Oral Healthcare for School Children In Malaysia

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Marked improvement in the oral health status of Malaysians especially among the school going population can be attributed to the success of the school dental service. The school dental service which hinges on the concept of providing systematic and comprehensive oral healthcare, aims at achieving optimal oral health for the maximum number of school children. Emphasis on prevention and an incremental approach in providing oral healthcare has been the main thrust of this initiative. Extensive coverage of school children has been made possible through a network of school dental clinics and outreach services.

With an increasing school-going population as well as increased customer awareness and expectations, there is also an urgent need to implement further initiatives to improve the outcome of care. It is therefore pertinent to consider these challenges in the provision of oral healthcare to school children today and thus formulate a new guideline towards an improved outcome of care for school children.

I take this opportunity to express my sincere appreciation for the commendable effort of the committee involved in the preparation of this guideline.

DATO' DR. WAN MOHAMAD NASIR BIN WAN OTHMAN
Director of Oral Health
Ministry of Health Malaysia
WORKING COMMITTEE

Advisor

Dato' Dr. Wan Mohamad Nasir Wan Othman
Director of Oral Health
Ministry of Health Malaysia

Chairman

Dr. Ling Kwok Sung
State Deputy Director of Health (Oral Health)
Sarawak

Secretary

Dr. Yaw Siew Lian
Senior Principal Assistant Director
Oral Health Division
Sarawak

Joint Secretary

Dr. Salmiah bt. Bustanuddin
Senior Principal Assistant Director
Oral Health Division
Ministry of Health Malaysia

Committee Members

Dr. Cheah Swee Poh
Former State Deputy Director of Health (Oral Health)
Pulau Pinang

Dr. Lawrence Mah Hon Kheong
Acting State Deputy Director of Health (Oral Health)
Sabah

Dr. Noor Aliyah bt. Ismail
Senior Principal Assistant Director
Oral Health Division
Selangor

Dr. Jegarajan N.S. Pillay
Senior Dental Officer
Kota Kinabalu,
Sabah

Laura Disimon
Former State Dental Matron
Oral Health Division
Sarawak

Hong Shiow Leng
Dental Matron
Dental Specialist Clinic
Kuching, Sarawak

Helena Yeo Yew Seng
Dental Sister
Oral Health Promotion Unit
Sarawak

Joint Secretary

Dr. Cheah Swee Poh
Former State Deputy Director of Health (Oral Health)
Pulau Pinang
ACKNOWLEDGEMENT

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ADVISOR

Dato’ Dr. Wan Mohamad Nasir bin Wan Othman
Director of Oral Health
Ministry of Health Malaysia

WORKING GROUP

Dr. Ling Kwok Sung
State Deputy Director of Health (Oral Health)
Sarawak

Chairman

Dr. Yaw Siew Lian
Senior Principal Assistant Director
Oral Health Division
State Health Department, Sarawak

Secretary

Dr. Salmiah bt. Bustanuddin
Senior Principal Assistant Director
Oral Health Division, Ministry of Health Malaysia

Joint Secretary

Dr. Cheah Swee Poh
Former State Deputy Director of Health (Oral Health)
Pulau Pinang

Dr. Lawrence Mah Hon Kheong
Acting State Deputy Director of Health (Oral Health)
Sabah

Dr. Noor Aliyah bt. Ismail
Senior Principal Assistant Director
Oral Health Division
State Health Department, Selangor

Laura Disimon
Former State Dental Matron, Oral Health Division
Sarawak

Hong Shiow Leng
Dental Matron, Dental Specialist Clinic, Kuching, Sarawak

Helena Yeo Yew Seng
Dental Sister, Oral Health Promotion Unit
Kuching, Sarawak
I. GENERAL INTRODUCTION

1. MALAYSIA – COUNTRY PROFILE

Malaysia is situated in South East Asia between latitudes 1° to 7° North and longitudes 100° to 119° East. It comprises 13 states and 3 Federal Territories (FT). The total land area of Malaysia is 329,758 sq. km, with Peninsular Malaysia occupying 131,598 sq. km. The states of Sabah and Sarawak with a total land area of 198,160 sq. km occupy the north-western coast of the island of Borneo (Figure 1). Peninsular Malaysia is separated from the states of Sabah, Sarawak and the Federal Territory of Labuan by the South China Sea.

