by peri-oral pain in the last month.
- At age 65+, no more than 30% of the population has lost all of their natural teeth.
- At age 65, 50% of the population has 20 or more natural teeth.

2. **Reduction of Dental decay**

- At age 6, 50% of children have never experienced dental decay.
- At age 6, no more than 20% of children have unmet dental treatment needs.
- At age 12, 75% of children have never experienced decay in their permanent teeth.

- At age 12, no more than 10% of children have unmet dental treatment needs.
- At age 12, a DMFT of 1.0 or less
- At age 12, a 'significant caries index', DMFT of 3.0 or less.
- At age 17, 50% of adolescents have never experienced decay in their permanent teeth.
- At age 17, no more than 10% of adolescents have unmet dental treatment needs.
- At age 17, a DMFT of 3.0 or less.
- At age 17, a 'significant caries index', (SiC index) of 5.0 or less.

3. **Reduction of Periodontal disease**

- At age 35-44, no more than 60% of adults will have a CPITN score of 3 or 4.
- At age 65+, no more than 30% of adults will have a CPITN score of 4.

4. **Reduce Mortality due to Oral cancer**

- Reduction of mortality due to oral cancer to less than 900 deaths per year, through prevention (smoking reduction) and early detection of oral cancers.

5. **Reduce Oral/dental injuries**

- All provinces have in place sport helmet legislation for minor hockey
- All provinces have in place bicycle helmet legislation for under age 18.
- All provinces have in place graduated auto licensing.
- A database system in place to monitor the frequency and severity of dental/oral injuries.

6. **Reduce the prevalence of acquired developmental anomalies**

- Prevalence of moderate or severe dental fluorosis (TSIF level 2 or greater) on 8 year old children of less than 7%
- A database system, using a common measuring method, in place to monitor the frequency and severity of dental fluorosis.
- A database system, using a common measuring method, in place to monitor the frequency and severity of hypoplastic teeth.

Strategies for improving Oral Health, and Reducing or Managing Oral Disease and Disabilities

To help improve the oral health of Canadian citizens, oral health professionals can:

- Keep abreast of new research in oral health.
- Implement policy/practice changes that reflect new research.
- Participate in continuing education programs.
- Advocate to government for oral health program and research funding increases.
- Promote and participate in sports mouth guard clinics.
- Ensure that clients/patients understand their options and the risk, benefits and side effects of treatment.
- Treat the infectious nature of dental disease before expensive restorative efforts are undertaken.
- Liaise on a local level with other health professionals to position oral health with overall health.
- Be alert to general health concerns in relation to oral health conditions.
- Study and follow clinical practice guidelines developed by 'evidence-based dentistry' committees.
- Improve dialogue between dentists and dental hygienists regarding a client's/patient's periodontal health.
- Adopt the CPITN or PSR methods of screening for periodontal health.
- Adopt routine screening for oral cancer as part of routine dental examinations.
- Refer appropriately to dental specialists.

Dental Organizations or Health Regions can:

- Advocate to government for oral health program and research funding increases.
- Conduct mouth (sports) guard clinics.
- Keep abreast of new research in oral health.
- Promote and conduct school based preventive services.
- Improve access to care by reducing barriers and/or improving knowledge of funding programs.
    - Include dental services in community health centers.
    - Provide reduced cost clinics for low-income people.
    - Develop seniors programs, delivered on-site at collective living centres.
- Develop, promote and incorporate clinical practice guidelines based on evidence.
- Liaise with the general oral health community on issues of mutual concern.
- Promote early detection, prevention and appropriate treatment or referral of oral disease.
- Assess the evidence and if indicated, adopt community water fluoridation.

Things that Governments (provincial, territorial and/or federal) can do

- Confirm a position of Chief Dental Officer to provide all levels of government with policy integration and consultation, promotion and information in relation to all aspects of oral health for the public, for federal programs and for emerging issues.
- Improve access to oral health care services (see recommendations in the section on improving access to care).
- Investigate, promote and implement alternate service delivery (such as delivered in homes, community health centres or other community facilities) to address the needs of people who do not have adequate access to care.
- Ensure that oral health issues are included or at least considered in all chronic disease initiatives.
- Promulgate legislation that makes healthy choices the easiest choices for people.
- Support and encourage committees that are developing clinical practice guidelines based on evidence.
- Provide comprehensive oral health programs, including diagnostic, preventive and restorative treatment, for low-income people, including those on social assistance and the working poor.
- Establish and support school based prevention clinics, including targeted oral health education, topical fluoride and application and dental sealants.
- Monitor and adjust fluoride levels in drinking water, based on prevalence of dental decay and prevalence of fluorosis.
- Promulgate legislation regarding bicycle helmets, sports helmets and/or mouth-guards, graduated licensing, etc.
- Increase oral health research funding and provide multi-year funding for CIHR and CIHI.
- Ongoing consultation with public groups and the oral health community in order to involve them in the needs assessments and designs for public health delivery programs.
- Examine and define the role of dental public health and directly delivered public dental programs in the provinces and territories.
- Create a new public health institution to oversee increased funding for:
    - Oral health promotion and disease prevention programs in schools, community health centres, and long-term care facilities
    - Implementation of the Canadian Oral Health Strategy

3. Improving Access and Reducing Barriers to Oral Health Care

Although Canadians in general have enjoyed tremendous improvements in the level of oral health over the past three decades, there are segments of the population that have not experienced these improvements. Much of the burden of dental disease is now concentrated in less advantaged individuals, namely elderly, low income, transitional youth, Aboriginal, northern dwelling, and mentally and/or physically challenged individuals. These are the same people who in addition to having higher levels of dental disease often have limited or no access to oral health care. In the evolution of the dental care and dental service delivery, a fundamental principle is that all Canadians should have access to basic treatment and preventive care.

Improving access to care involves identifying and addressing the barriers that restrict or impede people from attending preventive or treatment services. The principle barriers to accessing oral health care are similar to those affecting other forms of healthcare including geographic access, financial access, social/cultural access and legislative access. This section looks at each of the general barriers to access to care, lists goals and indicators that measure utilization of services, and gives strategies that can be used to improve access.

Geographic access

Canada is a vast country with the second largest geographic size in the world, but with a small and very concentrated population density. The great majority of Canadians live within 200 kilometers of our southern border. These great expanses complicate health service delivery for more isolated populations, thus creating access to care issues. The majority of health care professionals prefer to live and work in the urban areas, leading to an oversupply of care workers in some urban areas and a shortage in rural or isolated areas. Statistics Canada reports show considerable variation in dental utilization rates from region to region. Provincial utilization rates vary from a high of 66.7% in Ontario to a low of 44.0% in Newfoundland and Labrador (Statistics Canada – 2000-01

The needs of small and/or isolated communities determine the types of services that will be best suited. If an area has too low a population to support a dentist on a regular basis, then alternative service delivery is necessary. Further integration, education and support with non-dental health care workers for providing preventive services and recognizing treatment needs would also contribute to improving the oral health in isolated communities. For example, a Community Health Nurse could be trained to apply fluoride varnish, provide oral health education and to screen for obvious dental problems.

In order to attract oral health professionals to under serviced areas, it is necessary to look at incentives to make it a more attractive work and lifestyle situation. The incentives can be financial, social, cultural or educational, or a combination of them.

