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REGIONAL ORAL HEALTH PROGRAM

REGIONAL ORAL HEALTH STRATEGY FOR THE 1990s

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GLOSSARY

DEFT	Number of permanent decayed, extracted, and filled teeth
DMFT	Number of permanent decayed, missing, and filled teeth
IEC	Information, education, communication
HFA	Health for all
HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency syndrome
HSP	Health Systems and Services Development
LAC Region	Latin American and Caribbean Region
MOH	Ministry of Health
NGO	Nongovernmental organization
OPC	Oral and pharyngeal cancer
ORH	Oral health
PAHO	Pan American Health Organization
PALTEX	PAHO Expanded Textbook and Instructional Material Program
REMSA	Meeting of Health Ministers of the Andean Region
RESSCA	Meeting of the Health Sector of Central America
ROHDB	Regional Oral Health Data Bank
SILOS	Local Health Systems
WWW	World Wide Web

Preface

The greatest challenges to the Pan American Health Organization's Regional Oral Health Program for the 1990s and beyond are conceptualizing and developing oral health strategies for the 1990s and assisting countries in the Region to change the oral epidemiological profile and improve dental care delivery systems.

The thinking reflected in this document was put forth as a first draft for discussion at the first meeting of PAHO's Oral Health Technical Advisory Group in August 1994. Since then the document has been reviewed by colleagues in PAHO, country counterparts, and colleagues from other Organizations, who have shared their thoughts in order to contribute to a document useful to the organizations with which we work to improve oral health in the Americas.

This document sets forth innovative concepts for the allocation and management of oral health resources. The strategies proposed set the agenda and present a challenge to oral health delivery in the Latin American and Caribbean Region in the 21st century.

A special acknowledgement is in order for the members of the Technical Advisory Group and other colleagues for their contribution to the overall quality of the paper.

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REGIONAL ORAL HEALTH STRATEGY FOR THE 1990s
EXECUTIVE SUMMARY

An overview of current oral health data in the LAC Region indicates that most members country have a high prevalence of dental caries and periodontal diseases. Also, of emerging importance are oral and pharyngeal cancers HIV/AIDS, and hepatitis B. Besides the clinical effect of HIV/AIDS in the oral cavity, HIV/AIDS and hepatitis B are important due to the potential high risk of vertical and horizontal transmission in the dental care setting. In general, most of these diseases are distributed unevenly in the population. Dental caries and periodontal diseases, though highly prevalent throughout the Region, are most severe among low-income, poorly educated subgroups; most oral and pharyngeal cancers are associated with tobacco and alcohol use; and HIV infection is related to specific sexual behaviors and intravenous drug use.

To alter this epidemiological profile and its determinants countries can draw on an organized network of services for the delivery of oral health care services, mostly curative, with the participation of the public and private sectors. These services, however, may be inadequate to address communities' changing needs. In many LAC countries public dental services are poorly organized, underfinanced, and understaffed. Quality care may only be accessible in urban areas at high costs. Private providers, on the other hand, may be easier to reach, but their approach is mostly curative and costly. Higher income groups enjoy greater access to dental services.

Since dental conditions are usually not life-threatening, they are not included in mortality statistics, nor in national health policies. Competition for resources with other health conditions hinders planning and policy making for oral health programs in the Region.

The overall goal of the Regional Oral Health Strategy is to ensure that PAHO and country resources are used as efficiently as possible so as to improve the oral health of the people of the Americas.

Assisting countries in the Region to change both the oral epidemiological profile and the adverse characteristics of the dental care delivery systems pose the greatest challenge to the PAHO Regional Oral Health Program for the 1990s and beyond. To address this challenge, the Program includes elements of PAHO's Strategic Orientations including the vision of health sector reform reflected in

these guidelines, as a basis for the following Regional Oral Health Objectives and Strategies.

PAHO will play an active role in assisting countries to strengthen their ability to respond to the oral health challenge and the momentum of the oral health sector reform as the year 2000 approaches. PAHO strategic objectives in support of oral health in the Region are:

1. *To promote improvement of oral health conditions in the countries of the Americas building on the momentum of health sector reform.*

2. *To assist countries to develop accessible, effective, and sustainable oral health services.*

The strategies to pursue the above objectives include:

1. Promotion of national oral health preventive programs aimed at reducing the prevalence of dental caries, periodontal diseases, and dental fluorosis including effective epidemiological surveillance systems.

2. Strengthen sustainable integration of oral health services into Local Health Systems (SILOS).

3. Inspire training of human resources appropriate to the needs and new directions of oral health programs in the Region.

4. Support policy development in education, and communication programs aimed at improving decision making and community awareness about dental caries, periodontal diseases, HIV and related oral conditions, oral cancer, and preventive practices.

5. Development of a regional oral health information system and integration of the program into the Global Oral Health Network.

PAHO's Oral Health Strategy for the 1990s proposes to help countries reach a level where improved oral health indicators and preventive policies predominate. The strategy is based on an oral health development typology that classifies countries in the Latin America and Caribbean Region using the most current reported level of the DMFT-12 index (decayed-missing-filled teeth at 12 years of age) and the existence of national policies to promote fluoridated water or salt as preventive interventions. This typology situates LAC countries in three categories of oral health development: Emerging, Growth, and Consolidation. The strategy aims to support countries in all the categories, with emphasis on

those in the emerging group. As these countries receive assistance they will first move to the growth category, and eventually to the consolidation category. Similarly, countries in the growth category will be assisted to move into the consolidation category. Countries in the consolidation category will be assisted to keep their programs at that level. It is expected that by the end of the decade most of the countries in the LAC Region will have reached the WHO goal of a DMFT-12 of 3 by the year 2000 (WHO).

In this context, PAHO will delineate general strategic guidelines for countries to consider during the 1990s and beyond, using the Organization's Strategic Orientations and Program Priorities as a reference and following resolutions adopted in the most recent meetings of Health Ministers from the Andean Region (REMSA) and Central America (RESSCA). These meetings stressed the need for national preventive programs of water or salt fluoridation and for support for information, education, and communication programs to improve decision-making, community awareness, and behavioral changes to prevent dental caries, periodontal diseases, oral and pharyngeal cancer, HIV/AIDS, and hepatitis B.

This document includes three sections: **(I) A Background Section**, which presents an analysis of the current status of oral health in the Region (oral health status, trends and projections, supply factors, demand factors); **(II) Conceptualization of a Regional Strategy for Oral Health** which articulates strategic objectives and priorities for the development of oral health interventions. This conceptualization considers a typology (i.e., a matrix) for classifying the extent to which each country is making progress towards these objectives and how PAHO may provide support; and **(III) A Program Implementation Section**, which presents specific program activities to carry out the strategies proposed in section II. The Regional Oral Health Program of Health Systems and Services proposes to work in the following five areas:

(1)   Preventive programs through fluoride;
(2)   Integration of oral health services into the Local Health Systems (SILOS);
(3)   Oral health human resource development;
(4)   Strengthening of health policy development in information, education and communications programs to address the burden of oral disease; and
(5)   Development of information systems for oral health.

I. BACKGROUND

a. Oral Health Conditions in the LAC Region

Strategic planning and its associated interventions require the analysis of data on status and trends. Comprehensive data on oral health in the LAC Region are scarce; however, there is some data that allow an overall evaluation of the current status and recent trends, especially in dental caries and need for periodontal treatment.

Dental caries and periodontal diseases are the two best-known diseases that affect the oral health of individuals. In children caries is usually the most common oral disease, whereas in adults the focus shifts to periodontal diseases. Other concerns in the oral health of adults include tooth loss, root caries, and other oral pathology.

Current reports suggest that dental caries and periodontal diseases remain prevalent in the LAC Region despite preventive and curative technologies. Furthermore, oral health status varies widely within and between countries. This variation may be attributed to demographic, socioeconomic, dietary, and/or cultural factors. Some of these may not be amenable to change (e.g. demographic factors, general economy), but others may be as a result of the implementation of national preventive programs or improved access to care.

The World Health Organization (WHO) Oral Health Program and its global oral health strategy recognize oral health as an integral component of the primary care approach. In the Americas, the Pan American Health Organization (PAHO) supports national oral health plans based on measurable goals, to be attained largely through the implementation of preventive methods. Several countries in the Region have shown improvements in oral health indicators as a result of the adoption of massive preventive programs such as fluoridation of water and salt.