The country’s tropical climate, which is hot and humid, has temperatures at sea level ranging between 21°C and 32°C daily throughout the year. There is a fairly distinct wet and dry season and the mean annual rainfall is 230 centimetres.

Malaysia practises parliamentary democracy and is a constitutional monarchy. The latter is headed by the King who is elected to the throne on a five-year rotational basis. Malaysia is a multi-ethnic country with more than twenty ethnic groups. The population of Malaysia was 26,127,000 in year 2005 and in the same year, the crude birth rate was 19.6 per 1,000 population whereas the crude death rate was 4.4 per 1,000 population and the infant mortality rate was 5.1 per 1,000 live births.

Education is available for the population from pre-school to tertiary levels. The Ministry of Education regulates education provided by both the public and private sectors.

Rice is the staple food for the majority of the population. The consumption of sugar is high, at about 42.1 kg (raw value) per year in 2002.

The National Development Policy of Malaysia is based on the principle of growth with equity. It is aimed at alleviating poverty and economic imbalances amongst communities and regions towards the ultimate goal of national unity in the country. The country is currently into its Eighth Malaysia Plan (2001-2005) and its third long-term Outline Perspective Plan (2001-2010). Rapid economic growth in the country has led to an increase in the country's per capita income (Gross National Income) of RM 1,106 in the
year 1970 to RM 17,651 in the year 2005. Although Malaysia is still a large exporter of rubber, palm oil, petroleum and natural gas, the manufacturing sector has overtaken agriculture as the leading growth sector of the economy since 1987.

2. HEALTHCARE IN MALAYSIA – AN OVERVIEW

Since gaining independence in 1957, the health of the nation has been an important aspect of the socio-economic progress of Malaysia. The percentage allocation of the national budget for the Ministry Of Health (MOH) has remained fairly constant for the last thirty years, ranging from 4 % to 8 % of the total national budget. In the year 2005, the allocation for the MOH was approximately RM 7.860 billion.

Primary healthcare is the thrust of the healthcare system in the country and the MOH which is headed by a Minister, is the government's lead agency for healthcare in the country. In line with the nation’s “Vision 2020”, the MOH has formulated a Vision For Health as follows:

Vision For Health, Malaysia

By the year 2020, Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally adaptable and consumer friendly, with emphasis on quality, innovation, health promotion and respect for human dignity and which promotes individual responsibility towards an enhanced quality of life.

Towards the realisation of this vision, the current emphasis focuses on health promotion and lifelong wellness. Individuals and communities will be empowered to take responsibility in managing their own health towards the attainment of an improved quality of life, with information and communication technology (ICT) playing an enabling role.

The Ministry of Health provides healthcare at three levels namely primary, secondary and tertiary healthcare. Provision of healthcare is through a network of health clinics and a system of referral exists from primary to secondary level. Each rural/community clinic serves a population of about 4,000. In the urban areas, primary healthcare is rendered through a network of health clinics/centres with a coverage of 1:20,000 population. Secondary and tertiary healthcare are predominantly hospital-based.
Besides the MOH, healthcare is also provided by the Ministry of Defence, the Ministry of Home Affairs, the Ministry of Rural Development, statutory bodies, local authorities and the private sector. Private healthcare facilities such as private hospitals and clinics are mainly concentrated in the urban localities.

The delivery of healthcare also involves smart partnership and inter-sectoral collaboration with other agencies such as non-governmental organisations (NGOs), professional bodies and civic associations.

3. ORAL HEALTHCARE IN MALAYSIA – AN OVERVIEW

Oral healthcare in Malaysia is provided by both the public and private sectors. In the public sector, oral healthcare is delivered to the population through a comprehensive network of decentralised dental facilities established through the country's five-year Development Plans. In the year 2005, there were a total of 2,043 dental facilities throughout Malaysia. Private dental clinics are mainly located in well-populated urban areas throughout the country.

