

Reforming the Oral Health Sector in Uganda: A Primary Health Care approach.

MPH Integrating Experience: Special Studies (550.866)

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05/01/03

**Executive Summary:**

This paper outlines the need for reform of the oral health care delivery system in Uganda as fully as possible given the limited information base. The paper looks into the evolution of organized oral healthcare in Uganda as well as the havoc wrecked on healthcare provision in general by two decades of civil strife in an effort to find explanations for the lack of an oral health plan in Uganda based on the oral health priorities of the population. Feasible recommendations are put forward against this background, highlighting the need for an evidence based approach to oral health in this third world country and the importance of focusing on preventive policies which have been shown to be effective elsewhere. Preventive policy models are suggested drawing from the rich experiences of countries like New Zealand, Tanzania and Thailand. The paper concludes with a call to all Ugandan oral health workers to take personal and collective responsibility for the improvement of oral health outcomes of 24 million Ugandans through research, communication, adherence to professional ethics and cooperation.

## **Introduction:**

Uganda has no comprehensive national oral health care policy<sup>1</sup>. The existing oral health care system has no clearly defined goals, and has a largely therapeutic and technological bias. A primary health care approach that adds a community-based dimension to health care provision has not been adapted by this sector of the Uganda Health System. In 1994, the WHO Regional Committee for Africa recommended the formulation of comprehensive National Oral Health policies by African countries based on Primary Health Care. The call came following a consensus that the oral health priorities of these countries had not been taken into consideration during the establishment of Oral health services under and immediately following colonial rule.<sup>2</sup> In 1989, a National oral health plan committee set up by the Ministry of Health carried out a population-based survey to assess the oral health needs of Ugandans and to make manpower projections. The recommendations of the committee revolved around the need to expand curative dental services in Uganda. The primary health care approach was briefly discussed but not exhaustively explored as a feasible alternative for oral health care delivery.<sup>3</sup> None of the recommendations of the committee have ever been implemented.

In the industrialised world, oral health services developed mainly in response to dental caries, a condition that became widespread with the advent of the centrifuge and the availability of large quantities of cheap sugar from the colonies and sugar plantations of Europe and America. In keeping with the traditional model of health care provision, the focus of the oral health system in Uganda is on oral conditions more relevant to the developed world; particularly tooth decay. As its name suggests, the traditional model applies “persistent and pervasive ideologies” inherited from the past<sup>4</sup>.

The objective of this paper is to carry out a critical analysis of the focus of the oral health system in Uganda particularly with regard to the lack of congruence between oral health priorities in the country and present strategies of service delivery, to suggest alternatives to address this problem and make policy recommendations. The origins of the problem are to be found in the manner in which organized oral healthcare was introduced into Uganda as well as the drawn out civil conflict soon after independence that stunted Health Systems research development, prevented evidence-based decision making and delayed Uganda's adaptation of the Primary Health Care approach<sup>5</sup>.

#### **Overview of the current structure of oral health services in Uganda:**

At the time of independence in 1962, Uganda had a total of ten oral health workers all of whom were dental surgeons serving seven and a half million people<sup>3</sup>. The vast majority of people particularly those in rural areas derived their oral health services from traditional healers. The practices of traditional “dentists” over the years have not been well documented but their utilization by the population is believed to be significant. Uganda is one of the few countries in Sub Saharan Africa where oral health services are part of the services offered by government. Uganda initially elected to train a cadre of auxiliaries to provide the bulk of oral health services: In 1975, the first 14 Public Health Dental Assistants (now called Public Health Dental Officers/PDHOs) graduated from the Mulago paramedical school. It was perceived that the oral health needs of the population as well as the resources at hand demanded for a health worker who could provide basic curative services and was relatively cheaper to train. Although their title suggested a community-based orientation, a survey done in 1989<sup>3</sup> revealed that none of the PDHOs offered services anywhere outside their clinics. In other words their services were strictly hospital-based in keeping with the health service provision in Uganda at that time. This

scenario still persists up to this day. In 1987, the first 7 Ugandan-trained dental surgeons graduated from Makerere University. The dental surgeons were trained to be able to provide basic medical care in the absence of a doctor, to be proficient in general dentistry and basic oral surgery.

Based on this, the oral health workforce should now consist of approximately: 100 dental surgeons and 380 PDHOs serving a population of 24,600,000 million people. However losses to the work force have occurred due to out migration, death and involvement in other economic activities not related to oral health care provision. More realistic approximations stand at 50 dental surgeons and 300 PDHOs. The biggest problem presently is the skewed distribution of this workforce, with about 80% of the dental surgeons and 50% of the PDHOs concentrated in urban areas of which Kampala has the majority. Uganda's rural populace that accounts for up to 85% of its entire population continues to rely heavily on "traditional dentists", self-treatment and the district hospitals for curative services. Each district hospital is equipped with a dental clinic. Each health sub-district is expected to employ 2 dental surgeons and at least 4 PDHOs. These requirements do not necessitate an increase in number of oral health workers trained but rather improved distribution of these workers and innovative measures to increase retention and prevent brain drain from the country as a whole. Currently, community outreach programs in the districts do not include oral health services. The primary school oral health outreaches once quite active during the 1980s have collapsed due to logistic problems. Community health workers, school teachers, midwives, nurses, drug vendors, traditional dentists all of whom are in close contact with communities have not been trained to provide oral health education, promotion and management services. Involvement of these groups of people is necessary to empower communities to take charge of their oral health.

*Training:* Dental surgeons train for five years (about 9803 actual contact hours) with a mandatory 1- year of internship training in addition to this. Public Health Dental Officers train for three years (about 1548 actual contact hours). The Public Health Dental Officers' school receives funding from DANIDA. Government of Uganda funds the training of most of the dental surgeons.

*Specialist services:* The greatest need for specialist oral health services in Uganda is oral and maxillofacial surgery. This is expected to be provided by the dental surgeons stationed in district and regional hospitals for example the management of fractures and dislocations, abscesses, simple cysts, suturing of lacerations and other basic oral surgery. Complicated cases can only be handled at the Oral Surgery department in the National referral hospital in Kampala.

**Problem statement and significance:**

Uganda is located in Sub Saharan Africa and has a population of 24,600,000 people.<sup>6</sup> The country is for the most part in the pre-epidemiological phase of epidemiologic transition. The National burden of disease according to the Ministry of health is Maternal and perinatal conditions (20%), Malaria (15.4%), Acute respiratory illnesses (10.5%), HIV/AIDS(9.1%). Other major diseases are tuberculosis, malnutrition, trauma/accidents and cardiovascular diseases<sup>7</sup>. Infant mortality is 89 per 1000 live births<sup>8</sup> and the leading cause of death among children under five years of age is diarrhoea accounting for 29% of all under-5 deaths<sup>9</sup>. Clearly, communicable rather than Non-communicable diseases form the bulk of Uganda's public health problems.