Oral health among children

Dental caries is the most common disease among children in the Region; approximately 90 percent of school-age children (5-17 years) are affected. Dental caries is a progressive, infectious disease, which, if left unattended, may result in tooth loss. Unless timely restorative treatment is provided, the carious lesion will continue to destroy the tooth, eventually resulting in pain, acute infection, and costly treatment. However, with early intervention, dental caries can either be prevented or treated at a reduced cost. Preventive and treatment methodologies have been implemented in the LAC Region but have yet to become fully

effective. Consequently, the epidemiology of dental caries among children has not changed significantly over the last 20 years in the LAC Region.

One of the indicators commonly used to assess oral health is the number of decayed, missing, and filled teeth at age 12 (DMFT-12). The World Health Organization has defined severity levels for DMFT-12 as follows:

SEVERITY	DMFT-12
Very low	0.0 - 1.1
Low	1.2 - 2.6
Moderate	2.7 - 4.4
Severe	4.5 - 6.5
Very severe	6.6 and over

Source: 1994 Health Conditions in the Americas, PAHO.

Table 1 (Annex I) shows DMFT-12 data for selected countries in the LAC Region. Overall, there is a wide range of dental caries prevalence in the Region, from 1.7 to 8.3, with a mean of about 5.5 (Watson, 1994). Despite the potential methodological differences in the diagnostic criteria and representativity of the population sampled, the data show no country in the very low category. Two countries are in the low DMFT category; twelve countries have a moderate DMFT; another twelve indicate severe DMFT; and have depict very severe DMFT. An increase in incidence and severity is expected during the last decade, due in part to the adverse economic conditions prevailing in the Region.

A special problem in dental caries is baby bottle tooth decay (BBTD), also known as nursing caries (Kaste, 1994). This severe form of dental caries affects primary dentition. It is commonly observed among lower income and isolated communities. This type of dental caries is caused by frequent or prolonged use of baby bottles that contain sugared water, fruit juice, milk, or other sugary beverages during the day or night. In the United States, the proportion of young children with nursing caries is thought to be from 1 to 5 percent. However, some studies of specific population groups report prevalence rates as high as 80 percent. Although not much information is available on nursing caries in the LAC Region, data on certain feeding practices, such as prolonged use of bottle feeding, suggest that this may be a potential problem. Children who experience BBTD are at increased risk for dental disease throughout their lives. The

psychological trauma, health risks, and costs associated with restoration of these grossly carious teeth for children affected can be substantial; general anesthesia is often required for treatment delivery. Since children suffering this condition belong to impoverished families with low levels of education, many of these children are treated with dental extractions. Dietary counseling and early dental preventive interventions are required.

The lack of an appropriate indicator to monitor periodontal diseases among children makes country comparisons difficult. Many studies in the Region have reported a higher prevalence of periodontal diseases among older children (12-15 years-old) than figures reported in the United States.

Oral health among adults

The vast majority of adults (18-64 years) in the Americas, across all ethnic and socioeconomic conditions, are affected by dental caries. In the Unites States DMFT values are greater for white Americans than for African Americans and other minorities (e.g., 10.3 DMFT for whites vs. 6.8 for blacks). However, the number of untreated decayed teeth is greater among African Americans than that among whites at all ages (Oral Health Coordinating Committee - Public Health Service, 1993).

In the LAC Region, dental caries among adults and senior citizens continue the pattern observed in children and young adults, a pattern that frequently leads to loss of teeth and toothlessness. The poor suffer disproportionately from tooth loss because in many areas of the LAC Region the only treatment they have access to or can afford to pay for is extraction. Consequently, tooth loss and toothlessness among fully-grown adults and seniors are socially and culturally accepted conditions in many LAC countries.

Gingivitis and adult-onset periodontal diseases both involve the supporting tissue of the teeth and affect many adults in the LAC Region. Untreated periodontal diseases can lead to tooth mobility, poor esthetics, decreased ability to eat, chew, or speak, and loss of teeth. Gingival inflammation, gum recession, periodontal pockets, and bone resorption are some of the most common indicators of periodontal diseases. Root caries is associated with periodontal diseases and gum recession. It is suspected that these conditions are highly prevalent in LAC.

Studies that have examined occupational status in relation to periodontal disease suggest that in lower-level occupations prevalence tends to increase. Available studies do not elucidate whether this finding may be associated with educational, economic, or cultural variables.

Special mention should be made on oral health among the elderly, particularly in countries undergoing demographic transition. In those countries, the elderly may constitute a priority high risk group for periodontal conditions, root caries, oral manifestations of systemic disorders, and oral and pharyngeal cancer, among others.

Oral and pharyngeal cancer poses a special challenge to oral health programs considering that it is both preventable and lethal. Although oral and pharyngeal cancers are considered rare, they are more common than leukemia, skin melanoma, and other gonadal cancers. Use of tobacco products, including smokeless tobacco, and excessive alcohol use are associated with more than 70 percent of cancer lesions. The combined use of tobacco and alcohol has a synergistic effect. Other factors related to oral and pharyngeal cancer may include viral infections, nutritional deficiencies, immune disorders, and certain occupational exposures. Oral and pharyngeal cancers account for about 4 percent of total cancer cases, resulting in a mortality rate of approximately 3 percent in the LAC Region. In the United States it is the sixth most common cancer among males and the twelfth most common among females. According to a 1992 report from the International Association for Cancer Research, males from Puerto Rico and Martinique showed the highest incidence of cancer of the mouth, with annual rates of over five cases per 100,000 population (Beltrán and Beltrán-Aguilar, 1994). Similar rates were reported for pharyngeal cancers in the same population. Other geographical areas with high oral cancer rates were cities in Brazil, Peru, and Paraguay. Female oral cancer rates were substantially lower, probably because of their lower consumption of tobacco products and alcohol. Oral and pharyngeal cancers are highly lethal conditions. Almost half of all patients die within five years after diagnosis, depending on the site of the primary tumor. Poor survival rates can be attributed to delayed detection and treatment.

HIV/AIDS and Hepatitis B

Infection by the human immunodeficiency virus (HIV) and its associated acquired immunodeficiency syndrome (AIDS) are worldwide epidemics of serious public health concern. As of mid-1993 an estimated 1.5 million adult HIV infections had been reported in the LAC Region, resulting in about 250,000 AIDS cases (Kohn and Brahim, 1994). Public health experts agree that these figures may represent underestimates of both infection and disease. The oral manifestations of HIV infection include oral mycosis, leukoplakia, gingivitis and periodontal diseases, and Kaposi's sarcoma. Many HIV-seropositive persons experience very aggressive forms of destructive periodontal diseases, which can significantly compromise their nutritional status and may require hospitalization. These conditions are important oral health concerns in countries with high HIV/AIDS prevalence. Routine dental examinations can play an important role

in the initial diagnosis of HIV infection and in the management of AIDS. In some instances, oral manifestations associated with HIV infection may be an initial clinical presentation of the infection. Dental professionals should be able to make such diagnoses and refer persons for appropriate medical evaluation.

The dental profession is also concerned with the risk of transmission during the delivery of dental care. An outcome of the AIDS pandemic is an increased interest in infection control procedures. These procedures are also relevant to avoid transmission of hepatitis B. Current epidemiologic data indicate that the health care provider is at much higher risk of getting infected than the patient. Also, the risk of get infected by hepatitis B virus is 100 times the risk for HIV. Consequently standards are required to protect both dental care providers and their patients from transmission of infectious diseases. Protective procedures ought to be simple, practical, effective and low-cost. These standards need to be widely disseminated among the dental profession in order to promote knowledge and compliance.

Conclusions

Although dental problems do not command the instant fears associated with infant mortality, cholera, or malaria, they do have physical and emotional consequences on children and adults. Bleeding gums, impacted teeth, and rotting teeth are routine matters for the children in developing countries of the Americas. Children get used to feeling constant pain. They go to sleep with it. They go to school with it. Children live for months with pain that grown-ups would find unendurable. Children in isolated communities have teeth that look like brownish, broken sticks. Teenagers may have half of their teeth missing. Adults believe that lost teeth are a normal fact of life (Oral Health Coordinating Committee - Public Health Service, 1993).