The Oral Health Division in the Ministry of Health is the lead agency in the provision of oral healthcare services and the development of legislation concerning oral healthcare in Malaysia. The target groups to be rendered oral healthcare by the MOH in the public sector are pre-school children, primary and secondary school children, ante-natal mothers, and the socially, physically and economically disadvantaged groups, the adults and the elderly. In the year 2005, 31.5% of the population utilised the primary oral health care services provided by the MOH. It was highest for the primary school children, followed by the secondary school children, pre-school children, ante-natal mothers and adults.

The Dental Corps of the Ministry of Defence is the next major provider of oral healthcare in the public sector. Equipped with 33 dental clinics and three mobile dental teams, it serves all Armed Forces personnel and their families. It also undertakes outreach initiative to provide oral healthcare for school children of the armed forces personnel.

The Dental Unit under the Health and Medical Division of the Department of Aborigine Affairs (JHEOA – Jabatan Hal Ehwal Orang Asli) in the Ministry of Rural Development provides oral healthcare services for the indigenous people of Peninsular Malaysia consisting a population of 116,119 and forming about 0.5% of the total population of Malaysia (JHEOA Census, 2000). Basic oral healthcare is rendered either at the main dental clinics or as outreach initiative.
The dental faculties of the University of Malaya (UM), the National University of Malaysia (UKM) and the Dental Sciences Centre at the Science University of Malaysia (USM) also provide oral healthcare to the population.

In the public sector, under the Fees Act 1951, pre-school children, school children up to 17 years, ante-natal mothers and civil servants, their spouses and school-going dependents below the age of 21 years are exempted from payment for basic oral healthcare (excluding dentures and other prostheses). The private sector provides oral healthcare on a fee-for-service basis. There are only a few third party payment schemes. Three other Acts which are relevant to the practice of dentistry in Malaysia are the Dental Act 1971, the Atomic Energy Licensing Act 1984 and the Private Healthcare Facilities and Services Act 1998.

The Malaysian Dental Council (MDC) regulates the registration of practitioners and practice of dentistry in the country. The dentist to population ratio for Malaysia in 2005 was 1:9,497. Of the 2,751 dentists in the same year, 1,263 (45.9%) were employed in the public sector and 1,488 (54.1%) in the private sector. The targeted dentist to population ratio for Malaysia is 1:4,000 by the year 2020.

Other oral healthcare personnel in Malaysia are the dental auxiliaries and ancillary groups. Dental auxiliaries comprise three categories namely; the Dental Nurses, Dental Technologists and the Dental Surgery Assistants. They are formally trained at the Dental Training College, Malaysia (Kolej Latihan Pergigian Malaysia) in Penang. The dental nurse is the only operating dental auxiliary in Malaysia. They can only be employed in the public sector where they render oral healthcare to school children up to 17 years of age under the supervision of a dental officer. Unlike the dental nurses, dental technologists can be employed in either the public or private sectors. The dental surgery assistants provide chairside assistance to dental officers and dental nurses. Other dental ancillaries such as the health attendant, the motor vehicle driver and the boatman also play an important role particularly in outreach oral health initiatives.

The Health Management Information System (HMIS) is only utilised in the public sector. Data collection related to oral healthcare is under the purview of the HMIS Sub-System (Dental). Data on primary and specialist oral healthcare is collated and analysed at the relevant levels of management. This facilitates the monitoring and evaluation of work performances and quality of output. In the Dental Corps, Ministry of Defence, a computerised system which is integrated with the medical and administrative centres is utilised for oral health data management.
II. ORAL HEALTHCARE FOR SCHOOL CHILDREN IN MALAYSIA

1. INTRODUCTION

With more than 31% of the Malaysian population below the age of twenty\(^5\), oral healthcare for school children continues to be a priority. In the year 2005, there were 3,024,093 primary school children and 2,132,018 secondary school children\(^6\). In the same year, the incremental school oral health programme of the MOH rendered oral healthcare to 95.2% and 62.7% of primary and secondary school children respectively. Care is provided mainly through a network of school dental clinics and mobile dental teams. The latter utilises the outreach approach which has resulted in an extensive increase in the coverage of these school children.

There is no formalised structured programme for the school children provided by the private sector. Oral health service is based on demand and provided on a fee-for-service basis. The type of treatment provided by the private dental practitioners is geared towards catering to the needs of the patients. To date there is no system in place on data collection on the oral health status and treatment provided to those attending private dental practice.