School based diagnostic, preventive and restorative services in rural communities, provided by salaried or contract oral health professionals can help in removing the geographic barriers and increasing access to preventive dental services, thereby improving oral health.

For seniors and handicapped people in the community and in institutions, the distances do not need to be very great to be a barrier to accessing the care that they need. It is necessary to take the services to the people in cases where the people cannot get to the services. If Long-Term-Care facilities were to provide space and necessary equipment for the provision of dental services to their residents, that would enable public health departments to make arrangements with dentists and dental hygienists to provide preventive and reparative services on-site.

Financial Access

Private dental practitioners on a fee-for-service basis deliver most dental health services in Canada. According to Statistics Canada figures[38], 53% of Canadians have dental insurance that covers all or part of their needs. Another 5% of people are covered under public financial assistance programs for their basic or emergency needs. There are 30-

40% of people who pay for dental services out-of-pocket. In addition, there are a percentage of insured people for whom the co-pay portion of the costs creates a financial burden. This leads to a significant number of people, measuring in the millions, for whom there is a financial barrier to access to oral health services. While 80% of high-income Canadians have dental insurance, only 11% of low-income elderly have dental insurance. In most provinces welfare assistance programs cover treatment directed toward relief of pain or infection, and prosthetic replacement of teeth that have been lost.

According to Statistics Canada in 1998/99 about 80 percent of adult (age 12 and over) Canadians of the highest income levels visited a dentist. This is comparable to the percentage of Canadians in all income brackets that visited a medical doctor in that same year. In lower income brackets, however, fewer people visited a dentist; 45-50 percent in the low-middle income bracket and less than 40 percent in the lowest income levels. (See Appendix 3)

Seniors are the lowest dental care utilization group, with 41.1% having utilized dental services within the previous 12 months compared with the overall national average for all Canadian adults of 60.0%[39] (Statistics Canada - 2000-01). Many of these seniors are living on low, fixed incomes and if they did have insurance while they working, this insurance lapsed upon retirement.

Social/Cultural Access

An aspect of access to care that is given less attention than it is due is social access. Social access means that the client is able to access care in a comfortable setting where he/she can feel at ease, from a cultural, social and linguistic point of view. Simply providing access financially and geographically does not assure that the client will attend for services. Recent immigrants and Aboriginal people often would prefer to have services available in their own language and where the provider is from, or at least familiar with, their own cultural background. Many low-income families prefer a public clinic setting, especially when the parents themselves do not attend a private dental office on a regular basis.

In addition to the issue of access to care is the barrier to 'accessing care' due to personal or psychological reasons. After the physical barriers to accessing care are removed, the strongest predictors of low utilization are perceived need and fear.[40,41]

Legislative Access

It is important that legislation dealing with dental services protects the client from potential harm and regulates the delivery of the services. At the same time, however, legislation should not restrict clients from accessing the care that they need. Legislation should be built around assuring access to care, and options to care delivery, provided by the professionals who are adequately trained to provide the care. The public benefits from having all segments of the oral health care system working together and legislation can facilitate this co-operation.

In some provinces dental hygienists work independently to varying degrees and have been lobbying for the right of providing care directly to the public rather than on prescription from a dentist. Although there is not yet data from Canada that measures outcomes from this measure, data from the United States indicates that this would increase access to dental hygienists' services and increase referrals to dentists[42]. The various oral health professional groups need to work together to assure that segments of society that have less access to care can obtain the various types of services delivered by the professionals who are best suited to provide these services. Legislation should also be investigated and clarified regarding the application of fluoride varnish by non-dental personnel such as public health nurses or physicians, where there is evidence of early childhood dental decay.

Dental therapists are able to provide services on federal crown lands and First Nation communities, as well as in dental offices in Saskatchewan and Manitoba under the direct supervision of dentists. There are many under-served, isolated communities, however, in the provinces that could benefit from the services of a dental therapist, but this service is prohibited by legislation in some of the provinces. In the 1970s and 1980s provincial dental programs in Saskatchewan and Manitoba utilized dental

therapists to efficiently deliver dental services of high quality to children in rural/remote areas.

Public Programming

The predominant method of dental service delivery in Canada is the private practice model on a fee-for-service basis. This delivery system has served the Canadian population, which can access it, very well and has contributed towards an overall improvement in oral health over the past three decades. According to StatsCan, 60.0% of the population utilized dental services in 2000-01, the last year for which statistics are available. Most people who did utilize services are those who in general are younger, employed, have dental insurance (insured are 2.7 times more likely to have visited a dentist than non-insured), are healthier and/or have higher incomes (highest income bracket 2.8 times more likely than lowest bracket)[43]. Since the early 1970's, private third-party insurance has made dental services accessible to many people who would otherwise not have been able to afford the services that they need. Unfortunately, however, the existing dental care system which relies primarily on private fee-for-service dental clinics embedded in an environment where many individuals do not have 3rd party coverage does not meet the needs of 1/4 to 1/3 of the population who are lower income, immigrants, Aboriginal, in poorer health or for whom the barriers to good oral health restrict their access for care. In these cases there is a need to supplement the existing private dental care system with public health service delivery that uses alternative delivery and remuneration methods, delivered out of community health centers, schools or other public facilities.

There is a role for both private and public systems in dental care delivery. Currently most publicly delivered dental programs in Canada include only emergency or very basic general treatment, and cover only financial assistance recipients or children of very low-income families. Private dental offices, working on a fee-for-service basis, provide most of the services in public programs. There are currently only four provinces that offer universal children's dental care programs and in three of those provinces the benefits stop by age 11[44]. In general, publicly delivered oral health programs should focus on health promotion on a population basis, preventive services targeted according to health need and access to services, and treatment services targeted to the more disadvantaged members of society.

Public programs need to be verifiably accountable, highlighting the need to have measurable goals, health indicators and strategic planning. Whether the program consists of payments by governments to private dentists on a fee-for-service basis, salaried oral health professionals working out of government run clinics, clinics operated through non-profit agencies, or through community health centres, it is necessary to demonstrate health benefit for the expenditures made.

In addition to public services being accountable, they also need to be sustainable. There needs to be adequate funding to meet proven needs with evidence-based care, but increasing costs need to be managed within budgets so that they do not exceed the annual increase in revenues for running the programs. This leads to the need for effective, full time administrators to monitor the budgets of such programs and to monitor the health improvements attributable to the public programs.

For those people who lack access to care, there is a need to provide direct services out of schools and kindergartens for children, out of community health centers, and within collective living centres for seniors or the disabled. School based preventive services can be very effective in improving health outcomes for children, in that all children are able to access services. There is evidence to show that children who are at high risk of dental decay benefit from annual professionally applied topical fluoride, and that a prior rubber cup prophylaxis does not add to the preventive benefit of fluoride[45]. Topical fluoride can therefore be delivered with minimal dental equipment and in a very cost-efficient and effective way.

Goal 3. To improve access to oral health care services.

Objectives for Improving Access to Care and Reducing Barriers to Oral Health Care

1. To increase the utilization of dental services in Canada by 5% over the 2000-01 rate.
2. All provinces and territories offer dental treatment programs for children of low-income families.
3. All provinces and territories provide school-based preventive dental programs for children.