Millions in Latin America suffer from diseases and conditions of the oral cavity that result in decreased economic productivity through lost work and school days, pain, increased costs, loss of self-esteem, and sometimes death. Oral diseases and conditions, including dental caries, periodontal diseases, and tooth loss, afflict more persons that any other single disease in the Region. These diseases are unevenly distributed in the population, mostly affecting disadvantaged groups such as those isolated in rural areas, the poor, and those with inadequate education. Poor oral health and untreated oral diseases and conditions can have a significant impact on quality of life. Oral and facial pain affect a substantial proportion of the population. Delayed dental treatment may ultimately require more extensive and costly care, as well as restricted activity days. Finally, many of these ailments are preventable through simple and low-cost measures.

Countries need to establish policies to promote oral preventive interventions so that communities can move toward HFA 2000.

b.   Supply factors: Human, educational, and financial resources

Oral health services include preventive and curative activities. Curative services require the use of highly trained providers (mainly dentists in most LAC countries). Preventive services, both individual-oriented (e.g. fluoride gel applications, sealants, and prophylaxis) and community-oriented (e.g. salt and water fluoridation) also require trained personnel. Table 1 provides data based on the traditional way of measuring supply of personnel, number of dentists per population, in selected countries of the LAC Region.

Currently the Region has over 400,000 dentists, with an average of 3.1 dentists per 10,000 population. The actual number of dentists per population ranges between 0.2 to 10.5. Most dentists in the LAC Region establish private practices in urban areas; as a result, there are large underserved areas. The supply of dental care providers is related to the number of institutions that train qualified personnel and the relative size of the population. In the LAC Region, there are 202 schools of dentistry, 65 percent of which are located in Brazil and Mexico. The proportion of new graduates has steadily increased over the last 10 years, which is opposite the trend in numbers of medical schools graduates. The supply, distribution, and type of dental practice are also depend on other factors such as economic development, gender issues, the cost of other professional fields, and other characteristics.

Dental school curricula mostly emphasize curative interventions, very little is offered on public health dentistry. Training is mostly geared to producing professionals for private practice. This is also illustrated by the relative paucity of organized preventive programs in the Region, despite their proven effectiveness. Table 1 depicts the situation of some of these programs in selected countries of the LAC Region. Currently initiatives have been taken to adapt dental practice to the oral health needs of the communities; these initiatives involve coordinating between the training institutions, services, and professional associations. PAHO plays an instrumental role in this movement.

Conclusions

Data available on the supply of dental personnel in the LAC Region suggest that many countries have adequate numbers of dentists, based on standards used in economically developed societies. Important issues not examined through the available data, however, include in-country distribution of dentists and other dental personnel, the quality of their training vis-à-vis the

changing oral health needs, the prevailing practice orientation and its implications for service, the role of other dental personnel, and the accessibility and affordability of services. It is known that most dentists choose to set up their practice in urban locations. This is no different from their physician colleagues. Several analyses conducted to examine the issue of professional maldistribution suggest that a combination of individual, social, and economic factors interact to influence choice of practice location.

Because of the maldistribution of dentists, selected subgroups of the population in LAC countries are deprived of access to adequate dental care. In addition, the prevailing orientation among dentists is curative. Few dentists may consider prevention a primary responsibility. This aspect may be related to the quality of professional education, as well as to economic constraints, i.e. economic incentives, that affect practices. In summary, the availability of adequate numbers of dentists does not ensure accessible or affordable services. Other aspects, such as strengthening national preventive programs, ought to be considered if countries are to move successfully towards improving oral health conditions in the Region.

c.   **Demand factors**

Another issue to be considered when discussing the organization of dental care services is demand for such services. Demand refers to the quantity of dental services that consumers will obtain once factors such as the price, consumers' tastes and preferences, consumers' incomes, and prices of related services have all been accounted for. This notion of demand is considered here because dental care services, whether public or private, are provided in response to potential users' attitudes or perceptions, as well as their purchasing power, particularly in a market for private services. Understanding demand for dental services allows planners to identify potential needs, use patterns, and possible inequities in the distribution of services. Most countries in the Region have no information about nor mechanisms to organize and rationalize demand for dental care, or health care for that matter. In part, this is why dental care may only be available in certain areas of a country, benefiting selected population groups. Organized demand means that potential users of dental services access such services through a reasonable mechanism, making efficient and equitable use of resources. SILOS (local health systems) are an attempt to organize supply and demand of health care services, including dental care, at the local level. An effective SILOS approach should make possible (a) increased oral health coverage; (b) a priority focus; (c) development of efficient models for service delivery; and (d) a comprehensive and effective approach to global care.

When examining demand factors, data on population characteristics, such as demographics, educational level, socioeconomic level (place of residence, family income, occupation); and dental care service delivery characteristics (health care financing, availability of insurance) should be studied. The purpose is to determine (a) whether some or all of the factors described exist in any one country, (b) what are the possible implications of demand on oral health status and service delivery, (c) what is the regional demand pattern, and, (d) what are the potential strategic implications for the development and/or consolidation of organized, rationalized, and sustainable oral health delivery systems in the Region. Demand studies for oral health services are virtually nonexistent in the Region.

d. Analysis of Oral Health in the LAC Region

Three major aspects have been examined with regards to oral health in the LAC Region: The current status and some trends of significant oral diseases; the availability of human resources to provide dental care; and the demand for those services. Several issues emerge in the analysis of each aspect. As regards oral health status, it is clear that a thorough picture is not possible due to the lack of more detailed and timely data. Countries are severely limited in their ability to collect and analyze relevant data for planning or evaluation purposes. PAHO must spearhead efforts to encourage the development of a regional system for oral health information in the LAC Region. In any case, available information indicates that oral health continues to be a critical aspect of general health conditions in the Region because of the burden of disease, its associated treatment costs, and the potential for effective prevention.

One important consideration has to do with the uneven distribution of oral diseases. Disenfranchised populations, including those with low incomes, poor education, or who are geographically isolated, suffer from more prevalent and severe oral diseases as well as delayed care, if any. The inequities associated with this differential distribution ought to be addressed in the design of national preventive programs. Finally, the advent of new diseases, such as HIV and AIDS, has prompted the dental profession and the consumers of dental services to rethink behaviors aimed at infection control, standards for interactions necessarily attendant to care delivery.

As regards resources available to produce dental services, e.g. providers, institutional structures, funding, technology, etc., data indicate that using current developed- country figures as a standard, there are enough dentists in the Region. However, major distribution problems are evident. Moreover, a curative, private practice orientation prevails among professionals, as the result of questionable training paradigms and specific economic conditions. The current oral disease profile poses a challenge to all involved in the delivery of dental care. Dental

schools are faced with new conditions which require them to redesign curricula. Similarly, dentists must rethink their preventive practices and adopt more appropriate techniques in their care delivery.

Resources for delivery of health care services are limited in the region. In the environment of limited funds curative care is restricted to those with the ability to pay, or those with access to social insurance schemes. Again, those left out suffer an undue burden of disease. Furthermore, as a direct consequence of changes in global and local economies, budget limitations, and the competition for available dollars, many countries in the region are making changes in their health sector under the principles of equity, quality, efficiency, and participation. Thus, oral health care must compete for an ever shrinking national budget and contend with increased demands on private resources for non-discretionary expenses.

In this context, new strategies need to be devised. This is the purpose of the proposal advanced here. The strategic objectives presented in the next sections seek to catalyze the process of change of the oral epidemiological profile in the Region, as well as the conditions for supply and demand of services, with full and active participation by the private and public sectors. These objectives are in line with PAHO's 1991-1994 Strategic Orientations and Program Priorities.

II. CONCEPTUALIZATION OF A REGIONAL STRATEGY

Enunciation of strategic goals and objectives

An overview of the current oral health data in the LAC Region show most country members being affected by a high prevalence of dental caries and periodontal diseases. Furthermore, a variety of systemic conditions and/or their sequelae, e.g. diabetes, oral and pharyngeal cancer, etc., have oral manifestations such as dental caries, periodontal conditions, and tooth loss. Also, of emerging importance are the oral manifestations of HIV/AIDS. In general, these diseases are unevenly distributed in the population. Dental caries, although highly prevalent throughout the Region, is most severe among low-income, poorly educated subgroups; most oral and pharyngeal cancers are associated with tobacco and alcohol use; and HIV infection is related to specific sexual behaviors or intravenous drug use.