In recent years, health has come to be described as a state of well-being and absence of disease as opposed to simply being understood and studied in terms of survival.<sup>10</sup> A wide spectrum of conditions and diseases fall under the auspices of oral health. Oral

health in many parts of the developed and developing world is considered a fundamental aspect of general health. Furthermore, an individual's oral health status may serve as an important indicator of the presence or absence of underlying systemic illness for example malnutrition, HIV infection and cancer. Two points need to be made here: Oral health conditions in Uganda are more likely to be those associated with malnutrition, poor oral hygiene, accidents/trauma and oral cancer. There is a small proportion of Ugandans that are approaching the epidemiological transition faster than the majority given that 14% of Ugandans reside in urban areas and Uganda has a Gini index of 40.8<sup>11</sup>. Non-communicable oral conditions such as dental caries (which is associated with consumption of refined sugar) are likely to be higher in this sub group of people.

Presently, oral health is not a priority of the Ministry of Health but is documented as part of the Uganda National Minimum Healthcare Package (UNMHCP) under essential *clinical care*<sup>12</sup>. Although resources are being directed into oral health for training, payment of government employees and equipping dental clinics in Government hospitals and health centres nationwide, the impact of the oral health care system has not been comprehensively measured in terms of appropriateness, effectiveness, coverage, efficiency and equity. This is an issue of concern because there is no means of measuring how resources allocated to oral health are being utilized. The lack of clear-cut goals and objectives within the framework of a National oral health policy or plan make the situation alarming. Some conditions related to oral health, which are not receiving the attention they should, stand out as significant public health problems in Uganda and are briefly outlined below.

*Oral diseases and related conditions in Ugandan children:*

Traditional germectomy (*ebiinyo*) is a traditional practice that continues to be a significant cause of death and morbidity among infants in Uganda. It involves the removal of developing tooth buds in children aged from 1 to 18 months using crude and many times unsterilized instruments by traditional healers. One study reported a proportional mortality rate (proportion of observed deaths in a defined population due to a specified condition) due to this practice of 3.3% and a case fatality rate due to the resulting septicemia of 21.1% after measles and meningitis in Northern Uganda alone<sup>13</sup>. The fact that this practice is so persistent and widespread has negative implications for the successful implementation of child survival programs in Uganda<sup>14</sup>. Research into germectomy is often not documented making it difficult for policy makers and other stakeholders to obtain current and important information on the issue. The most obvious concern is that even if the child does not die of septicaemia, the diarrhoea goes untreated and this may result in death.

90% of childhood lymphomas in Uganda are due to Burkitt's lymphoma, of these 72 % affect the oral cavity primarily.<sup>15</sup> Although this lymphoma is successfully treated by chemotherapy, a 50% relapse rate has been reported. A study carried out in 1980 found that relapse is influenced most by stage of disease when therapy is commenced.<sup>15</sup> Uganda lies in the lymphoma belt of Africa where Burkitt's lymphoma is endemic and is associated with malaria infection.<sup>16</sup> There are no public health efforts underway in Uganda to increase the population's awareness of Burkitt's Lymphoma and the importance of seeking treatment early nor do we have programmes in place for the early detection of this malignancy in regions of the country where prevalence is known to be high. The progression of Burkitt's lymphoma is so rapid that children die within four months without treatment.



In informal urban areas, the limited studies done in the past few years indicate that the rates of dental caries are high at least among younger children. A survey carried out in 3 locations in Kampala in 1997 revealed that caries status in 5-7 year old children varied by residence<sup>17</sup> Mean dmft\* scores were highest for children in informal urban locations. A breakdown of the score showed highest decayed components for the informal urban children, a finding that reflects high rates of unmet oral healthcare needs especially for particular socio-economic subgroups of the population. Of the three countries covered by the study, Uganda had the highest overall dmft score. The missing components contributed to the high overall dmft scores observed in Uganda, a finding that the investigators attributed to the persistent traditional practice of removal of primary canine tooth buds (termed traditional germectomy or ebiinyo) for the management of childhood illnesses particularly diarrhoea.

In Uganda, there is no data available on gangrenous stomatitis / Noma (Cancrum Oris), a potentially fatal orofacial infection affecting children aged 1-7 years with an annual incidence of 100,000 cases in Sub Saharan Africa.<sup>18</sup>The case fatality rate is believed to be 70-90%<sup>19</sup> but the true rate is difficult to estimate because the worst hit children who tend to be malnourished and immunosuppressed, live in impoverished conditions remote from community health services. Uganda is one of the countries in Sub Saharan Africa believed by the WHO to have a significant Noma problem.<sup>19</sup>The prevalence of oral congenital anomalies which usually interfere with feeding, acute necrotising gingivitis and fluorosis in African children are believed to be high and the severity correspondingly great due to lack of access to health services.<sup>20</sup>Again, Uganda has no reliable statistics on these conditions. Malnutrition, high parasite loads and ignorance are postulated to play a role in the aetiology and poor control of some of the infections

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\* dmft refers to the total decayed, missing/extracted and filled teeth in an individual's primary dentition. The score is the average of this for a group of

highlighted above<sup>21</sup> therefore assessing the incidence and prevalence of these diseases would go a long way in improving our understanding of the factors that affect child survival in Uganda.

*Oral diseases and related conditions in adolescents and adults in Uganda:*

Prevalence of HIV/AIDS among adults is 5.0% in Uganda.<sup>22</sup> Adults aged 15-49 years account for 70% of all HIV infections in the country. Like other systemic diseases, some of the earliest symptoms of HIV and progression to AIDS manifest in the oral cavity<sup>23</sup>. Other features of HIV infection such as severe persistent oral ulcers and gum lesions can alert the oral health worker to the presence of immunosuppression in a young adult.<sup>24</sup> Oral lesions such as oral Kaposi's Sarcoma and hairy leukoplakia are considered pathognomic of HIV infection.<sup>25</sup> However, the potential role of dental/oral health care workers in the fight against HIV/AIDS through research, detection of immuno-suppression in their patients, advocates for voluntary counselling and testing, management of HIV positive patients and of course maintaining infection control practices remains virtually uncoordinated and undefined.

In young adults, the rising incidence of road traffic accidents and the continued pockets of conflict in the country has led to an increased burden on health due to trauma. Victims of traffic accidents occupy 28% of the beds<sup>26</sup> in the National referral hospital, Mulago. In 2001, a total of 9000 traffic accidents were reported to the Police in Kampala alone<sup>26</sup>. Although there is no reliable information on type and severity of injury, because of the lack of helmet and seat belt laws in Uganda, orofacial injuries are believed to be high in both magnitude and severity. Health workers including oral health workers should play their role in improving this situation by careful data collection, which can be used to inform the public and policy makers.