The first national epidemiological survey on school children was carried out in 1997\(^7\). Hence valid comparison of the oral health status of school children could only be carried out between the epidemiological surveys of school children in Peninsular Malaysia in 1970\(^8\) and 1988\(^9\). In the epidemiological surveys of 1970 and 1988, the mean DMFX of 12-year old school children was 3.7 and 2.37 respectively. This indicated a 35.9% decrease in caries severity over a period of 18 years. For the 16-year-olds, the mean DMFX was 4.6 in 1970 and 4.35 in 1988, indicating a decrease of 5.4% in the severity of caries.

Meanwhile, HMIS data also indicated an improvement in the percentages of 12 and 16-year-olds who were caries-free (DMFX = 0). In the year 2005, 57.8% of 12-year-olds were caries-free as compared to only 25.9% in 1991. Correspondingly for 16-year-olds, 30.2% were caries-free in the year 2005 as compared to only 9.9% in 1991. As for periodontal health in the same year, 98.6% of primary school children and 95.8% of secondary school children examined were free from gingivitis.
2. BACKGROUND

Essentially, the government dental services began as a school dental service in the 1950’s. It has since expanded to include oral healthcare for other identified priority groups such as preschool children, ante-natal mothers, children with special needs, adults and the elderly population. However, school children still remain the main priority.

The school oral healthcare initiative is based on the concept of systematic and comprehensive care comprising promotive, preventive and curative services. This is delivered through an incremental approach with focus on prevention, early detection and control of oral diseases. This initiative was first introduced in 1985 with the objective of rendering school children orally fit by the time they leave school. In addition to this, school children are also treated as walk-in cases or on an appointment basis at all main dental clinics.

The use of mobile clinics and appropriate mobile dental teams has been in practice for decades. The personnel comprises an effective mix of dental officers, dental nurses, dental surgery assistants and healthcare assistants.

The delivery of school oral healthcare through the concept of incremental oral healthcare aims at achieving optimal oral health for the maximum number of school children within a reasonable time frame. The various delivery modes are described as follows:

a. School Dental Clinic

This is a dental clinic established in the school. The room is provided by the school with the necessary modification. It is usually a single chair clinic but may accommodate two chairs if space permits. Such a clinic will have the convenience of providing the service in the school itself with proper infection control if space permits. Such a clinic
will have the convenience of providing the service in the school itself with proper infection control procedures in place. These clinics are planned for schools with large enrolments of more than 1,000 children and established under the five-year national development plan.

b. Outreach Initiatives

i. Mobile Dental Team

Under this delivery system, oral health personnel travel to the schools by land or river. A temporary clinic is set up using appropriate equipment such as portable autoclaves and portable dental units. The school would provide a suitable room for this purpose.

ii. Mobile Dental Clinic

The mobile dental clinic is used to deliver oral healthcare to rural and urban schools as well as for community projects. Under the Seventh Malaysia Plan, 13 such clinics were purchased, replacing
many of the old mobile dental clinics that have since been phased out. Each mobile dental clinic is a fully equipped clinic attached to a prime mover. The clinic houses two dental chairs and is air-conditioned.

3. LITERATURE REVIEW

3.1 Demographic Profile of Dental Disease and Coverage of School Children

The National Oral Health Survey Of School Children (NOHSS) in 1997 recorded caries prevalence of 80.6% (deciduous teeth only), 60.9% and 75.5% amongst the 6, 12 and 16 year-olds respectively. The epidemiological surveys of school children in Peninsular Malaysia in 1970 and 1988 also revealed a significant reduction from 95.4% to 88.6% in dental caries prevalence among 6-year-olds during this period. For the 12-year-olds, the corresponding reduction was from 78.4% in 1970 to 71.3% in 1988. For the 16-year old children who represent the proxy age group for the Malaysian secondary school leavers, caries prevalence had decreased from 84.8% in 1980 (Peninsular Malaysia) to 75.5% in 1997 (Malaysia)\(^7\).

Higher dental caries experience still exists amongst subjects in the rural areas and from families where parents had a lower educational background. Caries experience was found to be higher in females in 12 and 16-year old age groups\(^7\).