The most prevalent oral conditions are usually not life-threatening, and so are not included in mortality statistics, or other public health surveillance activities. As a result, dental health lacks a comprehensive system of oral health data collection and reporting. This dearth of data makes planning and policy

making for oral health programs difficult in the LAC Region. A few independent efforts, however, have provided an initial look into oral health conditions and the needs of the population, and have helped ensure the supply of dental personnel.

In order to address the oral health needs of the population and the determinants of oral health, countries in the LAC Region have established mixed oral health delivery schemes, including in both the public and private sectors. Public services, however, are often not considered a priority. In fact, in many LAC countries public dental services are poorly organized, under-financed, and inadequately staffed. Private providers, on the other hand, may be easier to reach, particularly in urban settings, but their approach is mostly curative and their costs are paid on a fee-for-service basis or using third-party schemes. Consequently, in many LAC countries higher income groups generally enjoy greater accessibility, and have better oral health, as compared to the poor, underserved, and unemployed, who suffer the burden of disease and have limited or no access to appropriate preventive and curative services.

In general, the oral health profile as well as the dental care delivery systems operate in the larger socioeconomic, political, and cultural environment of the LAC Region. After a decade of very little economic growth in the LAC Region, there is beginning to be some economic recovery. Yet this economic progress is not paralleled by gains in the social sector. Indicators point to increased poverty, unemployment, and social and political unrest in many countries. Public health services, including dental care, are also immersed in this context of crisis. As a result, service coverage indicators suggest important deficiencies at all levels, which hinder the countries' ability to make significant progress.

Assisting countries in the Region to change both the oral epidemiological profile and the adverse characteristics of dental care delivery systems, in the context described above, poses the greatest challenge to the PAHO Regional Oral Health Program for the 1990s and beyond. In order to adequately address this challenge, the Program will include elements proposed in PAHO strategic orientations such as reorganization of the health sector, consideration of populations at risk, health promotion, social communication, women in health and development, management of knowledge, and mobilization of resources and cooperation among countries. These elements should be expressed in the formulation of Regional Oral Health Objectives and Strategies.

The PAHO Regional Oral Health Program will assume a proactive role to assist countries to strengthen their ability to respond to current and future oral health challenges. Two objectives have been set forth for that purpose:

1. *To promote improvement of oral health conditions in the countries of the Americas, with emphasis on those with a greater burden of disease.*

2. *To assist countries to develop accessible, effective, and sustainable oral health services.*

In line with the Organization's 1995-1998 Strategic Orientations and Program Priorities, the strategies for pursuing the above objectives include:

1. *Promotion of national preventive oral health programs aimed at reducing the prevalence of dental caries, periodontal diseases, and dental fluorosis, including effective epidemiological surveillance systems.*

2. *Strengthen sustainable integration of oral health services into Local Health Systems (SILOS).*

3. *Support policy development in education and communication programs aimed at improving decision- making and community awareness about dental caries, periodontal diseases, HIV and related oral conditions, oral cancer, and preventive practices.*

4. *Encourage training of human resources appropriate to the needs and new directions of oral health programs in the Region.*

5. *Develop a regional oral health information system and communication network for education in oral health.*

Activities in support of these strategies may include policy support, technical assistance, information/education/communication (IEC) actions, and technical cooperation among countries. Evaluation of progress in implementing the strategy will examine variables or indicators of oral health status, oral health service use and sustainability, and successful adoption and implementation of national prevention programs. To this end, a regional oral health data bank will be established.

Typology of country characteristics

International organizations, such as PAHO, have generally utilized a regional perspective in making strategic decisions on resource allocation and country planning. Furthermore, a regional framework that allows for recognition of individual country problems makes it possible to develop targeted strategies. This approach has been used by PAHO to design its Regional Plan for Investment in Health and Environment (PAHO, 1993) and by USAID's Family Planning Services Division (USAID, 1990).

The first step in establishing a strategic typology is to identify variables relevant to country classification. A first approximation, based on availability of data and a logical conceptual framework, indicates that the DMFT-12 and the presence of national preventive policies such as water or salt fluoridation programs may be the most important factors in grouping countries along an oral health development continuum.

The DMFT-12 years is selected as one of the criteria due to its easy measurement and accessibility in most countries of the Region. This indicator allows for cross-country comparisons with sufficient validity and reliability. The presence or absence of a national salt fluoridation program is selected as the second criterion due to its effectiveness, coverage, and low cost. Although equally effective, water fluoridation programs are not considered as appropriate criteria for this typology given their limited coverage in the Region (no country exceeds 30 percent national coverage and most high-risk populations are not served by these programs), and their higher costs (it is more expensive to build and maintain safe water systems). It is assumed that countries that have adopted a salt fluoridation program have made a political decision to support prevention as an essential oral health intervention.

Having established these two criteria, three stages can be defined. First is "emerging," defined as DMFT-12 greater than 5 and absence of a national salt fluoridation program; second is "growth," defined by a DMFT-12 of 3 to 5 and absence of a national salt fluoridation program; and, third, "consolidation" defined by a DMFT-12 lower than 3 and the presence of a national salt fluoridation program. These three DMFT-12 cut-off points correspond to those established by WHO to label severity of dental caries.

Based on the above criteria, the following strategy-oriented typology may be structured:

TYPOLOGY TABLE

EMERGENT	GROWTH	CONSOLIDATION
Belize, Bolivia, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay, Peru, Dominican Republic	*Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Jamaica, Mexico, Panama, Puerto Rico, Suriname, Trinidad/Tobago, Uruguay, Venezuela*	*Bahamas, Bermuda, Canada, Cuba, Guyana, Jamaica, Dominica, USA*

Source: PAHO, 1996

Countries not included in the table do not have the complete data required to make classification possible.

This table is an initial attempt to group countries along an oral health status development continuum. Using the criteria described, most of the countries are grouped in the "Growth" category. However, it is clear that countries in this category are rather heterogeneous and may have different potential for supporting oral health activities. Hence, the respective individual country programs will account for internal characteristics in designing specific plans and programs.

Data presented in this typology can be used as a working matrix to plan and implement strategies. As more data become available in the future, other dimensions may be considered to update and improve this matrix. The overall oral health strategy for the 1990s and beyond will drive countries along the development continuum, from the "emerging" category to the "consolidation" category. In other words, PAHO's strategy will be to develop a series of activities aimed at moving countries with high levels of disease and lacking appropriate preventive policies towards achieving improved status indicators and policies.

III. OPERATIONALIZING THE ORAL HEALTH STRATEGY

An attempt has been made in Section I, using the available data, to present a preliminary picture of what the oral health situation in the Region. Section II proposes objectives and strategies to address the most crucial questions and problems encountered in Section I.

Section III describes specific near-term, medium-term, and longer term activities that may be considered by PAHO, using the strategic framework for charting activities and tracking progress. Preparation of annual work plans that identify precise programs and activities, along with evaluation benchmarks, is necessary to advance along the oral health development continuum. Data-based planning and evaluation are essential.

In this context, PAHO's HSP Division and the Regional Oral Health Program propose to support Oral Health activities in the Region under the following strategic orientations:

1. To promote national preventive oral health programs aimed at reducing the incidence of caries and periodontal diseases. Emphasis should be placed on countries at the "emerging" stage of oral health development, with the goal of reaching a DMFT-12 of 3 by the year 2000.

2. To strengthen sustainable integration of oral health services into Local Health Systems (SILOS).

3. To inspire development and training of human resources appropriate to the needs and direction of the new oral health agenda in the Region.

4. To support policy development in education and communication programs aimed at improving decision making and community awareness about dental caries, periodontal diseases, HIV and related oral conditions, oral cancer, and preventive practices.