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individuals. It is used in dental surveys as a measure of caries prevalence. DMFT is the score used for prevalence of caries based on the permanent dentition.

The rise in the sale, marketing and use of tobacco<sup>27</sup> signal the need to plan and implement educational and preventive services. Smoking prevalence for adults is 52% among males, 17.6% among females in Uganda<sup>28</sup> with an overall prevalence of 69% in Ugandan adults in 1995.<sup>29</sup> Smoking prevalence among the youth is 58.06%.<sup>29</sup> One hospital-based retrospective study found a positive history of tobacco use in 75% of histologically confirmed oral cancer cases<sup>30</sup>. Of these cases, 15% were below 40 years of age probably due to the early age of initiation of smoking in Uganda. Again oral health workers can serve as powerful sources of information and education as regards shaping tobacco policy in Uganda. Public awareness of the ill effects of tobacco remains low and the age of initiation of smoking is reported to be as low as 13.4 years in some parts of the country.<sup>31</sup> The potential roles and responsibilities of the oral health system remain under-emphasised and ignored mainly because there is no data to bring these issues to the forefront.

Periodontitis is believed to be unacceptably high among adolescents and adults particularly in rural populations implying poor oral hygiene and possibly poor nutrition.<sup>32</sup> The most recent survey of periodontal disease done on 1394 Ugandans in 1969, found extensive formation of periodontal pockets in a significant number of 10-14 year olds.<sup>33</sup> The 1989 oral health survey found high levels of poor oral hygiene among 6, 12 and 35-44 year olds but this was not associated with any significant tooth loss due to periodontal disease.<sup>3</sup> This finding suggests that there may be less need for clinical interventions such as scaling for the management of periodontitis in the Ugandan population and instead more emphasis on personal oral hygiene education.

Overall, this picture is less than accurate for making concrete statements about the distribution and determinants of oral conditions in Uganda, which translates directly into inadequate empirical evidence for informed decision-making. The rationale for tooth decay

forming the central focus of our training, our practice and our programs is questionable and should be critically reassessed. Specifically, the national health policy aims with regard to oral/dental health, only to “ensure availability of basic *dental treatment* services, with adequate supplies in all district hospitals and upgraded health centres”<sup>12</sup> (Emphasis author’s). The oral health system continues to focus on the management of tooth decay and its consequences as is reflected by the contents of the training curricula and the few oral health surveys that have been carried out. However, while some studies seem to indicate that the incidence of dental caries for the most part has remained static<sup>34,35,36,37,38</sup> other studies indicate that it may have increased for the subgroup of 5-7 year old children in the informal urban setting<sup>17</sup>.

Table 1: Trends in the prevalence and severity of dental caries in selected age groups in Uganda

Date of study	Age-group(s) studied (Years).	Sample size	Residence	Average DMFT/dmft per person*.	Prevalence†	Reference
1972	5-14	1139	National estimate	0.1-0.9	Low	34
1973	6-15	875	Urban	0.6-2.7	Low-	35

					moderate	
1988	12	1245	National estimate	0.45	Low	36
1993	12	NS <sup>§</sup>	National estimate	0.4	Low	37
1997	5-7	303	Urban	1.9	Moderate	} 17
			Informal urban	3.3	High	
			Rural	3.3	High	
			Overall	2.8 <sup>‡</sup>	Moderate	
1996-1997	10-14	481	Rural	0.3-0.9	Low	38

\* dmft refers to the decayed, missing/extracted and filled teeth in an individual's primary dentition. The score given is the average of this for a group of individuals. It is used in dental surveys as a measure of caries prevalence. DMFT is the score used for prevalence of caries based on the permanent dentition. As an average value it may mask high levels of unmet needs in sub groups of the population.

† WHO has defined a high caries prevalence as an average dmft/DMFT score greater than 3 for a given population.

‡ This value reduced to 2.2 when children with teeth missing due to germectomy were removed from the analysis.

§ Not stated.

The high dmft values portrayed here should be interpreted with caution for purposes of comparing the results of the study, referenced 17 to the other studies/surveys which focused on permanent teeth since the susceptibility of deciduous teeth to decay is believed to be greater than that of the permanent teeth. Although Manji et al<sup>39</sup> have argued that the more rapid progression of caries through the relatively thin enamel of deciduous teeth may give a false impression of higher susceptibility to initiation of carious lesions.

Against this background it is of concern that we do not have an appropriate National oral health plan to guide educators, public and private health workers and decision-makers at all levels and it is hardly surprising that we do not know what impact the existing largely curative based oral health services have on the oral health outcomes of Ugandans. The justification for allocating public resources to oral health therefore becomes questionable in the absence of evaluation and priority setting programs. Oral health research in Uganda is typically carried out in a fragmented manner with no fora in place for the translation of research findings into policy or feasible interventions.

**Key determinants:** These are the factors the data seem to indicate are contributing to the lack of an appropriate community-based oral health care system in Uganda.

**History of Organized Oral healthcare services in Uganda:**

Under colonial administration in Uganda, oral health services were designed to serve the European settlers and their families, the premise being that Africans had no need of such services hardly having been exposed to dietary sucrose the major cause of tooth decay.<sup>40</sup> It is important to note here that the oral health priorities of Europe at that time set the tone for the services that were established in the colonies. Furthermore since the rise of dentistry in Europe had been tempered by the fact that access to oral

healthcare was a luxury available only to those who could afford sugar, the treatment of tooth decay became the sole focus of the profession at that time.<sup>41</sup> Training curricula were developed by dentists trained abroad, a scenario common to many developing countries with complex dental care becoming the focus in an effort to preserve tradition and standards of quality defined by Western schools.<sup>42</sup> In this context, the field of oral health stood little chance of ever developing as an independent entity based on epidemiological data and paradigms specific to the Ugandan setting. Thus, oral healthcare provision as it is practiced in Uganda today is overwhelmingly dominated by wealthy urban clientele and a reparative approach is the basis of professional practice. Due to resource limitations it does not seem feasible to train professionals who are more at home practising in urban settings or developed countries.