However, inequitable distribution of human resources is a problem for the school oral healthcare services especially in the face of continuous resource constraints. This imbalance has resulted in differences in coverage of school children in the various states especially for secondary school children, which ranges from 100% in Perlis and Johor to about 25% for Sarawak and Sabah\(^10\).

The National Oral Health Plan has envisaged that by the year 2010 the mean DMFT of the 12-year old children shall be less than 1.5 and 60% of these children shall have caries-free permanent dentition (DMFT = 0). For the 16-year old children, the mean DMFT shall be less than 2.5 and 40% of these children shall have caries-free permanent dentition. With regards to
goals for periodontal condition, 95% of 12-year-olds and 50% of 16-year-olds shall have healthy periodontium by 2010\textsuperscript{11}.

3.2 Importance of A School-Based Oral Healthcare Initiative

Worldwide evidence has shown that a school-based oral healthcare initiative is a cost effective means to promote good oral health that can last a lifetime. This school-based initiative ensures that positive oral health habits are fostered early in life and children who might not otherwise have the means to seek dental treatment are provided with necessary care. In addition, schools provide an efficient mechanism for the provision of health education, fluoride application and fissure sealants to large groups of children. Oral health education and preventive care can be integrated into the existing health education curriculum and by heightening oral health awareness, schools can promote oral health beyond the dental clinic environment\textsuperscript{12,13,14}.

It should be emphasised that early preventive policy, rather than restorative alone, should be encouraged as was shown by the findings from the evaluation of a school-based dental care programme in Hong Kong\textsuperscript{12}.

Two cluster randomised controlled trials in the United Kingdom ascertained that children in a school-based dental health education programme had significantly lower mean plaque scores. They also had greater knowledge of dental disease as well as usage of toothbrush and disclosing tablet\textsuperscript{15,16}.

A study of a school-based oral health education programme in Indonesia concluded that the programme had a moderate to positive effect on children’s oral health knowledge and plaque levels as well as effectiveness of tooth brushing. However, the effects on caries experience were inconclusive\textsuperscript{17}.

In the People’s Republic of China, school children who had participated in a school programme as compared to a controlled group had better attitudes to dental care. This includes regular tooth brushing habits, use of fluoridated toothpaste, increased dental visits as well as reduced frequency of consuming sugary drinks / foods\textsuperscript{18}.

A study conducted in Northern Ireland found that school dental screening was capable of achieving an increase in subsequent dental attendance.
3.3 Community and Parental Responses to School Oral Healthcare Initiatives

In the United States of America, a study showed that communities benefited greatly from school-based dental health screening and referral programmes. In addition, school officials can serve as role models to the children and further reinforce the importance of oral health by encouraging them to participate in the screening programmes and also to follow through on referrals\textsuperscript{20}.

Another study in the United Kingdom (U.K.) which measured parental responses and attitudes to school-based dental health programmes found that the majority of parents supported school dental screening and some relied solely on screening as a basis for obtaining dental care for their children\textsuperscript{21}.

A study in Newcastle, U.K. also showed that such a programme was well accepted by the majority of parents and head teachers. However, gaps were identified in many aspects of communication between the dental services, schools and parents. It was therefore recommended that the objectives of the programme be clearly defined and then clearly communicated to all those involved\textsuperscript{22}.

3.4 School Oral Healthcare Delivery Systems in Other Countries

All primary school children in Hong Kong are provided with dental care through the School Dental Care Service organised by the Department of Health. Basic dental care is provided by dental therapists who work under the direct supervision of government dental officers. School children are treated in school dental clinics nearest their schools\textsuperscript{23}.

The Community Dental Service in the United Kingdom provides dental screening to all children in state funded schools three times during each child’s school life\textsuperscript{24}. In Ireland, health boards provide free dental treatment to school children under 16 years of age attending state primary schools. These children are referred from the school health services and free treatment is provided either in the health board clinics or primary schools\textsuperscript{25}.

In Australia, school children are provided dental care up to sixteen years of age through the School Dental Services. Treatment is carried out in fixed or mobile caravans. Dentists and auxiliary personnel known as school therapists provide dental care and treatment based on established programmes. The school therapists must work under the supervision of dentists.
Patients treated by these school therapists should be examined by a dentist at intervals of not more than two years.  