5. To develop a regional oral health information system and communication network for education in oral health.

PROJECT IMPLEMENTATION

These five strategic orientations should serve as guidelines for the planning and implementation of oral health activities at the central level as well as at the country level over the next five years. The following sections illustrate how the five orientations will be operationalized. Three elements are discussed for each strategy:

    a. Goals and objectives
    b. Outcomes or impacts that the plan aims to achieve
    c. Country selection criteria

1. NATIONAL PREVENTIVE ORAL HEALTH PROGRAMS: WATER AND SALT FLUORIDATION

The goal of these programs is to increase fluoride coverage in every country in the Region as stated in resolutions adopted by the XVIII Andean Regional Meeting of Health Ministers (REMSA: Reunión de Ministros de Salud del Area Andina) and the X Meeting of the Health Sector of Central America (RESSCA: Reunión del Sector Salud de América Central). These programs are highly desirable for controlling dental caries in the population. Two options similar in their preventive effectiveness are available: salt and water fluoridation. Salt fluoridation, however, is more important for the LAC Region in view of its lower production costs, broader coverage, and greater potential for sustainability. Fluoridated water, in contrast, is more expensive to produce, operate, and maintain, and has limited coverage, especially in hard-to-reach areas. Technological and financial resources necessary for the development and implementation of fluoridated salt programs are very reasonable. Salt is a widely used commodity in all communities at affordable prices. More importantly, these programs have a high probability of becoming sustainable in the short run. Recently the experience with iodized salt to prevent thyroid disease has been heralded as a success. There is no reason why this experience should not be emulated.

These are well-founded reasons why fluoridated salt programs are ideal for Latin America and the Caribbean. Fluoridation of salt for human consumption, especially what is known as "table salt" or "salt for household consumption" is being promoted and used in several countries in Latin America and the Caribbean. Brazil, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Peru, Uruguay, and Venezuela have launched national, regional, or local salt fluoridation programs. Not all of these countries, however, have set up adequate control and biological and chemical monitoring systems. Most have limited

themselves to adding fluoride compounds, sometimes with acceptable controls in the salt mines, but with relatively little control over marketing of the finished product. Similarly, there is no adequate monitoring of consumption patterns or impact on the populations in the countries mentioned. The PAHO Regional Oral Health office will provide leadership and guidelines in these areas to promote adequate salt fluoridation systems in the member countries.

The type of assistance provided to each country will vary depending on needs and resources. For countries at the emerging stage in the typology table, direct donor assistance should be provided to develop a national fluoridation program. Cost of the programs, the willingness of governments and other local groups to invest in salt fluoridation, and the prospects for increased local support and sustainability of such programs should be examined. This requires information on baseline and feasibility assessments. Wherever feasible, governments should be encouraged to consider salt fluoridation programs in their national budgets.

One of the most important considerations when organizing these programs is determining the sources of salt. In the Region, salt consumed usually comes from two main sources: 1) sea water, and 2) salt mines. Salt that originates in sea water is stored in large vats. Solar energy evaporates the excess water and increases the concentration of sodium chloride almost to the point of crystallization. In some countries salt comes from salt deposits, lodes or mines, which are exploited either by injecting water and pumping in order to extract the brine, or by removal from the mines by mechanical means for subsequent processing to eliminate impurities or, if the product is pure, preparing it for use by simple grinding.

As in any program, salt fluoridation has its down sides. The main problem is the presence of areas in the country with optimal or higher levels of natural fluoride, based on WHO standards. The program should avoid the distribution of fluoridated salt into these regions. Furthermore, if the concentration of natural fluoride in the water is four times the optimum or higher, national and local authorities should also warn the population and implement techniques to remove the excess fluoride by appropriate methods. If this is not possible, an attempt should be make to replace the water being used with water containing acceptable levels of fluoride.

As mentioned above, baseline and feasibility assessments are essential to determine whether these programs are possible in a given country. The presence of a successful iodine program in a given country could make the path for salt fluoridation easier, as it would suggest that information necessary for feasibility assessments is readily available. Working with such programs is important.

Multi-Year Plan for Salt Fluoridation Programs

A multi-year plan to develop salt fluoridation programs is presented to guide support for these programs and achieve specific outcomes. The operating principles for this regional plan are a preventive orientation, capacity building, and sustainability. These principles are relevant to the oral epidemiological profile in the Region and the programs' ability to address the problems.

Programmatically, three stages are proposed to carry out salt fluoridation programs: feasibility, short-term evaluation, and long-term evaluation (see Annex 2). Each country can be classified into one of these stages based on the current status of its national water and salt fluoridation programs. These stages correspond to the country typology indicated in an earlier section.

PHASE ONE, Feasibility: Most countries classified in the "emerging" group will be in this phase.

Several preliminary studies are essential prior to determining whether a national fluoridation program may be appropriate in a given country. Two types of preliminary studies are required:

(1) Cost-benefit studies.

The purpose of these studies is to examine the financial feasibility of salt fluoridation programs. The analysis uses a cost-benefit ratio, both expressed in monetary units (e.g., dollars). Costs are estimated based on the production of fluoridated salt; they include direct and indirect costs associated with installation of the facilities and production and distribution of the fluoridated salt. Benefits are calculated based on the savings due to projected unused curative dental care; such savings could in turn be used for other activities or programs. A program is considered appropriate if the benefits exceed the costs. These studies are recommended because they may provide strong support to and justification for the intervention as compared to other interventions. Also, under current economic constraints and market-oriented economies, cost-benefit analysis is the best way to justify the implementation of preventive interventions such as salt fluoridation programs.

(2) Prevalence Baseline studies

Besides cost-benefit analysis, the feasibility study of salt fluoridation requires data on a wide spectrum of areas, ranging from epidemiological to market information. Some of these data may already be available from other

public and private sector activities. Other data, however, will need to be collected de novo. The following is a list of the most important information:

a) Baseline information on disease prevalence. It is essential to have a baseline information on the diseases the program intends to address (e.g. DMFT, oral cancer incidence, etc). The most appropriate protocols include a DMFT and dental fluorosis survey in children ages 6 to 8 years and ages 12 and 15 years.

b) Assessment of fluoride urine excretion. These studies provide the physiological/metabolic information to estimate the amount of fluoride that needs to be added to the salt. The most appropriate protocol includes one urine sample within 24 hours of fluoride ingestion in children ages 3 to 5 years.

c) Baseline levels of fluoride in the drinking water. These data will detect areas where the natural fluoride content precludes the introduction of fluoridated salt. Water samples should be analyzed in a laboratory that complies with technical standards, using a calibrated fluoride ion-specific electrode.

d) Reference on nutritional survey in preschool children. These data will allow for the consumption of salt by the population. These data may already be available from other sources.

e) Assessment of additional sources of fluoride supplements currently available in the market. Fluoride dietary supplements were designed to provide systemic fluoride to mimic water fluoridation or as a supplement in those areas with levels of fluoride below normal. Once salt fluoridation is introduced there is no need for this type of supplementation. Additional activities include the development of epidemiological surveillance systems for quality assurance and control.

PAHO's role should be very active during Phase One. The Organization should encourage member countries and their health authorities to consider preventive benefits of fluoridated salt by information dissemination activities. PAHO should also leverage mobilization of other donors' resources to support and carry out the proposed studies. Based on the information provided by these studies, countries will enter into a second phase.

PHASE II, First Evaluation: Countries classified in the "growth" group may be ready for a First Evaluation, which is to take place after seven years, for after that interval early erupting teeth exposed to salt fluoridation throughout their development can be assessed for reduced paries preventive effects and for the prevalence of fluorosis. This long-term effects ascertained after 14 years will measure the maximal caries preventive effects and measure dental fluorosis in

both early and late erupting teeth. Additional biological monitoring examinations may be measured after additional seven-year intervals.

Ages 6-8, 12, and 15 are specified for the biological monitoring for effectiveness and risk assessment of salt fluoridation. Children ages 6-8 have a complement of early erupting permanent teeth (incisors and first molars) and anticarious effects and the first indications of dental fluorosis may be discerned in these teeth. Children 12 years old conform to WHO's targeted benchmark age for mean DMFT scores for the year 2000. Children age 15 are designated because they are included in the Fourth Edition of WHO's Oral Health Surveys Basic Methods. Ages 12 and 15 are also specified because they permit an assessment of caries and dental fluorosis in later erupting teeth (canines, premolar, and second molars). Age 15 is especially important because it permits an assessment of teeth after they have been in the mouth for three to five years.

Program administrative personnel may decide to conduct biological monitoring examinations at intervals other than 7 years and 14 years, depending on evidence that surfaces on geographic areas that are discovered to have higher than formerly-believed concentrations of fluoride in drinking water or where interim measurements of effectiveness in reducing the prevalence of dental caries suggest it is needed.