4. All provinces & territories have legislation requiring oral screening of new residents upon entry into a long-term care facility, as well as ongoing oral health care plans.
5. 75% of non-institutionalized seniors report adequate access to dental care
6. All provinces and territories have full time oral health professionals to administer and direct public dental services.

Strategies to Improve Access to Care.

What Oral Health Professionals can do to improve access to care and reduce barriers to oral health care.

- Participate in continuing education on service provision for special populations such as multicultural, Aboriginal, disabled, low-income and seniors.
- Recognize and consider the barriers to access to care within their own offices in terms of
    - Wheelchair accessibility.
    - Hours of work.
    - Financial arrangements.
    - Cultural sensitivities.
- Continue efforts to develop programs and services that recognize the different health care needs of the sectors that have reduced access to care.
- Participate in clinics providing reduced-fee dental care to low-income people.
- Treat dental disease via the medical model, versus a surgical model.
- Recognize the need for, and advocate for, better access to oral health care services.

What Dental Organizations or Health Regions can do to improve access to care and reduce barriers to oral health care.

- Provide continuing education on oral health service provision for special populations that exhibit low dental service utilization rates.
- Continue efforts to develop programs and services that recognize the different health care needs of the sectors that have reduced access to care.
- Increase the delivery of oral health care out of community health centers.
- Arrange clinics for oral care using a collaborative team approach.
- Maintain information on oral health professionals who provide services outside the traditional practice settings, and their experiences and challenges.
- Increase awareness and mobilize the public to advocate for universal access to dental care, which is well designed and adequately funded.
- Create and maintain a website location with a list of ‘best practices’ of Canadian programs and promotion activities. Create a process for the determination of what constitutes a ‘best practice’.
- Work with the Canadian Council of Health Service Accreditation (CCHSA) in regional accreditations to assure that programs for oral health promotion, prevention and treatment services for disadvantaged citizens are in place in all health regions.
- Oral health education institutions can
    - Develop admission policies that take into account an awareness of demographic patterns and cultural needs of various communities.
    - Include more undergraduate educational components that raise awareness of linguistic, cultural, and social difference.
    - Provide continuing education to raise awareness of linguistic, cultural and social difference.

What governments can do to improve access to care and reduce barriers to oral health care.

- Provide the leadership
    - Each province and territory should have a senior dental consultant to work on improving access to care and integration with other health jurisdictions.
    - Work with the Canadian Council on Health Service Accreditation (CCHSA) to incorporate oral health criteria in health service accreditations.
    - Investigating alternate methods of delivering oral health services

- Establish the infrastructure
    - Investigate, encourage, legislate and fund dental care delivery out of community health centres, integrating services with other health jurisdictions.
    - Increase the number of hospitals with dental facilities (both for emergency patients and for hospitalized and high-risk patients).
    - Provide incentives for practitioners to work in under served areas.
    - Increased school-based preventive services. (Sealant clinics, interactive oral health education, targeted fluoride applications.)
    - Provide public oral health care services in collaboration with other health services.
    - Create or bolster provincial public health preventive programs.

- Establish the environment
    - Implement long term care facility legislation requiring the development and implementation of oral healthcare plans for residents that include a daily oral care strategy.
    - Provide culture sensitivity training for providers.
    - Legislation to ensure access to care.
        - Dental hygienists work unsupervised in public health programs (within scope of practice).
        - Dental therapists work off reserve in community programs.
        - Legislation that allows follow-up in cases of dental neglect (children/elderly)
        - Legislation to mandate oral health screening and preventive services in private and public long term care facilities.
        - Legislate that the facilities above a determined size create a health room where treatment services could be provided.
            - Investigate alternative methods of compensating dentists for providing services.
    - Investigate, document and incorporate 'best practice' examples from an environmental scan.
    - Facilitate collaboration between government and oral health care organizations, and between the various oral health care organizations, with the goal of assuring appropriate services delivered by the oral health professional best suited to provide that service.
    - Continue efforts to develop programs and services that recognize the different health care needs of seniors, persons of different ethnic backgrounds, Aboriginal peoples, and the disabled and low-income individuals.
    - Improve integration of oral health services with other health and education services.

- Provide the resources.
    - Work closely with universities and colleges on scholarships for oral health professionals, particularly those aimed at increasing the number of First Nations and Inuit students.
    - Provide funding for preventive oral health services in long term care facilities.
    - Increase funding to include oral health care under Medicare for at risk groups – children, maternity benefits, etc.
    - Provide direct delivery of services or increased funding for oral health services for persons with low socio-economic status, including the working poor.

Services can include basic oral health programs and services, including necessary restoration, maintenance, prevention, and health promotion. This can be done through:

- Federal funding on a per capita basis to provinces and territories to use for oral health programs and services; or
- Funding to Community Health Centres that provide oral health services.

- Federal government can increase funding for both the Community Health and Non-insured Health Benefits Program of the First Nations and Inuit Health Branch of Health Canada, so that
    - Adequate basic oral health programs and services are provided including necessary restoration, maintenance, prevention, and health promotion.
    - There is an inter-professional approach to health and wellness that involves an oral health component.
    - The focus of the program is shifted from treatment of disease to prevention of disease.
    - The mix of public and private service delivery is used to complement each other and augment access to care.
- Providing incentives for dental professionals to locate in underserved areas.

Other

- Employers can
    - Recognize the value of providing oral health insurance coverage for employees and retired employees (in that healthy people require fewer sick days, etc.).
    - Consider the feasibility of providing on-site dental clinics for disease prevention, health promotion, screening and referral to other health professionals as needed.
- Long term care facilities can
    - Establish oral health care policies and protocols including initial oral health assessment and follow-up at regular intervals.
    - Ensure that health care/nurses aides provide daily basic oral hygiene care to residents who are unable to manage their own care.

4. Monitoring, Surveillance and Research

Monitoring of Progress Towards the Goals of the Canadian Oral Health Strategy

Monitoring of progress towards the goals of the COHS and surveillance of oral health data are closely related. Any monitoring or surveillance data from surveys that relate to the goals of the COHS should be stored in a common, accessible location so that it can be used and/or combined with other surveys through meta-analysis to give a broader picture of the oral health status of Canadians.

Provided goal-monitoring data is accumulated and centrally stored, it is possible to create a 'report card,' on a regular basis, to assess the progress towards oral health improvement in the provinces and territories.

Surveillance of oral health data

The definition of surveillance in public health is "the ongoing and systematic collection, analysis and interpretation of outcome-specific data for use in planning, implementing, and evaluating public health practice".

In Canada there is a scarcity of oral health surveys and statistics. There is very little database information available at a national, provincial or territorial basis. When provinces or health regions provide oral health screenings or surveys, there are no inter-provincial standards or uniformity of the information that is gathered, or on what segments of the population are surveyed. As a result, local or regional statistics that are gathered, while of value to the region, cannot be compared with other parts of the country.

Although it would be desirable to conduct a well planned and executed national oral health survey, and this should be an aim in Canada, such an endeavor will require considerable planning, financing and commitment. It is hoped that the Canadian Oral Health Strategy will inspire work in this area. In the meantime, until a national survey can be conducted, many of the objectives of a national survey will be achieved when standardized protocols, developed by dental faculties, oral health organizations, practitioners and/or governments are used for surveys conducted by provinces and health regions. These protocols would best be developed in an electronic format that could be made available in a downloadable form from a website. This would give the provinces/regions useful data that could be shared with other jurisdictions and/or combined to form a provincial or national picture.