In New Zealand, the School Dental Service (SDS) was established in 1921 and treatment offered by the SDS became free in 1945 when the Department of Health began to completely reimburse school dental clinics for their operating expenditures. Basic preventive and restorative oral health care is delivered by dental therapists who are employed by the District Health Boards. The SDS model initiated at that time is a unique national model for managing early intervention in children’s dental decay as well as providing a comprehensive range of treatment. This educational and preventive model has been successfully emulated internationally in Australia, Malaysia, Hong Kong, certain African nations and, to some extent, in the United Kingdom.

4. **RATIONALE**

The first guideline for the implementation of oral healthcare by the MOH for school children was documented in 1997. Since then there has been substantial changes to the scenario of oral healthcare provision by the MOH with the introduction of new quality initiatives which include Clinical Practice Guidelines, MS ISO 9000 Quality Management System, patient-centred care and further consolidation of quality initiatives such as Quality Assurance Programme. With an increase in customer awareness and expectations, there is an urgent need for further initiatives to improve the outcome of care. It is therefore pertinent to consider these challenges in the provision of oral healthcare for school children and hence the need to formulate a new guideline towards an overall improvement in the quality of life for school children.

5. **SCOPE**

The scope of this guideline shall refer to the provision of oral healthcare for school children from Primary One to Form Five in government or government-aided schools.

6. **OBJECTIVES**

6.1 General Objective

To achieve and maintain optimal oral health amongst school children.
6.2 **Specific Objectives**

- To render oral fitness amongst all school children who have received treatment.
- To empower school children in taking responsibility of their own oral health.
- To strengthen clinical preventive initiatives amongst school children.
- To enhance the roles of teachers, parents and the community in oral health promotion.
- To enhance continuous professional development of oral healthcare providers.

7. **STRATEGIES FOR IMPLEMENTATION**

The following strategies are adopted for the implementation of oral health care services for the school children:

7.1 **Provision of Comprehensive Oral Healthcare to School Children from Primary 1 to Form 5**

Comprehensive oral healthcare including the strengthening of oral health promotion to further inculcate good oral health practices and self-care amongst school children is provided through school-based dental clinics and outreach initiatives.

7.2 **Strengthening Clinical Prevention Initiatives**

Clinical prevention is an integral part of overall prevention and health promotion. Clinical prevention initiatives such as fissure sealants\(^{29}\), preventive resin restorations (PPR)\(^{30}\), topical fluoride application, and fluoride mouth rinses are implemented especially for children at high risk to dental caries.

7.3 **Expansion of Outreach Initiatives to Increase Coverage**

With an increasing school-going population, there is a continuing need to sustain the delivery of incremental oral healthcare to enable more school children to attain and maintain optimal oral health. Towards this end, the MOH has rendered oral health care to 95.2% of primary and 62.7% of secondary school children respectively in the year 2005. The outreach initiatives thus represent a feasible means to expand the incremental oral healthcare delivery for the following reasons:
a) The establishment of school dental clinics is dependent upon the approval of such facilities through the country’s five-year development plans. The number of dental clinics approved under each five-year plan is limited. Oral healthcare facilities for school children as of the year 2005 are as shown in Table 1.

Table 1: Oral Healthcare Facilities for School Children (as of 31.12.2005)

<table>
<thead>
<tr>
<th>Type of Facilities</th>
<th>Peninsular Malaysia</th>
<th>Sabah</th>
<th>Sarawak</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary School Dental Clinic</td>
<td>457</td>
<td>94</td>
<td>129</td>
<td>680</td>
</tr>
<tr>
<td>Secondary School Dental Clinic</td>
<td>185</td>
<td>6</td>
<td>24</td>
<td>215</td>
</tr>
<tr>
<td>Mobile Dental Team</td>
<td>231</td>
<td>47</td>
<td>26</td>
<td>304</td>
</tr>
<tr>
<td>Mobile Dental Clinic</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>School Dental Centre</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>909</strong></td>
<td><strong>149</strong></td>
<td><strong>179</strong></td>
<td><strong>1,235</strong></td>
</tr>
</tbody>
</table>

b) The norm for the establishment of a school dental clinic is an enrolment of at least 1,000 students. Schools with enrolment less than 1,000 particularly in the rural areas would thus be able to receive oral healthcare through the outreach initiatives.

c) The mobile dental team represents a viable approach for schools without a dental clinic. It does not require a permanent room in the school as equipment can be mobilised from one school to another once the treatment has been completed.