**Resource constraints:**

Uganda is one of the world's 20 poorest countries with a Human development index of 158.<sup>43</sup> The government spends \$4.00 per head of the population on health.<sup>44</sup> Like other developing countries in Africa, Uganda's health system was based on the social welfare models emanating from Europe during the colonial era with the government bearing sole responsibility for the health of its citizens. The lack of sustainability of a State-funded health care system in Uganda however was already obvious by 1971<sup>5</sup>. In the 1960s, Uganda had been cited as having the best health status indicators in Sub Saharan Africa<sup>45</sup> but by 1986, following decades of political instability which led to the breakdown of physical infrastructure and international trade links, Uganda was ranked fortieth and now has some of the worst health indicators in the region.<sup>46</sup> In 1986, only 4% of public expenditure was allocated to health and the Ministry of the health budget was only 6.4% of its 1970 levels.<sup>5</sup> Currently, the public expenditure on health as a percentage of GDP is 1.9%

compared to the Sub Saharan Africa average of 1.7%.<sup>11</sup> Uganda faces challenges in financing its public health sector, these challenges include a low tax base and heavy dependence on donor funding which limits decision-making.<sup>47</sup> Oral health cannot be given public resource allocation priority in this situation and the oral health system has in general not been significantly supported by external funding. In 1989, 2% of the total Ministry of Health expenditure was allocated to oral health. Of this, 37.4% was spent on equipment and maintenance, 22.7% on training of workers and the remainder was used to pay workers among other things.<sup>3</sup> At that time there was no specific allocation for preventive public health programs. In urban Kampala, the private oral health sector is well developed but this leaves the needs of the rural and informal urban populace catered for only by largely inadequate and inappropriate public oral health services.

**Lack of informed decision-making:**

During the Idi Amin regime (1972 to 1979) there developed a pervasive climate of fear that led to health policy developing only from a series of government decrees that went unquestioned and unchallenged by academics and health workers.<sup>5</sup> Towards the end of the 1970s, the Alma Ata declaration initiated sweeping reforms to health systems of developing countries with a shift from urban curative-based models to Primary Health Care philosophies that aimed at empowering communities to take control of their own health and promoting affordable, appropriate methods of health care delivery. No definable fora existed in Uganda at that time for the Primary Health Care approach to be translated into policy.<sup>48</sup> As a result of this, throughout the early 1980s, the government that had displaced Idi Amin concentrated on expanding the public health system through the construction and equipping of District Hospitals. Owing to



the country's isolation from international debates concerned with Primary Health Care, this approach to healthcare was not embraced until the late 1980s.<sup>48</sup>

### **Emergence of HIV and the rise of infectious diseases:**

On top of the havoc wrecked on the civil structure by war and poverty, Uganda has had to deal with one of the worst AIDS crises in the history of the pandemic. The high infant mortality, uncontrolled endemic malaria and the emergence of HIV/AIDS along with tuberculosis whose spread had been facilitated by the conflict and civil disruption gave the 1986 NRM government pressing health issues to attend to and pushed less life threatening conditions such Oral health and Mental health to the background.<sup>49</sup> This led to oral health as an aspect of general health lagging behind in terms of manpower development, research, planning of services and policy making.

### **Development of vertical programmes during the post conflict era in the 1980s:**

Within the context of post conflict rehabilitation of the health system, there was internal and external pressure on the new 1986 NRM regime to return the Nations' health status to what it had been in the 1960s.<sup>5</sup> This led to the rapid development of vertical programmes, accompanied by infrastructural rehabilitation of the health system. This programmatic approach to rehabilitation in the post-conflict era did not do much to address multisectoral collaboration and correct the inherent structural deficiencies of the National health system<sup>5</sup>. It was not until ten years later that a National Health Policy was drafted that sought to rectify the mistakes made during this period immediately following the resolution of the conflict.<sup>50</sup> Oral health care as with all other sectors of health was negatively affected by the general lack of adaptation of an integrated, multisectoral approach to health service delivery during this period.

### **The persistence of the traditional approach in the health system:**

This approach aims at treating disease as it develops. It is based on the clinical model in which oral ill health is linked to a specific infection thus justifying clinical intervention. Health workers are under pressure to resolve patient complaints during the brief clinical encounter even though this bias towards intervention may be largely ineffective in producing sustained improvements in the oral health status of the population. The model relies on the diagnosis of a condition, which in turn is influenced by treatment seeking behaviours and the tendency of oral health workers to focus on repair rather than prevention. In Uganda, where the training of oral health workers to provide primarily curative services has not been accompanied by availability of highly technological dental equipment or the development of affordable means of treatment, the inclination has been towards what WHO has termed the “forceps” approach<sup>51</sup>, with widespread and unnecessary edentulousness in the population being the outcome of this practice. In any case, full coverage of the population through treatment would quickly exhaust the entire National health budget of Uganda and even then the objective of treating all oral disorders may not have been attained. Clearly in order to achieve oral health for all Ugandans the traditional approach is not the most appropriate.

### **Stakeholders and their requirements**

**Central government:** This includes specifically the line ministry: Ministry of Health, Uganda and other ministries such as the Ministry of Education. This stakeholder is concerned with setting policies that will improve oral health outcomes for Ugandans through affordable, acceptable and effective means. It will be necessary to guide the Central government through dialogue and provision of

appropriate data to a state of informed decision-making regarding the need to divert resources for health care from curative based to preventive public health interventions, which are more cost effective.

*Local administrators:* The local administrators are charged with the task of implementing Central government policies and setting goals relevant to the problems in their health Sub-districts. They face challenges such as high rates of health worker attrition and inability to afford salaries for highly qualified staff such as dental surgeons. There is need for the oral health professionals to establish good communication lines with this group of people and for the training institutions to produce appropriately trained personnel who do not feel redundant in rural settings.

*Professional bodies and private not for profit service providers:* Both private and public professionals and other oral health care providers such as the traditional “dentists” should be consulted regarding their concerns, needs and ideas on how best to improve the delivery of oral health care. Their input should be sought through meetings and consultative workshops and the implementation of policies and programs should follow consensus and understanding among this group of stakeholders. Efforts should be made to address the tensions that may arise due to conflicting interests between the different professional organizations.

*International donors:* The importance of the need to re-prioritise goals and objectives within the oral health sector should be impressed upon the international donors. The information provided to this group of stakeholders should be credible and convincing based on scientific methods of data collection.

*Training institutions and academia:* Efforts should be made to facilitate the role of this group of stakeholders as regards the critical re-assessment of the training curricula. Where necessary resources should be geared towards providing trainers with the appropriate skills

and knowledge to enable them carry out their role competently. National guidelines on the goals and objectives of the oral health system should be drawn up in full consultation with trainers. Agreed upon guidelines should then be made accessible to them in order to achieve congruence between the training of health providers and the Oral health system priorities.

*Communities:* This important group of stakeholders, values good overall health in order to be able to adequately perform economic and social functions on a daily basis. Contact with the health system at any level should be accompanied by some guarantee of improved oral health outcomes. Communities should be actively involved at every stage of the re-assessment of Uganda's oral health sector: from baseline surveys, implementation of programs to monitoring and evaluation. Good communication patterns must be established that enable communities to make informed decisions about their oral health.