This phase involves primarily production and distribution of fluoridated salt. Salt fluoridation programs are sustainable contingent on initial and continued support from the authorities, the community, and the salt production companies. Sustainability refers to the program's ability to continue operative beyond the start-up stage, when country and donor support are available. Sustainability of the program will require continued political support, availability of local technical assistance, and more importantly the ability to generate income that will cover recurrent program costs in the long run. A program will be deemed sustainable if it enjoys support at the highest political level; if it is recognized as beneficial by local oral health leaders; if it is supported by the local salt industry; and if it is accepted by the community, as expressed in the active purchasing and consumption of the fluoridated salt.

An equally important component in this phase is the development of an oral health epidemiological surveillance system. This system will make it possible to monitor program effectiveness and will constitute a benchmark for the development of comprehensive oral surveillance systems for other oral conditions. Recently, PAHO's Oral Health Regional office has developed guidelines for developing surveillance systems for salt fluoridation programs that incorporate detection, reporting, and analysis of disease prevalence data, as well as the baseline data collected during phase I. It is expected that every country that

incorporates a salt fluoridation program will have an operational oral health surveillance system, including biological and chemical monitors (Annex 2).

Biological monitoring includes a urine fluoride excretion study 15 months after implementation of the program and a DMFT/dental fluorosis after 7 years. Chemical monitoring includes periodical evaluation of the natural levels of fluoride in the water and quality assurance of the concentration of fluoride added to the salt. The latter should be a joint effort with the MOH and the salt industry. Finally, obtaining reference materials on nutritional surveys and monitoring of the use of other fluoride sources, such as toothpastes and dietary supplements, should continue in this phase. All this information should be incorporated into the oral health surveillance system.

PAHO's role will be to facilitate and/or catalyze support for both implementation of the fluoridation program and development of a surveillance system. Establishment of a steering committee may be necessary to oversee this phase and to garner support from MOH, the salt industry, the oral products industry, professional associations, and donor agencies. PAHO will provide technical assistance in the development of surveillance systems.

PHASE III, Long-term evaluation: Two types of countries may be found in this phase: first, countries that have successfully moved along the oral health development continuum and have an established fluoridated salt program and DMFT-12 of 3 or less; and second, countries that fall within this category from year 1 of the plan.

Countries in the "consolidation" stage of the strategic typology require continued monitoring and evaluation activities. These activities provide information on program progress, effectiveness, and sustainability, which are important for generating continued support for the program. PAHO's role should be to continue to provide general guidance and support for these activities through specialized technical assistance.

This three-phased multi-year master plan will be updated as needed and will become a basic reference for managing activities. Other programs and activities envisioned in annual work plans should maintain close ties with the master plan.

a. **Goals for Multi-year Plans for Salt and Water Fluoridation Programs**

Short-term goals (1-2 years)

* Initiate feasibility (cost-benefit) and baseline assessments for national salt fluoridation programs in 5 countries.
* Support development of country capability to carry out oral health surveillance.

Medium term (3-4 years)

* Continue feasibility and baseline assessments for additional national fluoridation programs.
* Support establishment of sustainable fluoridation programs in all LAC countries.
* Reinforce country capability to carry out appropriate epidemiological surveillance activities.

Long-term goals (4-6 years)

* Fluoridation programs established in all Latin American countries.
* Sufficient capability in the LAC Region for sustained analysis, planning, implementation, and evaluation of fluoridated salt programs.

b. **Outcomes/Impact**

Short-term outcomes

* Baseline and feasibility assessments for national salt fluoridation programs in five countries completed.
* Oral health surveillance system developed (collection, transmission, storage, analysis, dissemination); technical staff trained; specialized hardware and software installed and operational; communications network operational.

Mid-term outcomes

* Baseline and feasibility assessments for additional national fluoridation programs in process or completed.
* Fluoridation programs in all LAC countries established.
* Country capability to carry out appropriate epidemiological surveillance activities strengthened.

<u>Long-term outcomes</u>

*   Fluoridation programs established and sustainable in all Latin American countries.
*   Capability in the LAC Region for sustained analysis, planning, implementation, and evaluation of fluoridated salt programs fully established and in operation.

c.   **Country Selection Criteria**

Countries will be selected based on the oral health development typology, existence of complementary financial support, donor interest, participation of and endorsement by professional community within the country, and congruence with local MOH policies.

d.   **Annual Program Description**

The annual work plan operationalizes the master, multi-year plan for salt and water fluoridation program development. Five countries have been selected to begin program activities. A country annual work plan will first determine priority problem areas in oral health. Then specific goals and objectives will be set to be accomplished every year. A detailed plan of programs and activities will then be developed, including funding sources, personnel responsible, and a timetable. Evaluation and monitoring activities are an important part of the plan. Meaningful indicators of progress need to be identified.

In sum, a tentative work plan for each country should include the following:

*   Overview of the project: background, strategy and goals.
*   Objectives for current year.
*   Annual program description.
*   Proposed new initiatives.
*   Resources, including financial, infrastructure, and human resources.
*   Staffing, training, and skills.
*   Evaluation plan and indicators.
*   Implementation issues.

Currently, epidemiological surveillance systems have been designed for Mexico, Costa Rica, and Jamaica, based on their particular program design and availability of resources. Venezuela, Ecuador, and Bolivia are carrying out baseline and feasibility studies. Further assistance to develop epidemiological surveillance systems are important to Uruguay, Colombia, and Peru. Training of appropriate human resources for all Central American countries is ongoing.

e. **Objectives Met as of 1996**

As of January, 1996, the Regional Office's activities described in this strategic plan had provided new and updated epidemiologic data for some country members. These data have allowed to reclassify some countries based on their current DMFT levels. The following table reflects these changes.

TYPOLOGY TABLE

EMERGENT	GROWTH	CONSOLIDATION
Belize, Bolivia, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay, Peru, Dominican Republic	Argentina, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, Puerto Rico, Suriname, Trinidad/Tobago, Uruguay, Venezuela	Bahamas, Bermuda, Canada, Cuba, Guyana, Jamaica, Dominica, USA 1996

2. **INTEGRATION OF ORAL HEALTH SERVICES TO THE LOCAL HEALTH SYSTEM (SILOS)**

The purpose of this strategic objective is to strengthen sustainable integration of oral health services into Local Health Systems (SILOS), an important step under the current vision to health sector reform. This integration will allow for increased coverage for dental care through SILOS. Dental services produced in greater quantity and quality, within the integral approach of SILOS, will improve efficiencies in the delivery of care. Improved organization of supply (including personnel management, resource generation and utilization, appropriate interventions, etc.) will maximize service production and quality.

As mentioned earlier SILOS are an attempt to organize supply of and demand for health care services, including dental care, at the local level. An effective SILOS approach should make possible (a) increased oral health coverage; (b) a priority focus; (c) development of efficient models for service delivery; and (d) a comprehensive and effective approach towards global care.

As part of this strategy, a basic oral health package will be developed. This package will include preventive and curative items with enough flexibility in contents and coverage to assure adaptability to specific situations. Available resources and particular needs of the local population will be important elements in determining the package contents. The following are general items to be included in the package: (a) intra- and extra-oral examination for the early detection of dental caries, periodontal diseases, oral cancer, and oral manifestations of HIV/AIDS; (b) treatment plan based on priorities, urgency, and potential for referral, and (c) innovative clinical techniques to arrest caries, e.g. the use of traumatic restorative treatment using glass ionomer cements.

a. Goals for Oral Health and the Local Health Systems

Short-term goals (1-2 years)

* Analysis of demand for dental services, payment patterns, national level expenditure estimates.
* Identification of priorities and beginning work on expanded coverage of dental services through social financing.
* Identification of priorities and beginning of work to expand demand through organized plans.

Medium-term goals (3-4 years)

* Expansion of demand for dental services through SILOS.
* Expansion of demand for dental services through alternative plans.

Long-term goals (4-6 years)

* Extensive and sustainable coverage for dental services through social financing.
* Extensive and sustainable coverage for dental services through alternative financing.

b.   Outcomes/Impact

Short-term outcomes

*   Studies of demand for dental services, payment patterns, national level expenditure estimates completed.
*   Priorities and initial work on expanded coverage for dental services through social financing completed.
*   Priorities and analysis on expanded demand through organized plans completed.

Medium-term outcomes

*   Bolstered demand for dental services through SILOS and through alternative plans.