Standardized survey methods should be developed for the following clinical indicators, which measure the overall oral health of Canadians. Governments and oral health organizations would be able to choose from the list what surveys they would like to conduct, and would be encouraged to conduct some surveying on a regular basis.

- Dental decay
    - deft at age 6
    - DMFT at age 12, 17
    - Significant Caries Index (SiC index) at age 12, 17
    - % of the population with unmet dental treatment needs age 6, 12, 17, 35-44, 65-74.
    - % of population with no caries experience
        - 6 &9 for primary dentition
        - 12, 17 for permanent dentition.
- Periodontal screening
    - CPITN at age 12, 17, 35-44, 65-74.
- Dental fluorosis
    - TSIF index at age 8.
- Dental injuries
    - % of population with fractured teeth, avulsed teeth, non-vital teeth (due to accident), mandibular or maxillary fractures at ages 12, 17,35-44.
- Hypocalcification of molars
    - % of children at age 12, 17 with various classifications of hypocalcified teeth.
- Tooth loss
    - % of population with no natural teeth at ages 35-44, 65+.
    - % of population with 20 or more natural, functional teeth at ages 35-44, 65.

Self-report surveys will be looking for health data related to:

- Oral Health Status
    - Perception of oral health
    - Untreated caries.
- Edentulism.
    - Percent of population that is edentulous at age 35-44, 65-74
- Presence of pain.
- Satisfaction with appearance.
- Oral health function.
- Speech and communication.
- Nutrition and chewing
- Smoking
- Psychological and social well being.
- Oral health behaviours
    - Tooth brushing with fluoride toothpaste twice a day.
    - Use of dental floss
    - Consumption of sugary foods or beverages.
    - Frequency of snacking
    - Infant nighttime feeding practices.
- Utilization of dental services.
- Work or school days lost due to dental pain or infection.

Self-report or parent report surveys are much easier and less costly to conduct than clinical surveys for all ages. In the current Canadian Community Health Survey (CCHS), three oral health related questions are being used in the core set of health questions. In addition, there are eleven questions on an optional set that provinces or territories can negotiate onto the survey. If the optional questions are not used in a particular province or territory's CCHS survey, they could still be used in a survey conducted by other health organizations. Results from these questions can help to form the basis of an oral health database.

From a comparability perspective, it would be preferable for future survey data to relate to the goals of the Canadian Oral Health Strategy. This would provide the health region with a picture of how they stand in relation to these goals. Although data on a particular topic could be gathered for any or all age groups, it would be helpful if target age groups of the COHS would be included in the data gathering and given special emphasis. Having common goals through the Canadian Oral Health Strategy will contribute significantly toward standardization of oral health surveillance in Canada, an essential first step towards improving oral health.

A central website should be used for storing a catalogue of surveys done previously, sample surveys and protocols, results of recent surveys, and progress towards the goals. Individual surveys could be combined to permit a meta-analysis of the results. The central cataloguing of surveys, similar to that of the National Institute of Dental and Craniofacial Research (NIDCR) in the United States[46], should be available to all researchers, oral health care providers and policy decision makers in order to facilitate decision-making.

In addition to the central Oral Health Registry of survey results, it is important to also work with the Canadian Institute of Health Information[47] in order to have oral health data kept as a part of general health data. This would help researchers to investigate potential links between oral health and general health as well as establish the fact that oral health is a component of general health.

Ethics in health research and data gathering is of prime concern. Any research or summary of collected data must meet ethics guidelines and respect informed consent and confidentiality of the clients who are part of the surveys or research. Ethics guidelines are outlined by the Canadian Institute of Health Research[48] and also from the new Personal Information Protection and Electronic Documents Act[49] (PIPEDA) legislation of the Government of Canada.

Oral Health Research

The leading body for oral health research in Canada is the Institute of Musculoskeletal Health and Arthritis[50], (IMHA) one of 13 divisions of the Canadian Institute of Health Research (CIHR). IMHA supports, helps coordinate and funds research conducted by dental faculties, dental organizations and other health agencies. The Dentistry Canada Fund[51] and some federal, provincial and private health research funding agencies, as well as the dental faculties also play an active role in supporting and funding oral health research. The Canadian Association of Dental Research (CADR) is an association of oral health researchers that facilitates the dissemination of research findings and lobbies for oral health research. CADR is closely affiliated with the International and the American Associations of Dental Research (IADR and AADR)[52].

In 2002, the Oral Health section of IMHA held an oral health research-planning workshop,[53] which helped to develop a National Oral Health Research Strategy, providing a framework for the development and structure of oral health research in the years to come. It is important that this strategy be adequately funded to enable it to be effective.

Research, under the Institute of Musculoskeletal Health and Arthritis, comes under the topic areas of

- Fundamental (Basic biomedical)
- Applied Clinical Sciences
- Population based research, including the social and environmental aspects of health and disease.
- Health services and health systems research.

A major challenge for research in Canada is the shortage of young, qualified researchers. The student debt load contributes to this shortage – graduating dentists and dental hygienists need to pay off high student debts, and therefore are most likely to begin clinical practice as soon as they are qualified to do so. The Institute of Musculoskeletal Health and Arthritis is trying to overcome this problem somewhat by supporting students through research awards and projects[54], however more assistance is required from governments, oral health organizations and individuals to help enable young people to continue in a research, academic or public health career.

When research is conducted, it is very important to transfer the outcomes and knowledge gained from the research to oral health professionals, public health policy-makers, academics and the general public. Clinicians need the results of research translated into clinical practice protocols and guidelines so that they can apply the research into their daily practices. Policy makers need to have surveillance data that compares their jurisdiction to the goals of the COHS, to other jurisdictions and to benchmark data.

Goal 4. To establish a country wide, standardized method of monitoring and surveillance of oral health, and to assure that oral health research is appropriately supported.

Objectives for Oral Health Monitoring, Surveillance and Research

1. Develop standardized protocols for oral health surveillance
2. Establish a central site for collecting and storing survey results
3. Establish a central cataloguing of surveys and research reports.

Strategies for Improvement of Monitoring, Surveillance and Research

Oral health professionals and researchers can improve monitoring, surveillance and research by:

- Professionals with research, monitoring or surveillance skills can mentor other professionals.
- Support the need for national surveys to be conducted on a regular basis.
- Participate in conducting surveys if required.
- Study and incorporate clinical practice guidelines developed from evidence.

Dental Organizations, Health Regions and Research Institutions can:

- Increase involvement in the transfer and translation of the knowledge gained from research.

- Facilitate meetings with members of other healthcare providers on meeting the challenges reported above.

- Advocate for the implementation of a national survey.

- Support calibration process to ensure consistency in data collection.

- Adopt protocols for standardized survey tools, data gathering and collection.

- Organize and conduct self-report and clinical surveys, using standardized data collection tools and measuring towards the goals of the COHS.

- Develop clinical practice guidelines based on evidence.

- Educational institutions and/or research agencies can provide workshops and conferences to assist providers in survey methodology and basic epidemiology, writing grant applications, etc.

- Research Institutions

    - Advocate for new government, private sector, industry or other collaborative approaches to funding.

    - Develop methods of disseminating information gained from research – online access to research articles, interactive distant teaching, and clinical practice guidelines based on evidence gained from research.