#### **Identification of alternative strategies to the method of provision of oral health care in Uganda:**

With the current environment of economic growth and political stability, this is an opportune time for Uganda to adopt a multisectoral, community-based approach to the provision of oral health services supported by affordable and sustainable methods and technology. For this to happen, setting of objectives, program implementation and choice of health worker training must be informed by evidence gathered through standard research techniques. It is important to establish dialogue between researchers and decision-makers so that common ground can be reached regarding issues perceived to be of scientific merit to researchers and issues of pressing importance to decision makers. Immediate priorities appear to be resource mobilization and data collection, in effect setting the stage for the design of a comprehensive oral health care plan for Uganda. For planning purposes, we must add feasibility, coverage and equity to our original equation of health care provision. We should also learn from the lessons of other developing countries such as Sri Lanka and

Tanzania which have already begun to make the transition from curative based to cheaper community based preventive oral health services.<sup>52, 53</sup>

For this to occur the following strategy is recommended:

- (i) Adaptation of the primary health care approach
- (ii) Emphasis on a systematic model in adaptation of Primary health care.

**The primary health care approach:**

According to its definition<sup>54</sup> this approach aims at using effective, affordable and acceptable means and technology of bringing health care close to empowered communities. It should form the central focus of a country's health system.<sup>54</sup> It follows therefore that to increase equity, coverage and to justify the allocation of public resources to oral health care any oral health plan for Uganda should revolve around the theme of primary health care. If properly implemented, it would ensure that resources are utilised efficiently and appropriately. The social and economic factors that govern the health of a community at any given stage of its development should be taken into consideration when implementing a primary health care program. If as oral health workers we do not lobby and advocate for policies that influence social, cultural and economic factors which impact oral ill health then we have failed to adapt our system of care delivery to the primary health care approach.

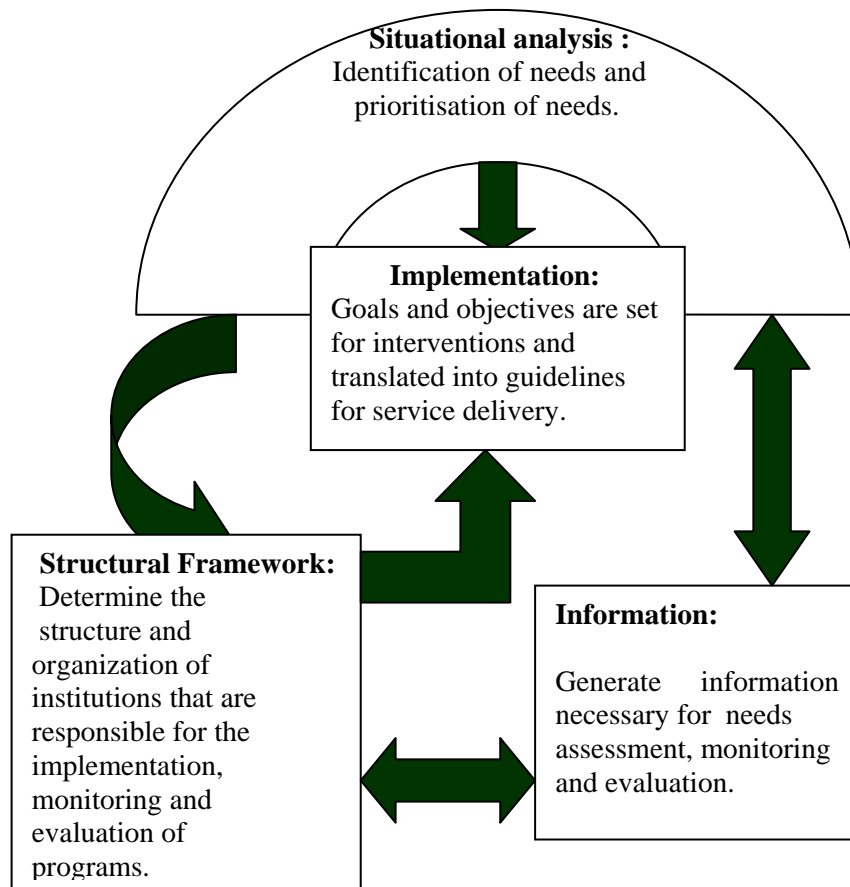
**The systematic primary health care paradigm work and oral health care in Uganda.** What is lacking in Uganda is the translation of research into information and policy. A systematic approach to the development of policy and planning based on evidence from research that is pertinent to the needs of our population is essentially the concept of the systematic model.

**Building an information base:** *What is the burden of oral disease in a given setting and what are the perceived oral health needs of different subgroups of people?* The primary health care

approach emphasises the need to use the results of public health, biomedical and social/behavioural sciences research in the planning, monitoring and evaluation stages of a primary health care-based program. In the case of Uganda, the paucity of data on oral health needs and priorities signals the need for data collection, analysis, documentation and dissemination. The results of this research can then be used to inform policy-makers and to raise provider and public awareness.

**Situational analysis:** *Based on the information we have now does the situation call for action, a change in strategy or simply continued monitoring?* If we do not know where we are now, it is quite unlikely that we will be able to decide where we want to go. Priority setting for the purposes of planning and service provision must derive from baseline information and needs assessment. Within the framework of the oral health system, priority setting should be based on groups of people and then health problems within those groups. There should also be an assessment of manpower skills, effectiveness and performance. The determination of goals and objectives is more likely to be appropriate to the needs of the population if it is based on sound scientific data.

The systematic model: A conceptual framework.



**Implementation strategy:** *How do we respond to any problems identified in the situation analysis?* The goals and objectives of the system as a whole will serve as guidelines for both public and private practitioners working within the system. These guidelines can be translated into intervention strategies. Basing on the limited data available now, it seems feasible to prioritise subgroups of the

population in relation to what their oral health needs are. Interventions should then address the perceived needs of these groups of people as follows:

*Paediatric oral health:*

- Training primary care givers in the detection and/or prevention of common childhood oral conditions. These include Burkitt's Lymphoma, dental caries in particular geographic locations, gum disease, congenital anomalies, acute necrotizing gingivitis and its sequel; Noma / Cancrum Oris.
- Sensitising other health care workers including physicians, paediatricians, nurses and paramedical workers on the detection and prevention of these conditions.
- Raising public awareness about the harmful effects of traditional germectomy (ebiinyo): We will first need to identify those regions where it is practised on a large scale. Since this practice is a traditional alternative to the management of diarrhoea and a host of other childhood illnesses, a National anti-ebiinyo campaign can be used as a vehicle for the communication of messages related to the proper management of childhood illnesses.
- Revival of primary school oral health outreach programs: With the advent of Universal Primary Education, schools are an ideal site for targeting the majority of 6-14 year old children in Uganda. These should be planned and implemented at the district level as part of the Health sub district out reach programs. The oral health team should visit all primary schools in a district three times a year. Children enrolled in primary school (ages 6-14) should be given free screening, emergency treatment, education in oral hygiene techniques and referral services during these visits. Members of the team should be trained in



recording of data because this will provide information for monitoring and evaluation of the programs and will also provide data for proper planning of services for children. Screening should include the detection of missing canines which can give an idea of the extent of the practice of germectomy in the district and need for a sensitisation program, childhood lymphomas, dental caries, Noma and gum diseases which may be an indication of poor nutrition as well as fluorosis and treatable severe congenital anomalies.