Long-term outcomes

*   Extensive and sustainable coverage of dental services attained through social financing and through alternative financing.

c.   Country selection criteria

Countries to be included in this program should have taken steps to develop SILOS. Operational manuals should be in place to enable incorporation of oral health services.

3.   HUMAN RESOURCE DEVELOPMENT FOR ORAL HEALTH

This strategy will promote the development and training of human resources appropriate to the needs and direction of the new oral health agenda in the Region and following the other elements in this strategic plan.

a. Goals for Human Resource Development

Short-term goals

*   Continue and strengthen collaborative projects with centers such as the WHO Research Collaborating Centers, and Brazil (CEDROS) and the University of Texas San Antonio Collaborative Study.
*   Establish a Technical Advisory Group to advise and support PAHO's activities in oral health.

*   Establish a core team for technical assistance in areas of epidemiology, organizational development, management, finance, AIDS, and preventive dentistry.
*   Obtain accreditation of dental school curricula to include HIV/AIDS, practice and organizational models, preventive dentistry, etc.
*   WHO Collaborating Centers begin to serve as regional research and training centers.

Medium-term goals

*   Continued support and strengthening of dental school curricula.
*   WHO Collaborating Centers functioning as true regional research and training centers.
*   Planning for increased production of dental personnel.
*   Strengthening of WHO Center as research and training center.

Long-term goals

*   Sufficient supply of appropriately trained dental personnel in the LAC Region.
*   Sustained advanced research and training capacity in WHO Collaborating Centers.

b. Outcomes/Impact

Short-term outcomes

*   A Technical Advisory Group formed to advise and support PAHO's activities in oral health.
*   A core team identified and structured for technical assistance in epidemiology, organizational development, management, finance, AIDS, and preventive dentistry.
*   Accredited dental school curricula introduced.
*   WHO Collaborating Centers established as regional research and training centers.

Medium-term outcomes

*   Dental School curricula strengthened.
*   WHO Collaborating Centers functioning as true regional research and training centers.
*   Plans for increased production of dental personnel prepared.

<u>Long-term outcomes</u>

* Sufficient supply of dental personnel in the LAC Region.
* Sustained advanced research and training capacity in WHO Collaborating Centers.

c. Country selection criteria

Countries to participate in activities within this strategy should have indicated a willingness and agreement to be fully involved.

4. REGIONAL ORAL HEALTH POLICY DEVELOPMENT IN INFORMATION, EDUCATION, AND COMMUNICATIONS PROGRAMS TO ADDRESS THE BURDEN OF ORAL DISEASES, INCLUDING ORAL CANCER AND HIV/AIDS

The purpose of this program is to support information, education, and communications (IEC) programs aimed at improving or encouraging decision-making, community awareness, and behavioral changes to prevent caries, periodontal diseases, HIV and related oral conditions, and oral cancer. These are the most important oral conditions in terms of the burden of disease in the Region. As mentioned in the background section, most of these conditions are associated with specific risk factors, such as poor oral hygiene, inadequate diet, low socioeconomic status, limited education, and pernicious behaviors such as smoking, drug abuse, or unsafe sexual practices. Because of the complex nature of these risk factors, preventive programs also require a multidisciplinary, intersectoral approach. An IEC program has the potential to recognize key aspects related to the incidence of selected risk factors, and to design educational and communications actions to alter those risk factors.

Preventing caries and periodontal disease requires understanding the disease process, popular beliefs and attitudes towards these diseases and their sequelae, and the value of preventive practices. People's perceptions about caries and tooth loss, for example, need to be examined so as to modify them. Some people may believe that caries are a normal stage of tooth evolution, and that tooth loss is an expected outcome of the aging process. Education and communications activities should be designed bearing these cultural characteristics in mind. These perceptions need to change if an effective oral prevention program is to occur.

Oral and pharyngeal cancers (OPC) are an emerging oral health problem in the LAC Region, particularly in certain countries and subregions, such as Brazil and the Caribbean, and certain population subgroups, e.g. blacks of African descent. Approximately 75 percent of all OPCs are attributed to tobacco use in its various forms. Another risk factor for OPC is the excessive use of alcoholic beverages, especially those with a particularly high alcohol content. Moreover, the combined use of alcohol and tobacco has a synergistic effect. Most OPCs cause death; only 50 percent of persons with OPC survive beyond five years after the diagnosis. OPC can be prevented by refraining from tobacco and alcohol use. In addition, early diagnosis favors treatment effectiveness and a favorable prognosis. These primary or secondary prevention measures for OPC may greatly benefit from an IEC program geared to the community and dental care providers. Effective communications campaigns may reduce demand for tobacco or alcohol; educational activities may enhance clinical skills among providers to improve early OPC detection and treatment.

Infection by the human immunodeficiency virus (HIV) and the acquired immune deficiency syndrome (AIDS) are important public health problems in the LAC Region. Over 240,000 cases of AIDS have been reported, and another 2 to 2.5 million are infected with HIV, mostly asymptomatic, in the Americas. This epidemic has major implications for oral health in the Region. The oral cavity is susceptible to HIV-related diseases, and candidiasis, hairy leukoplakia, herpes simplex, Kaposi's sarcoma, lymphoma, and squamous cell carcinoma, among others, have all been linked to the disease. Clinicians are increasingly aware of the oral manifestations associated with HIV infections, which are sometimes one of the first opportunistic infections that appear once the immune system has been damaged by HIV.

Clearly one result of the AIDS pandemic is an international interest in infection control procedures. Dental health care workers are exposed to a wide variety of pathogens. Dentistry is at high risk for accidental exposure. Evidence is clear that while the risk of transmission of HIV in the dental setting may be minimal, careful attention to proper infection control is essential. IEC activities, especially continuing education for professionals, are likely to disseminate preventive behaviors that will minimize the risk of transmission of HIV and AIDS.

a.   **Goals for IEC activities to prevent oral infectious diseases, OPC, and HIV in dental practice in the Region**

Short-term goals

*   Promote the introduction of country policies for IEC activities for oral health.

*   Introduce adequate standards for dental health care providers in the Region.
*   Development of Universal Precautions Guidelines appropriate for the dental community and the Region.
*   Carry out regional conferences on OPC and HIV/AIDS with dental schools, MOH, national AIDS programs.

Medium-term goals

*   IEC policies and programs to prevent OPC and HIV are in place and operating in every country in the Region.
*   Guidelines on Universal Precautions distributed throughout the Region.
*   Prevention of OPC and HIV included in curriculum of all dental schools in the Region.

Long-term goals

*   Institutionalize oral health IEC activities in country programs and activities.

b.   Outcomes/Impact

Short-term outcomes

*   Country policies for IEC activities for oral health designed and introduced.
*   Adequate standards available for dental health care providers in the Region.
*   Universal Precautions Guidelines appropriate for the dental community and the Region developed.
*   Regional conferences on OPC and HIV/AIDS with dental schools, MOH, and national AIDS programs completed.

Medium-term outcomes

*   IEC policies and programs to prevent OPC and HIV in every country in the Region in place and operating.
*   Guidelines on Universal Precautions distributed throughout the Region.
*   Incorporation of universal precautions and standards into the basic preventive package.

* Prevention of OPC, HIV included in curriculum of all dental schools in the Region.

<u>Long-term outcomes</u>

* Oral health IEC activities institutionalized in country oral health programs and activities.

c. **Criteria for country selection**

Countries to participate in activities within this strategy should have indicated willingness and agreement to be fully involved.

5. **DEVELOPMENT OF A REGIONAL ORAL HEALTH INFORMATION SYSTEM AND COMMUNICATION NETWORK FOR EDUCATION IN ORAL HEALTH**

The overall purpose of this strategic objective is to develop a regional oral health information system. This system will provide (1) analytical information for planning and epidemiological surveillance of oral health status, trends, and national preventive programs using fluoride (salt and water), and (2) a regional communication network for the development and sharing of oral health education and science. This information system will be operative through a Regional Oral Health Data Bank (ROHDB).

A. **REGIONAL ORAL HEALTH DATA BANK AND COMMUNICATION NETWORK**

The Regional Oral Health Program, with the assistance of the WHO Oral Health Program, will develop a data bank to assist PAHO and individual countries to collect and analyze oral health data in a complete and systematic manner. This data bank will include data sets generated by the countries' surveillance systems as part of the salt fluoridation programs or any other activities such as surveys of oral disease prevalence. Data will become available to the country members by existing networking schemes such as INTERNET or the World Wide Web (WWW).