What Governments can do to improve monitoring, surveillance and research:

- Provide leadership in oral health surveillance and research, and apply the results in policy and planning.
    - Each province and territory should have a full-time senior dental consultant with skills in dental epidemiology, to monitor the levels of oral health and oral disease, and to advise government on strategies to improve oral health.
    - Establish and support the position of a Chief Dental Officer (Senior Dental Consultant).

- Promote and develop oral health research and surveillance.
    - Federal, provincial and territorial governments should conduct surveillance research on Canadians' oral health status, which allows a comparison based on geographical area, gender, age, income, and multicultural status.
    - Adhere to standardized survey protocols.
    - Commit to funding the development, implementation and analysis of a national oral health epidemiology survey.
    - Build oral health research capacity by:
        - Providing adequate grants.
        - Increasing the supply of oral health researchers through training opportunities.
        - Support the development of, and improve access to, oral health and oral health services data.
        - Support mentorship of new researchers and establish networking opportunities for researchers.

- Improve dissemination of survey and research results.
    - Improve knowledge dissemination by encouraging researchers to work collaboratively with the users of research and identify effective knowledge translation approaches.
    - Work with CIHI to establish an oral health monitoring system.
    - Support the development of clinical practice guidelines based on evidence.
    - Develop (or assist in the funding of the development of) an electronic, universally accessible central cataloging of surveys and research papers and a central storage area for storing survey results.

5. Human Resources

Many aspects of oral health professionals' education, scope of practice, location and performance have an impact on the human resources that can be applied to oral health promotion, prevention, and care. As well, non-oral health personnel promote or could promote oral health. There are four major human resources issues – the number and types of providers, the distribution of providers, the needs of society and the training of health professionals, both generalists and specialists. Similar to other aspects of health care delivery, there are areas of the country that have a shortage of oral health personnel and other areas that have a surplus.

Monitoring of human resources is currently being conducted by the Canadian Dental Association, the Canadian Dental Hygienist Association, and also by Human Resources Development Canada (HRDC)[55] through an 'Oral Health Care Human Resource Sector Study'. Prediction of future needs is very difficult but necessary, and in order to strike the right balance in the supply of professionals, training institutions need to apply this information accordingly. Any predictions of future human resources have to take into account the changing needs of an aging population and what numbers and distribution of each type of oral health professionals would best meet those needs.

In order to meet the oral health needs in underserved areas of the country there must be incentives to attract and retain dental health personnel. Further, all oral health professionals should be utilized to the fullest extent possible. A cooperative effort on scopes of practice would be in the best interest of professionals and the general population they serve.

Some non-dental health care providers have active roles to play in dental prevention and promotion activities for children, adults and seniors. For example, public health nurses and physicians see young infants from birth and do various health assessments. Infants who are determined to be at risk, or to have early childhood caries, identified by a public health nurse or physician, would benefit from an early referral to oral health professionals so that preventive and treatment services could be initiated. Also, health care workers in senior's residences are often responsible for the oral health of residents. Basic dental assessments and simple, daily mouth-care practices should be incorporated into the curriculums of their respective training programs and into their routine practices.

The high cost of training and the debt load of graduates of oral health training programs is a particular concern. There are several negative implications of this high training cost, in addition to the personal implications for the individual:

- High debt loads may preclude a graduate from going into research, public health or teaching, where the potential income after extra training might be less than in general practice.
- High debts pressure the new graduate into needing an immediate income to pay off the debts and make a living.
- Students from low-income families are less likely to be able to enter dental or dental hygiene programs.

There is a serious concern for the training of public health dental specialists in Canada. The cost of training weighed against the rewards upon course completion in part restricts many dentists and dental hygienists from entering dental public health training. The lack of qualified public health professionals creates a void in oral epidemiology and program planning and evaluation, the essential skills needed to improve access to care. Similarly, there is a shortage of oral health professionals who provide specialist services to disabled/handicapped children and adults, and seniors. This is a specialty on its own and should be promoted and supported as such.

As indicated in the earlier section on oral health promotion, addressing the determinants of health requires an integrated approach involving various health and non-health personnel. The evolution towards health promotion, addressing the determinants of health, should be taken into consideration in human resource projections.

Goal 5. To assure appropriate numbers, distribution and education of oral health professionals.

Objectives for Monitoring Oral Health Human Resources.

By 2010, conduct a complete Human Resources strategic plan for the period 2010 to 2020, taking into consideration the oral health needs of the Canadian society, all oral health professionals, the related health sectors, and education requirements.

Strategies for Developing Human Resources

What oral health providers can do to improve the supply of human resources to meet oral health care needs.

- Integration of oral health services with other health services.
- Contribute to attracting people to the oral health field by participating in high school career days, health fairs, National Oral Health month, National Dental Hygienists Week, etc.
- A healthy work environment and adequate remuneration would contribute to attracting and maintaining interest in the profession.
- Provide flexibility in work hours and work settings and opportunities for job sharing where appropriate.

What Dental Organizations or Health Regions can do

- Support and continue their involvement with the Oral Health Care Human Resources Sector Study.
- Promote alternate forms of services delivery for under-serviced areas, using a team approach.

What Governments can do.

- Identify oral health system needs, and apply the findings to human resource planning.
  - Increase the proportion of primary care providers and other workers who can identify and use the primary methods for preventing and controlling dental caries and refer to oral health practitioners.
  - Identify access to care issues and make recommendations for assuring that adequate numbers of well-trained individuals are available for all Canadians to access quality oral health programs.
  - Develop and implement alternative methods of service delivery for preventing, diagnosing, and treating oral health problems for underserved segments of society.
  - Identify to policymakers, governments, educators and practitioners the wide disparity in oral health status and access to care.
  - Ensure that each province and territory has a chief oral health consultant who can advise government on strategies to determine, monitor and develop human resources.
- Plan oral health education requirements.
  - Explore the basic education for each oral health professional. Are there less costly and equally effective alternatives?
  - Focus education requirements on health outcomes.
- Develop or assist in the development of programs to forecast and monitor trends in the supply and demand of dental personnel and analyze information on factors affecting the need and demand for oral health care.
- Identify oral health specialty needs (including Dental Public Health, researchers, academics) and provide incentives to encourage health care professionals to enter these areas.
  - Student loan repayment strategies.
  - Studentships, Fellowships and Scholarships for the training of researchers and their support in the early stages of their academic careers.
  - Adequate salary rates, taking into consideration the skills necessary and the additional training required.

    - Scholarships with return of service.

- Remove barriers to inter-provincial mobility for health care professionals.

- Ensure that the providers are well educated and regulated appropriately.

- Federal, provincial and territorial governments can:
    - Facilitate dental hygienists to provide services without direct supervision in public health settings.
    - Provide scholarships with return of service agreements.
    - Facilitate the provision of services by dental therapists and dental hygienists in isolated areas.
    - Fund research on cost benefits of oral disease prevention, oral health promotion and oral health services.
    - Support the transfer of knowledge and the development of practice guidelines.
    - Provide funding for alternative models of service delivery in underserved areas.
    - Conduct research on workplace injuries.

- Provincial governments can support an increase in the number of admissions in oral health education programs, to provide practitioners in areas of demonstrated shortages of qualified personnel.