- One contact teacher per primary school should be identified and facilitated to attend relevant seminars and training workshops. This role can be played by the teacher responsible for overseeing the health education program where one exists in the school. Contact teachers will also be responsible for arranging suitable times for the outreaches and obtaining parental consent for examination of children. Private schools should be encouraged to participate in the programs.

*Adolescent oral health:*

- This is a period of life characterised by high-risk behaviour. The major issues of concern in this group of individuals are diet and tobacco use. Each district oral health plan should include a component that targets this group of the population for educational messages. Districts where tobacco is grown for commercial and local purposes should have particularly strong anti-tobacco educational and oral cancer surveillance programs, since recent research has shown that 15% of diagnosed oral cancers occur under 40 years of age in Uganda and the Northern and Western districts where tobacco is grown are over-represented in terms of incident oral cancer cases<sup>30</sup>. This can be done through targeting the youth at community centres, recreation centres and in schools. The popularity of FM radio stations with this group of the population can be utilised to its full potential. It is

important to note that the behaviours of the youth in rural and urban or informal urban areas may differ significantly and needs assessment surveys can be used to determine the priorities for different settings.

- Secondary school outreach programs with contact teachers should be set up in districts where this is logistically feasible.

Other special groups:

*People living with HIV/AIDS:*

Workshops, seminars and consultative meetings should be held to consolidate the information we have on the common presenting oral symptoms of HIV in our setting. This should be followed by a call for further research and mobilization of resources for this purpose.

In order to successfully fight the HIV epidemic it is important to fully document and understand all aspects of the condition. Very few studies have been carried out in Uganda to assess the impact of HIV on oral health as it relates to quality of life. One pilot study in Entebbe found statistically significantly increased difficulties in eating and sleeping due to oral conditions in women with HIV compared to those without.<sup>55</sup>

Standardized guidelines should:

- Highlight and define the oral health workers' role in the diagnosis of HIV infection
- Identify which oral lesions can be considered diagnostic of HIV in our setting and how diagnosis can be made.
- The role of oral health workers as advocates for voluntary testing and counselling.
- The importance of utilising effective and affordable infection control methods.
- Outline ethical considerations in the management of known HIV positive individuals.

- Encourage research ranging from simple case series through to cohort studies when possible that further our understanding of the oral manifestations HIV and their management.

These guidelines should be made available to all oral health teams and traditional dentists should be targeted in this dissemination process.

*The disabled, the mentally ill and the elderly:*

There are concerns about the current marginalization and rationing out of these subgroups of people from access to adequate health care. Although there are comprehensive efforts in Uganda to address the health needs of the handicapped and the mentally ill<sup>56</sup>, the contribution of good oral health to improving their quality of life has not been assessed with specific regard to the Ugandan setting. In Uganda the percentage of the population over 60 years is 3.8% however owing to the devastating effects of HIV/AIDS, the dependency ratio is 107<sup>57</sup>. The elderly in Uganda therefore form a small but significant proportion of the population. The onus is on the oral health profession to design programs that address the oral health needs of these subgroups in order to achieve an equitable distribution of services. The first step in designing these programs should be surveys that obtain input from these groups of people either directly or through contact with coalitions that represent their interests.

*Dental caries in all age groups:*

It is necessary to carry out a National oral health population-based survey that specifically looks at the prevalence of dental caries in index ages for rural, informal urban and urban areas. This will enable us to plan appropriately for preventive programs as well as distribution and type of manpower and treatment facilities. The current presiding assumption among national and international policy

makers about the role of oral health care systems in developing countries is that the only basic dental care they can provide is extraction of teeth, thereby increasing edentulousness in the communities they serve. On a pragmatic note, the highly advanced and modern techniques of management of dental caries utilised in developed countries cannot be feasibly adapted for use in less developed countries. However, our focus should shift from tooth extraction to prevention of caries and the development of affordable, effective means of managing caries in those who develop the condition. This technique is based on procedures to remove decayed tooth tissues using only hand instruments with minimal cavity preparation. The Atraumatic restorative treatment (ART) technique provides a good example of a method of managing dental caries in resource-poor nations, which for several reasons has not been adapted in Uganda. This is a minimally invasive and relatively painless procedure that can be used in the restoration of decayed teeth by a trained health worker (not necessarily a dentist) in the absence of electricity and running water. This technique was developed for application in developing countries where whole populations experience edentulousness at an early age because of lack of adequate facilities in rural and informal urban settings. Field trials conducted in Thailand<sup>58</sup> and Zimbabwe<sup>59</sup> have demonstrated favourable outcomes such as high retention rates, operative sensitivity, good patient acceptability because of the lack of pain or need for anaesthesia and cost-effectiveness. In South Africa a 50% lower annual capital cost of ART has been found compared to the widely used amalgam techniques<sup>60</sup>. In Uganda, however focus continues to be on purchasing high technology dental equipment for district hospitals even when there are obvious limitations to its use such as the lack of running water, electricity and trained maintenance personnel.

Preventive programs which focus on educating and screening children and adolescents should be strengthened because behaviour among these age groups can be modified more easily than among adults. The effect of such preventive programs is to give rise to cohorts of adults with better knowledge about dental disease and their role in its prevention.

*Fluoridation as an option in the control of dental caries:*

Studies have shown the effectiveness of fluoride in improving resistance to decay. In 1985, a FDI/WHO working group revealed a substantial decline in dental caries in developed countries. The factor consistently common to these countries was the exposure of their populations to fluoride either in water and/or toothpaste.<sup>61</sup> Developing countries on the other hand showed considerable increase in dental caries. Fluoridation is cost-effective when preventing caries in a population that is served by a public water supply and has high prevalence of the condition. In the absence of these conditions occurring together, the cost-benefit ratio of fluoridation increases. In Uganda, this would be possible only in the well-planned residential urban areas. The Kampala public water supply contains 0.8mg/dl of fluoride well within optimal levels. Estimates made in 1972 put the fluoride content of natural sources of water in Uganda in the ranges of 0.11-3.0 mg/dl clearly above excess in some areas<sup>34</sup>. While fluoridation of public water supplies is not a feasible or appropriate option for caries control in Uganda, innovative ways to make fluoride toothpastes affordable for communities (such as by local manufacture) in which dental decay is a public health problem should be explored further.