Regional Oral Health Data Bank

a.   **Goals**

Short-term goals

*   Develop guidelines to standardize oral health information collected by the country members during their surveillance activities.
*   Develop a centralized data bank suitable to receive, process, and disseminate oral health status information.
*   Train technical personnel in informatics.

Medium-term goals

*   Distribution of guidelines for data collection to member countries.
*   The Regional Oral Health Data Bank will be operational.
*   Introduction of informatics in the dental curriculum.

b.   **Outcomes/Impact**

Short-term outcomes

*   Guidelines for data collection and diagnostic criteria will be produced for the oral conditions to be monitored.
*   A regional data base will be indicated based on indicators (DMFT, dental fluorosis, fluoride concentration in drinking water, manpower, policy, etc.).
*   Personnel trained in informatics will be available at country level.

Medium-term outcomes

*   Guidelines for data collection and diagnostic criteria will be used by the member countries during surveillance activities.
*   An operational oral health data bank will exist and will receive, process, and distribute oral health status information in a timely fashion.
*   Dental curriculum will include aspects of informatics.

Developing Communication Network

a.   **Goals**

Short-term goals

*   Promote the development of educational technology to be use by dental students and health personnel in different settings.
*   Facilitate the testing, maintenance, and modification of learning modules as new knowledge becomes available.
*   Expand participation in the PAHO Expanded Textbook and Instructional Material Program (PALTEX) by the dental schools in the region.
*   Establish a Technical Advisory Group for PAHO activities in oral health.
*   Establish a core team for technical assistance in areas of epidemiology, organizational development, management, finance, AIDS, and preventive dentistry.
*   One Regional Conference of Schools of Dentistry and MOH Directors: establish priority areas of activity for the 1990s.

Medium-term goals

*   Use of appropriate textbooks and other instructional materials by dental students.

Long-term goals

*   Sufficient supply of dental personnel in the LAC Region.

b.   **Outcomes/Impact**

Short-term outcomes

*   A Technical Advisory Group formed to advise and support PAHO activities in oral health.
*   A technical assistance core team identified and set up in the areas of epidemiology, organizational development, management, finance, AIDS, and preventive dentistry.
*   One Regional Conference of Schools of Dentistry and MOH Directors held to establish priority areas of activity for the 1990s.
*   Standardized dental school curricula introduced.

<u>Medium-term outcomes</u>

* Standardization and strengthening of dental school curricula.
* Plans for increased production of dental personnel prepared.

<u>Long-term outcomes</u>

* Sufficient supply of dental personnel in the LAC Region.

c. **Country selection criteria for ROHDB and Communication network**

To participate in this program countries should have indicated their willingness and agreement to participate fully.

B. **ANALYSIS OF ORAL HEALTH MANPOWER PRODUCTION AND DISTRIBUTION IN LAC REGION** (Including public and private sectors)

A system approach is necessary to describe the structure of oral health services in the LAC Region. This structure is comprised of various subsystems, such as public oral health programs, university programs, private sector services, suppliers, etc., which together define inputs, process, and outputs for the system. With quantitative data on financial resources, manpower production, and service delivery, PAHO should be able to identify efficiency, complementariness, constraints, and other characteristics of the overall system. In practice, however, such data is not readily obtainable. For the purpose of this document, a conceptual model will be developed, using one country per subregion as an example. This model will describe the major subsystems and how they relate to one another. An example of this model is presented in Annex 3.

a. **Goals for a system analysis of oral health in the LAC Region** (including public and private sectors)

<u>Short-term goals</u>

* Establish a survey to analyze the oral health system in each country.

<u>Medium-term goals</u>

* Establish linkages of manpower information with Regional Oral Health Data Bank.

<u>Long-term goals</u>

* Support centralized information management capability of manpower supply in all LAC countries.

b.   Outcomes

<u>Short-term outcomes</u>

* Dental manpower supply surveys established in each country through professional organizations such as OFEDO-UDUAL, COSAL, FOLA, and CARDA.

<u>Medium-term outcomes</u>

* Linkages of manpower information with Regional Oral Health Data Bank established and operational.

<u>Long-term outcomes</u>

* Centralized information management capability of manpower supply instituted in all LAC countries.

c.   Country selection criteria

To participate in this program countries should have indicated willingness and agreement to be fully involved.

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V. List of Annexes

Table 1 - DMFT-12 INDICATORS, AVAILABLE HUMAN RESOURCES, AND PREVENTIVE POLICIES FOR ORAL HEALTH IN SELECTED COUNTRIES

Country	DMFT-12 (yr)	Dentist per 10,000 population	National Programs of Salt Fluoridation	% National pop. covered with fluoridated water
Argentina	3.44 (87)	6.81	No	30.0
Chile	Pend (85)	3.95	No	10.0
Paraguay	5.90 (83)	2.16	No	11.0
Uruguay	4.10 (92)	10.50	Yes	2.7
Brazil	6.70 (86)	6.72	No	41.0
Brazil, Sao Paulo	2.76 (94)			
Bolivia	7.60 (81)	2.25	In progress	
Colombia	4.80 (80)	4.34	Yes	
Ecuador	4.94 (88)	10.10	Yes	
Peru	7.00 (90)	3.19	Yes	
Venezuela	3.60 (86)	3.93	Yes	27.2
Costa Rica	4.90 (93)	3.53	Yes	
El Salvador	5.10 (89)	1.46	Projected	
Guatemala	8.12 (87)	1.16	No	9.5
Honduras	8.34 (87)	0.47	Projected	
Nicaragua	5.90 (88)	1.27	Projected	
Panama	4.20 (89)	3.48	Projected	52.0 URB, 1.2 RUR
Belize	6.00 (89)	0.80	Projected	
Cuba	2.90 (89)	5.94	Projected	2.4
Dominican Rep.	6.00 (86)	2.36	Projected	16.0
Guyana	1.33 (95)		No	
Haiti	2.20 (94)	0.32	No	
Jamaica	1.08 (95)	0.23	Yes	
Trinidad/Tobago	4.90(89)	0.93	No	
United States	1.73 (87)			62.1
Mexico	3.16 (84)	3.75	Yes	12.0

Source: PAHO, 1996

<u>Table 2 - Epidemiological Surveillance</u>

PAN AMERICAN HEALTH ORGANIZATION
REGIONAL ORAL HEALTH PROGRAM
Recommendations for Epidemiological Surveillance
National Preventive Programs of Water and Salt Fluoridation

January 1996

BIOLOGIC MONITORING

Phase I Feasibility	Phase II First Evaluation	Phase II Long-Term Evaluation
Baseline DMFT and dental fluorosis survey in 6-8, 12, and 15-year-old children	DMFT and dental fluorosis survey in 6-8, 12, and 15-year-old children seven years after program implementation	DMFT and dental fluorosis survey in 6-8, 12, and 15 year-old children fourteen years after program implementation
Initial assessment of urine fluoride excretion in 3-5 year-old children, one sample/24 hours, after 15 months of implementation.	Urine fluoride excretion in 3-5 year-old children 15 months after program implementation (one sample/24 hours)	Periodic evaluation of urine fluoride excretion in 3-5 year-old children (one sample/24 hours)

CHEMICAL MONITORING

Phase I Feasibility	Phase II First Evaluation	Phase III Long-Term Evaluation
Baseline levels of fluoride in the drinking water	Periodical sampling and determination of fluoride in the drinking water	Continue periodical sampling and determination of fluoride in the drinking water
Nutritional/dietary survey in preschool children (possible already available in the country)	Reference on nutritional/dietary survey in preschool children	Reference on nutritional/dietary survey in preschool children
Baseline study on toothpaste use in preschool children	Periodical evaluation of toothpaste use in preschool children	Continue periodical evaluation of toothpaste use in preschool children
Baseline study on marketing and use of fluoride-containing products, e.g., dietary supplements, available in the market	Periodical monitoring of fluoride-containing products in the market	Continue periodical monitoring of fluoride-containing products in the market
Develop epidemiologic surveillance guidelines for quality assurance and control	Periodical monitoring and quality assurance of fluoride concentration	Continue periodical monitoring and quality assurance of fluoride concentration