Conclusions

A first Canadian Oral Health Strategy (COHS) has been developed and outlined. The COHS identifies the problems, provides measurable oral health goals for the year 2010, and recommends strategies that can be used to assist Canadians to improve and/or maintain oral health.

There are segments of the population that have higher disease rates and less access to professional health care services than society in general. Some of these segments are Aboriginals, low-income families, seniors, recent immigrants and the disabled. Any strategies, programs and policies need to particularly keep these groups in mind. The COHS puts special emphasis on these groups.

Going into the first COHS, there is little baseline data to work from, no organized government framework to fit in to, limited oral health promotion, and little integration of oral health with other health care services. The goals of the COHS address the shortfalls and the oral health needs of Canadians, as they are in 2003-04.

The Canadian Oral Health Strategy document is the beginning of the process. Much work needs to be done to improve oral health promotion, improve oral health (especially for the disadvantaged), and to implement a standardized surveillance system. The website of the Federal Provincial and Territorial Dental Directors (FPTDD) will be used to assist the monitoring of the goals of the COHS. The success in achieving the goals of the COHS will be dependant on the concerted efforts of oral health professionals and Canadians in general in advocating for improved promotion of oral health and for programs and strategies that will improve access to care and reduce the barriers to good oral health.

Appendices

Appendix 1. The oral health – general health connection.

Appendix 2. Goals, objectives, baseline data and current status of the Canadian Oral Health Strategy.

Appendix 3. Dental visits compared with medical visits – by income level.

Appendix 4. The process of development of the Canadian Oral Health Strategy

Appendix 1 - The Oral Health, General Health Connection

The Oral Health, General Health Connection

The importance of oral health for general health comes under the following categories:

- The oral cavity as a portal of nutrients for the body.
- The oral cavity for communication.
- Medical links between oral disease and other health entities.
- The importance of the oral cavity for self-esteem and social contacts.

The oral cavity as a portal of nutrients for the body

Good physical and mental health are dependant upon the intake of healthy nutrients, and with the mouth being the initial part of the digestive system good oral health is essential for the proper initial breakdown of the food as it enters the system. Healthy teeth are important for breaking up all sorts of foods, including proteins and fibers, foods that require more chewing and grinding. If the teeth and surrounding tissues are not healthy, general health is more at risk to chronic disorders caused by inadequate ingestion of essential dietary components. Seniors with poor teeth or no teeth at all may be more at risk of bowel disorders due to lack of fiber, mental depression due to an imbalance of nutrients or vitamin deficiencies, or a whole array of other disorders related to dietary deficiencies. Young children with painful or abscessed teeth may suffer from failure to thrive and their learning may be affected by nutritional deficiencies and the distraction of oral pain. People of any age may be unable to maintain an adequate nutritional balance if they are suffering from dental pain, periodontal disease, temporo-mandibular dysfunction, too many missing teeth or uncomfortable dentures.

The oral cavity for communication

Good communication is an essential part of daily living. Healthy teeth, healthy soft tissues and normal salivary function facilitate good speaking.

Good communication is not only pronunciation of words and syllables, but also facial expression and facial appearance – all part of a healthy and functional oral system.

Medical links between oral disease and other health entities

In recent years, research has been looking into the direct connection between oral diseases and general health. Some of these connections are causal, where an oral disorder is related to the incidence of another systemic disorder, and some are concurrent, where people who are more likely to have one disease are also more likely to have an oral disorder at the same time. Further research is necessary to differentiate to what extent the links between oral health and general health are causal or concurrent.

The oral health/general health connection can come under any of the six following categories.

1. Oral conditions related to treatment for other systemic disorders.
    a. Example – loss of salivary flow due to radiation treatment for head or neck cancer. This can cause increased tooth decay rates, loss of retention of dentures, or mouth discomfort.
2. Oral disease as a precursor of a systemic disease.
    a. Example – Leukoplakia (white patches) that develop into oral cancer and possibly metastasize to other organs.

3. Oral disorders as a marker of systemic disease.
    a. Example – signs showing in the mouth may first detect conditions such as vitamin B12 deficiency, AIDS or diabetes.
4. Systemic disorders affecting oral tissues.
    a. Example – Diabetes as a factor that reduces the body's resistance to periodontal disease or other mucosal disorders.
5. Oral disorders affecting systemic conditions.
    a. Examples – Periodontal disease as a possible causal factor or contributing factor for cardiovascular disease, pre-term low birth weight babies, aspiration pneumonia in the elderly, or other respiratory diseases.
6. Medical syndromes that affect the oral cavity as well as other parts of the body.
    a. Example – Osteogenesis imperfecta, which affects the number or quality of teeth as well as effects on the skeletal system.

All of the above oral health/general health connections or problems can be prevented, treated or ameliorated by being aware of their existence, paying attention to oral preventive home care and accessing professional oral health care.

The importance of the oral cavity for self-esteem and social contacts.

In today's world, now that oral health for the majority of the population has improved considerably, the importance of good appearance and function of the oral cavity is much more important than in the past. Good oral health means being able to socialize without embarrassment. Although it is not essential that everyone's teeth appear the same, it is important for people to not have their teeth reflect negatively on them in their social contacts. People do not want to be embarrassed by the appearance of their teeth when they meet friends, go to the grocery store or appear in public. Also, the chances of having a good interview for a job application is enhanced by an appearance that is not detracted by a missing front tooth, visible decay or oral odors from diseased periodontal tissues.

The importance of oral health on the health care system.

Despite the fact that dental care programs have been recommended in various health care commissions in the past such as the 1964 Royal Commission on Health Services, and in reports in various provinces and by governments of all political stripes, dental services are not covered under Canada's Medicare system, with the exception of some surgical services provided in hospital settings by Oral Surgeon or Pediatric Dentist specialists. Also, despite four submissions to the Commission on the Future of Health Care in Canada (Romanow Commission – 2002) and an appearance before the Commission hearings, oral health and oral health care were not even mentioned in its final report. This appears to indicate that oral health is still by and large considered outside the health care system, and that more work needs to be done in demonstrating the connection between oral health and general health.

In Canada, nearly 7% of all health expenditures are for oral health care, ranking second in diagnostic categories behind only cardiovascular care expenditures. These costs are borne mostly by individuals and private insurance companies (55% of privately funded expenditures), and less by provincial or territorial governments (5.8%). Expenditures on oral health exceed those for mental health, cancer, diabetes and pulmonary diseases. Dental decay is by far the most common childhood disease, and for pre-school children the number one reason for hospital general anaesthetics is for treatment of the effects of dental decay.

When the expenditures on dental care, as well as the links between oral conditions and other diseases are taken into consideration, the impacts of oral diseases on the health care system are enormous.

Appendix 2 - Goals, Objectives, Baseline data and Current Status.

Goal 1. To improve oral health promotion and public awareness of the importance of good oral health.