*Tobacco and oral cancer:*

Oral health workers should take the lead alongside other health care providers in Uganda as advocates, evidence gatherers and educators in light of the potential adverse impact of increased tobacco use in Uganda. They should also be able to advise policy makers based on credible data what implications this has for planning health services.

*District oral health services:*

Each district should include an oral health team in its outreach program. The function of this team should be to:

- Provide pain relief.
- Provide information and education at targeted locations such as schools, antenatal clinics, health centres.
- Collect information on oral health needs of the populations they serve for the purposes of planning appropriate and effective preventive and treatment services.
- Train and supervise community health workers, traditional dentists, nurses, midwives, school teachers and drug vendors to provide education and advice on oral health to community members and to detect common oral conditions in that setting that require the services of a Public Health Dental Officer or Dental Surgeon.

Hopefully the success of the educational and preventive programs will reduce the need for pain relief and the burden on curative services.

**Organisational framework:** Who will be responsible for implementation, monitoring and evaluation? (See also Appendix 1)

**Current priorities:**

The main issues at present revolve around the need to harness the resources that we have at our disposal in order to ensure their efficient utilization and maximization emphasising cost containment and technical efficiency in an attempt to decrease wastage of scarce human and material resources with the Primary health care approach forming the backbone of health reform measures.

*Resource mobilisation:* Resources include appropriately trained health workers and material

resources. Formation of a coordinated network of oral health researchers and advocates on the ground committed to forming a link between communities and policy-makers is important. For this it is necessary to mobilise resources for the training and support of researchers. Other sources of funding apart from Public funds will be necessary in order to increase the research capacity of the profession. A strong and well-organized dental association has the potential to

lobby for funds from International donors such as the International Association of Dental Researchers, International Dental Federation, the Commonwealth Dental Association, DANIDA and the World Health Organization. The formation of Non governmental organizations which supplement the role of government and bring services closer to communities within the framework of a National Oral Health plan should be encouraged and supported.

*Creation of incentives to improve coverage and equity in the system:* Globally, concerns are

being raised regarding the traditional curative model that forms the backbone of oral health care systems in developed and developing countries. The major criticism being that for as long as its use persists then the chances of providing oral health services to economically disadvantaged groups in society remain remote.<sup>62</sup> The only currently feasible option is to concentrate on preventive and educational components of oral health care, which is a cost effective and affordable means of bringing oral health care closer to

communities. To achieve this, not only should the training curriculum be designed to fit in with this objective, but also surveys of the oral health workers can be carried out periodically to ascertain what incentives might work in increasing deployment and retention of these workers in rural areas. Besides the obvious incentives such as prestige, financial gain and a desire to help others, factors such as being able to actually achieve improved health outcomes of the communities they serve and getting positive feed back from the system could be considered.



Table 2: Delineation of roles within the organizational framework.

Organisation	Functions
1.Ministry of Health	<ul style="list-style-type: none"> <li>• Policy formulation</li> <li>• Setting technical standards</li> <li>• Monitoring and evaluation</li> <li>• Training</li> </ul>
2.District oral Health teams	<ul style="list-style-type: none"> <li>• Planning</li> <li>• Implementation</li> <li>• Research: operational.</li> </ul>
3.Training institutions	<ul style="list-style-type: none"> <li>• Production of manpower</li> <li>• Research: Biomedical, appropriate technology, social/behavioural.</li> </ul>
4.Professional bodies	<ul style="list-style-type: none"> <li>• Setting and maintaining ethical standards</li> <li>• Supervision</li> <li>• Defining roles.</li> </ul>

*Private-public collaboration:* In Uganda there are concerns that the public and private health systems function as completely separate entities with poorly delineated roles and lack of a common goal.<sup>63</sup> It is important that the oral health sector takes steps to establish dialogue between stakeholders in both the public and private units of delivery. It is particularly important to involve traditional healers since they are significant providers of health care in communities. Reaching a consensus on how to merge the objectives of these groups of people with that of the public oral health system could lead to improved equity, coverage and may prevent the duplication of functions.

*Manpower requirements:* Efforts should be made to re-assess the manpower needs of the sector. The lack of adequate epidemiological data for oral health in Uganda makes the prediction of manpower needs difficult. The primary health care approach increases the need for adequately trained, community-based providers of oral health care. The ideal situation is to be able to train and deploy manpower in such a way as to contain costs without sacrificing quality. It may be necessary to alter the profile of the manpower team by training a more community-oriented worker in larger numbers than a clinical-based worker similar to what was done in the Chiang-Mai model of alternative oral health care in Thailand.<sup>51,64</sup> Each district should employ at least 1 dental surgeon and 5 Public Health Dental Officers. However the size of the population and the demand for oral health services will dictate exactly what ratios and what type of oral health worker is necessary for each district. The community-based oral health workers drawn from various sections of the community and health service will facilitate the work of this core team.

*The role of dentists/dental surgeons:* Using the Primary Health care approach within the public system, the role of this group of professionals will be expected to be:

- Team leaders, supervisors and administrators at the district level.
- Researchers: forming the critical link between communities and policy makers.
- Clinicians for the management of complicated cases.

*The role of Dental Hygienists (Public Health Dental Officers /PHDOs ):*

As early as 1973, critics of oral health services pointed out that much of the routine work of the graduate dentist could be provided by a trained auxiliary without loss of quality and with considerable savings in cost<sup>65, 66</sup>. Subsequently, the school based dental nurses of New Zealand and South Australia demonstrated that auxiliaries could be utilised in improving equity of oral health care provision combined with high quality performance levels<sup>67</sup>. Lack of guidance from a national oral health plan and the lack of regular assessments of the relevance and objectives of the curriculum for Public Health Dental Officers as they relate to the distribution and determinants of oral conditions in Uganda has resulted in loss of definition of the role of this group of workers in the oral health system. In general, public health dental officers are cheaper to employ and train for a shorter period of time. The feasibility of training more PHDOs and fewer dental surgeons for Uganda should be explored further.

Dental Officers would be responsible for implementing the oral health plan at the district level by:

- Management of school, community and media-based educational and prevention programs.
- Provision of routine prophylaxis and treatment using affordable, effective means.
- Training and supervision of primary health care teams in each district.
- Overseeing record keeping and data collection for surveillance, evaluation and monitoring purposes.

- Referral of complicated dental and oral surgical cases to dental surgeons.

*The roles of community health workers, schoolteachers, members of community/local council health committees, members of the health profession (nurses, clinical officers, midwives), village medicine vendors and traditional “dentists”:*

This group of Community health workers and teachers should form the base of the workforce pyramid representing the first line of contact between the community and the health system. They should be recruited within the already existing primary health care structure of Uganda and should therefore be trained within the framework of the Uganda community health workers system. Their duties would involve advising and educating communities on:

- Oral hygiene practices.
- Relationship between diet and caries.
- Disadvantages of certain traditional practices.
- How to perform sterile traditional practices for example lip piercing.
- Potential consequences of tobacco use for example tooth staining, periodontal disease and oral cancer.
- They should be trained in the detection and recognition of diseases that require referral.
- Dispensing analgesics for management of pain.