Objectives	Baseline	Current Status
The establishment of an Oral Health Secretariat within Health Canada with the mandate of: • Establishing a major Oral Health Promotion initiative. • Provide oral health advice, consultation and information. • Integration of oral health promotion with other health professional organizations. • Developing evidence-based resources for oral health promotion. • Assist in the process of Evidence Based Clinical Practice Guidelines, along with the Canadian Collaboration of Clinical Practice Guidelines in Dentistry. • Implementing initiatives developed through the Canadian Oral Health Strategy.	January 1, 2004 The position of a Chief Dental Officer and/or an oral health secretariat does not exist at this time within Health Canada.	January 1, 2004 The position of a Chief Dental Officer and/or an oral health secretariat does not exist at this time within Health Canada. Various organizations are advocating for such a position, including the FPTDD, CAPHD, CDA and CDHA.
A major national oral health promotion campaign, coordinated cooperatively by the Canadian Dental Association, the Canadian Dental Hygienist Association and Health Canada.	January 1, 2004 There are no current plans for a national, coordinated oral health promotion campaign	
A national report on the oral health of Canadians, equivalent to the U.S. Surgeon General's First Report on the Oral Health of Americans.	January 1, 2004 There is no report on the oral health of Canadians, outlining the oral health status or the issues of access to care, etc.	

Goal 2. To improve the overall oral health of Canadians.

Objectives	Baseline	Current Status
Improvement of Oral health status • In self-report surveys, at age 17, at least 75% of the population report that they are satisfied with the appearance of their teeth.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• In self-report surveys, at age 35-44, at least 75% of population report that the state of their oral health is Very Good or better.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• At age 35-44, 45% of the population has never lost a permanent tooth due to dental caries or periodontal disease.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• In self-report surveys, at age 35-44, no more than 20% of the population report that they are impacted by difficulties in chewing.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• In self-report surveys, at age 35-44, at least 75% of the population report that they are satisfied with the appearance of their teeth.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• In self-report surveys, at age 35-44, no more than 20% of the population report that they have been impacted by peri-oral pain within the last month.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	
• In self-report surveys, at age 65+, at least 70% of population report that the state of their oral health is very good or better.	Due to a lack of scientific data, this objective is based on arbitrary assumptions and best guesses, in order to assign a target value.	

• In self-report surveys, at age 65+, no more than 35% of the population report that they are impacted by difficulties in chewing.	PE – 2001[56] – 42.9% impacted in ability to chew	
• In self-report surveys, at age 65+, no more than 35% of the population report that they have been impacted by peri-oral discomfort within the last month.	PE – 2001 – 42.9% impacted by peri-oral discomfort	
• At age 65+, no more than 30% of the population has lost all of their natural teeth.	WHO – Quebec 1993. Edentulousness = 58%	
• At age 65, 50% of the population has 20 or more natural teeth.		

Objective	Baseline	Current Status
Reduction of Dental decay • At age 6, 50% of children have never experienced dental decay.	PEI – 2002-03 53.9% with deft = 0 [57]	
• At age 6, no more than 20% of children have unmet dental treatment needs	PE – 2002-03. Grade 1. 16.3% with dental treatment needs.	
• At age 12, a DMFT of 1.0 or less	PE – 2002-03. Grade 6&7. DMFT = 0.7	
• At age 12, a 'significant caries index', (SiC) DMFT of 3.0 or less.	PE – 2002-03. Grade 6&7. SIC index= 2.1	
• At age 12, 75% of children have never experienced decay in their permanent teeth.	PE – 2002-03. Grade 6&7. 68.2% with DMFT=0	
• At age 12, no more than 10% of children have unmet dental treatment needs.	PE – 2002-03. Grade 6&7. 7.6% with dental treatment needs.	
• At age 17, a DMFT of 3.0 or less.	PE – 2002-03. Grade 10,11 & 12. DMFT= 2.1	
• At age 17, a 'significant caries index', (SiC index) of 5.0 or less.	PE – 2002-03. Grade 10,11&12. SIC index=5.3	
• At age 17, 50% of adolescents have never experienced decay in their permanent teeth.	PE – 2002-03. Grade 10,11 & 12. 43.1% with DMFT=0	
• At age 17, no more than 10% of adolescents have unmet dental treatment needs.	PE – 2002-03. Grade 10,11 & 12. 3.8% with dental treatment needs.	

Objectives	Baseline	Current Status
Reduction of Periodontal disease • At age 35-44, no more than 60% of adults will have a CPITN score of 3 or 4.	WHO data – 1994-95 52% had a highest CPITN score of '3'; 21% with score of '4'	
• At age 65+, no more than 30% of adults will have a CPITN score of 4.	WHO (U.S. data) 1991. 32% with score of '4'.	

Objective	Baseline	Current Status
Reduce Mortality due to Oral cancer • Reduction of mortality due to oral cancer to less than 900 deaths per year, through prevention (smoking reduction) and early detection of oral cancers.	Approximately 1,000 deaths due to oral cancer per year.	

Objective	Baseline	Current Status
Reduce the prevalence of acquired developmental anomalies • Prevalence of moderate or severe dental fluorosis (TSIF level 2 or greater) on 8 year olds = 7% or less.	ON – 1999. Fluorosis = or > '2' of 4.9%.[58] BC – 1993. Fluorosis = of > '2' of 8% (TSIF)[59]	
• A database system, using a common measuring method, in place to monitor the frequency and severity of dental fluorosis.	TSIF index is the most commonly used fluorosis index in Canada	
• A database system, using a common measuring method, in place to monitor the frequency and severity of hypoplastic teeth.	There is not a common measuring system in place.	

Theme 3 – To improve access to oral health care services.

Objectives	Baseline	Current Status
To increase the utilization of dental services in Canada by 5% over the 2000-01 rate.	StatsCan 2000 report indicates utilization rate of 60%	
All provinces and territories offer dental treatment programs for children of low-income families.	As of 01/01/04, there are treatment programs in YK, NT, NU, AB, SK, ON, QC, NS, PE, NL; W/A programs in BC, MB, NB	
All provinces and territories provide school-based preventive dental programs for children.	As of 01/01/04, there are school based preventive programs in YK, NT, NU, SK, ON, NS, PE.	
All provinces & territories have legislation requiring oral screening of new residents upon entry into a long-term care facility, as well as ongoing oral health care plans	As of 01/01/04, BC has legislation. PE has no legislation, but does screening.	
All provinces and territories have full time oral health professionals to administer and direct public dental services.	As of 01/01/04, there are full-time Senior Dental Consultants in BC, MB, QC, PE.	
75% of non-institutionalized seniors report adequate access to dental care	As of 01/01/04, there are no statistics on access to care for non-institutionalized seniors.	

Theme 4 – To establish a country wide, standardized method of monitoring and surveillance of oral health, and to assure that oral health research is appropriately supported.

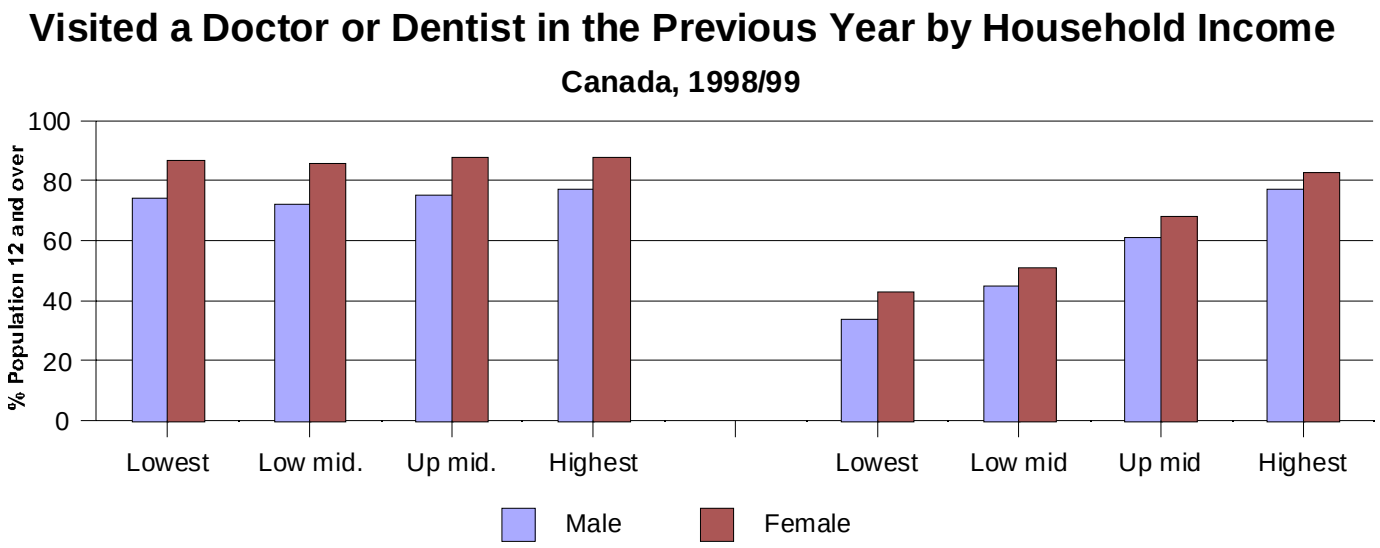
Objectives	Baseline	Current Status
1. Develop standardized protocols for oral health surveillance	There are currently no common standards or measuring oral health	There are plans for a workshop in 2004 to develop standardized protocols.
2. Establish a central site for collecting and storing survey results	There is currently not a central site for collecting and storing survey results	There are plans for establishing a central website for storing and displaying survey results.
3. Establish a central cataloguing of surveys and research reports	There is currently not a central cataloguing of survey and research reports.	Work has begun on establishing a central cataloguing of survey reports.

Theme 5 – To assure appropriate numbers, distribution and education of oral health professionals.

Goal	Baseline	Current Status
1. By 2010, conduct a complete Human Resources strategic plan for the period 2010 to 2020, taking into consideration the oral health needs of the Canadian society, all oral health professionals, the related health sectors, and education requirements.		

Appendix 3 – Dental visits compared with medical visits – by income level

Source: Statistics Canada, Health Division, Health Reports, Winter 1999



Appendix 4 - The Process of Development of a Canadian Oral Health Strategy

The Process of Development of a Canadian Oral Health Strategy

The Federal, Provincial and Territorial Dental Directors (FPTDD) initiated and facilitated the development of the Canadian Oral Health Strategy, through a wide and thorough consultation process involving oral health organizations, oral health providers, government representatives and the public.

The process began in November of 2002 by sending letters explaining the purpose and the process of COHS development to the Federal Minister of Health, the Honourable Anne McLellan and the Ministers of Health of the various provinces and territories. Also letters were sent to the Canadian Dental Association, the Canadian Dental Hygienist Association, the Canadian Dental Assistants Association, all provincial and territorial dental associations, all Canadian faculties of dentistry; and all of the dental specialty associations. The letters provided an e-mail address so that these organizations or agencies could request to be on the distribution list for all future communications on this project. In addition, a website was established so that drafts and requests for input could be displayed, enabling anyone to respond with their suggestions and ideas.

The response to the original letter was very positive and a distribution list of over 100 individuals and organizations was created. Many of the groups such as the Canadian Association of Public Health Dentistry, the Canadian Dental Association and the Canadian Dental Hygienist Association regularly kept their members informed and involved through their own communications systems. Letters of encouragement were received from the Canadian Minister of Health and from several of the provincial and territorial Health Ministers.

With the communications network established, the next step was to formulate the process. An outline of the process along with timelines was posted on the website and through the distribution list the participants were made aware of it. The basic structure of the document to be created consisted of five main theme areas, each with a description of the problem, measurable goals to attain and a list of strategies. Input was sought on this framework, resulting in some minor modifications of the theme areas. Because health comes under provincial jurisdiction in Canada, it was determined that the Canadian Oral Health Strategy could aim for national oral health goals and it could establish uniform measurement tools, but when it comes to strategies the best it could do is to create a list of the various strategies. Provinces, territories, oral health organizations, oral health

professionals or the public could then pick and choose from the list and implement strategies to work towards achieving the goals.

The next stage was to develop the introduction and the five theme areas. For each of these the process was consistent – each part was developed separately with the initial draft being submitted to the members of the Federal Provincial and Territorial Dental Directors for preliminary input. Modifications were made and they were then posted on the website with an e-mail being distributed to each of the participants, making them aware of it's presence. Instructions were given on how to download the documents and provide input.

The development of the introduction set the tone for the process. There was considerable input on it that suggested that it was too long and too detailed. As a result some sections of it were moved to an appendix to the document and other sections were eliminated. It was clear from the input that the document needed to be inclusive in all details for each theme, yet very specific and succinct.

For the five theme areas an extra step of consultation was added to the process. A reference group of twelve people with expertise in the development of strategic plans, expertise in health delivery, or representative of oral health organizations was established. After the initial stage of input from the FPTDD members the theme documents were sent to the reference group members for input before being distributed to the wide audience. All of the input at each level was considered very seriously and many modifications were made both on content and writing style of each of the theme areas based on the input received.

After all of the themes had been developed individually the next stage was to assemble the introduction and all of the themes together into one document along with a page of overall conclusions. This document was then posted on the website and through the distribution list was opened up for another round of input. The main change that resulted from this round was a strengthening of the first theme on oral health promotion. The final changes were made and the revised document was posted with the message that it was still open for further review and changes. At that point no further input was received.

Although some people would like to have seen forums presented across the country as part of the development process this was not possible due to financial constraints and the fact that the process was done on a completely volunteer basis. Modern technology with the use of an e-mail distribution list and website, however, provided an electronic forum enabling anyone to provide input, where they might otherwise have not be able to attend public events. Interim updates on the status of the project were presented to the Canadian Association of Public Health Dentistry in June of 2003, the Canadian Dental Association strategic forum in September of

2003, the Nova Scotia Seniors Oral Health Project in March of 2004, and at the Symposium on Access and Care in Toronto in May of 2004.

In general the support and encouragement for the project was nothing short of overwhelming. The process took longer than was originally anticipated because of the huge volume of input and suggestions. Many very positive comments and congratulatory notes were received on the concept, the structure and the end product. In the entire process there was only one person who expressed considerable criticism of the process and the content, and although several suggestions by this individual were incorporated into the document, his main criticisms were countered by a large number of individuals and organizations with opposite views.

The FPTDD would like to take this opportunity to thank the many organizations and individuals who participated in the process - it was truly a combined effort of many, producing a product that all participants can be pleased and proud that they were a part of.

The FPTDD was very pleased to facilitate the development of this first Canadian Oral Health Strategy. We are hopeful that the same degree of involvement by participants in the development of the COHS will now go into taking action, using the document and its suggestions to make improvements in the overall oral health of Canadians a reality.

Dr. Barry Maze,
Coordinator, Canadian Oral Health Strategy
Federal, Provincial and Territorial Dental Directors

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