It is important to continuously gather information through monitoring, evaluation and feedback to assess the performance and effectiveness of this approach. See Table 3.

**Conclusion:** Uganda has made considerable progress in rebuilding its health sector and continues to do so. Oral health professionals should take advantage of the current political stability and economic growth to contribute to this remarkable spirit of reform and improvement. Discipline, cooperation, continuous self appraisal, a strong information base and appropriate communication patterns will enable us to make the mission of achieving oral health for all Ugandans a reality.

Table 3. Selected Indicators by level of program evaluation:

Level of evaluation	Indicator	Purpose/what it measures
Process evaluation: <ul style="list-style-type: none"> <li>Inputs</li> </ul>	1. Percentage of public oral health funds allocated to public health interventions.  2. Total donor allocation to funding research in oral health.	Shift of focus from curative care to more cost effective preventive measures.  Increased capacity to build an information base.
<ul style="list-style-type: none"> <li>Process</li> </ul>	1. Proportion of health subdistricts with five year oral health work plans.  2. Proportion of community	Commitment to making oral health care an integral Part of general health.  Implementation of the primary

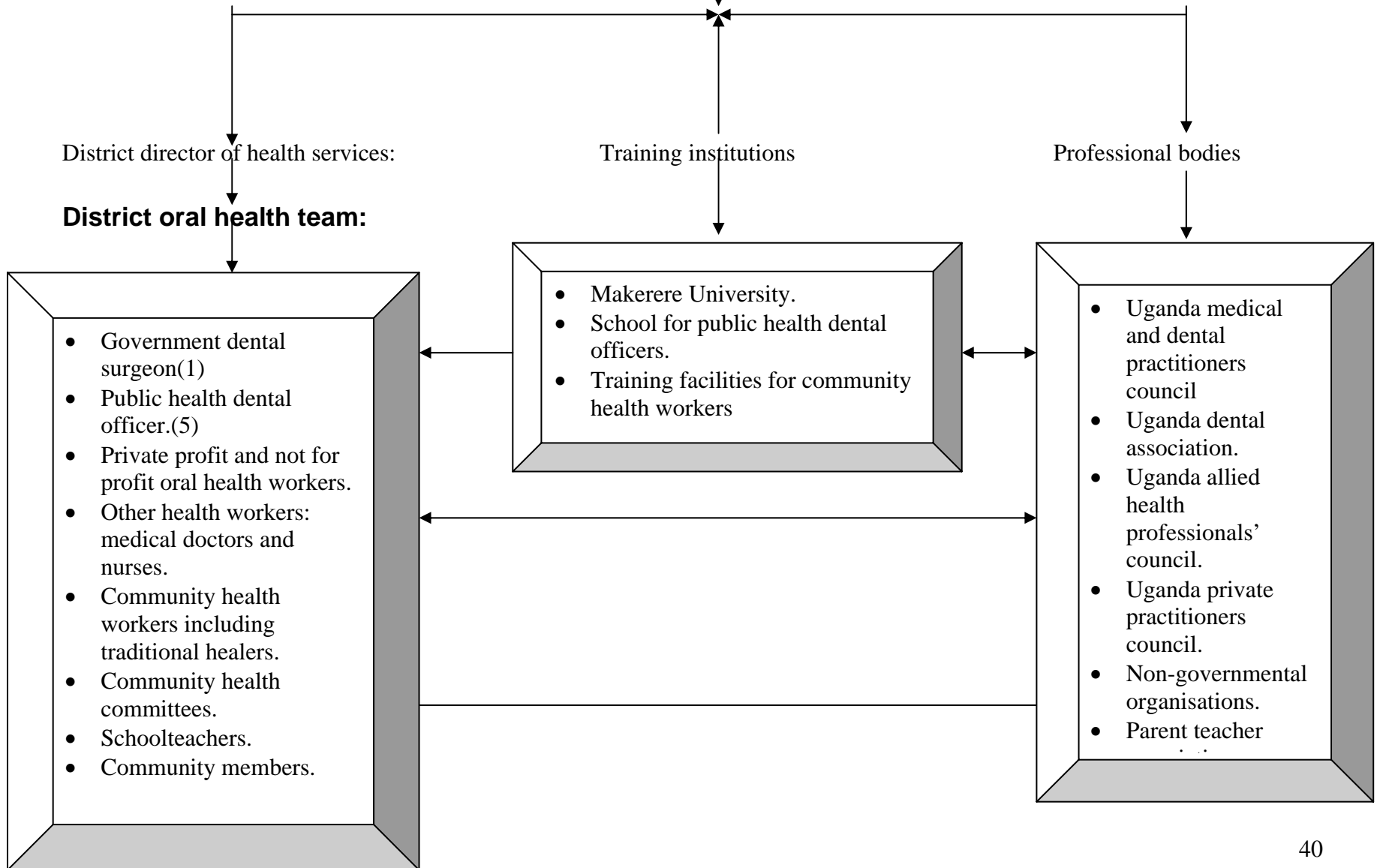
	health workers per district who have attended at least three training sessions in oral health care.	healthcare approach to oral health.
<ul style="list-style-type: none"> <li>Output</li> </ul>	<ol style="list-style-type: none"> <li>60% health subdistricts with entire oral health team.</li> <li>80% of community health workers in each district trained to give advice on oral health and to refer patients.</li> </ol>	<p>Availability and adequacy of referral system for oral health care.</p> <p>Capacity for community-based oral health interventions.</p>
<p>Effectiveness evaluation:</p> <ul style="list-style-type: none"> <li>Outcome</li> </ul>	<ol style="list-style-type: none"> <li>Proportion of mothers interviewed who know one adverse effect of traditional germectomy.</li> </ol>	<p>Success or failure of educational campaign on harmful traditional practices.</p>

	2. Proportion of primary schools per district receiving oral health outreach services.	Coverage of children by Public oral health system.
<ul style="list-style-type: none"> <li>• Impact</li> </ul>	<p>1. Prevalence of selected oral conditions<sup>†</sup> among cohorts of children who were the first beneficiaries of school oral health programs.</p> <p>2. Case fatality rates among children under five years of age attributable to sepsis following traditional germectomy.</p>	<p>Effectiveness of screening programs and access to care.</p> <p>Control of adverse effects of traditional germectomy.</p>

Appendix 1: Organizational framework: Arrows denote the need for continuous feedback, interdependence and integration.

Ministry of Health, Directorate of Clinical and Community services

(Chief Dental surgeon: Oral/dental health)





## Endnotes:

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