It is to be emphasised that in the expansion of care, the quality of care must not be compromised. A proper working environment needs to be provided by the schools to enable the dental team to render optimal oral healthcare to the school children. Other considerations to be given due attention include effective cross infection control measures such as the proper disposal of clinical waste and the use of autoclaves for sterilisation. Adherence to the infection control policy as documented is to be emphasised\(^{31,32}\).

7.4 Enhancing the Role of Parents, Teachers, Community and other Agencies

Current approaches to health improvement initiatives promote the involvement of individuals, families and the community towards coordinated action that will lead to an improved health outcome for the target population. In addition, since the school-going child spends most of his
time in the school, it is important that teachers and parents be recognised as partners in the implementation of our efforts to attain and maintain optimal health for the children. There should also be renewed emphasis on partnerships and collaboration in health with other related agencies like water authorities as well as non-governmental organisations. The implementation of Integrated Healthy School Programme *(Program Bersepadu Sekolah Sihat)*\(^{33}\) is to be further enhanced.

7.5 Enhancing Continuous Professional Development of Oral Healthcare Providers

In keeping with the rapid advances in dentistry, there has to be renewed commitment amongst all providers involved to continuously update their skills and knowledge towards enhancing their core competencies. These include appropriate and effective use of the latest technologies and materials as well as information on current concepts in diagnosis and intervention, safety and environmental issues, and quality improvement efforts.

7.6 Strengthening of the Referral System to Officers and Specialists

Dental officers and dental nurses are the main providers of primary oral healthcare. Complex cases are referred to specialists for their further management. Referral for complex care is now made easier with the increasing availability of specialist care. The paediatric dental specialist and orthodontist in particular play an increasingly important role in the management of complex cases.

8. DELIVERY OF ORAL HEALTHCARE

The delivery of comprehensive oral healthcare to school children is operationalised through the four main phases as follows (refer MS ISO 9001:2000 Quality Procedures\(^{34}\), Appendix 1 and Appendix 2):

8.1 Planning

Planning of the school oral healthcare initiatives shall be done by the state and district management teams. Both inter and intra-agency cooperation and collaboration are essential in determining the success of these initiatives.

8.2 Implementation

Delivery of care comprises promotive, preventive and curative components, which are carried out simultaneously.
8.3 Monitoring

Monitoring shall be carried out on a scheduled and regular basis by the State Deputy Director of Health (Oral Health), Senior Dental Officers, Dental Officers and Dental Nurses. The progress of the planned activities is monitored through indicators as stipulated in the Quality Assurance Programme - National Indicator Approach, District Specific Approach, Programme Agreement, Key Performance Indicators and National Oral Health Plan Goals. The frequency of monitoring can be on a monthly, quarterly, half-yearly or yearly basis to enable timely intervention to achieve the set annual targets.

8.4 Evaluation

Utilisation of resources for implementation has to be accounted for and the improvement in oral health amongst school children measured. Evaluation is done through indicators as in Quality Assurance Programme - National Indicator Approach, District Specific Approach and Programme Agreement.

The frequency of evaluation can be on a yearly or scheduled basis. In addition, for data that is not available from HMIS, relevant studies may be conducted from time to time to assess the effectiveness of the services provided.

9. FUNDING

There is no specific allocation given go school oral healthcare as funding is incorporated into the overall budget allocation for oral health activity which encompasses specialist care and other target groups in primary care.

10. CONCLUSION

The incremental oral healthcare for school children has brought about a tremendous increase in the number of school children receiving primary oral healthcare. This initiative has resulted in a marked improvement in their oral health status.

With an increasing school-going population, constraints in resources, the emergence of new materials and technologies as well as increasing customer expectations, we have to adopt and adapt promptly so as to continuously provide the best care possible. It is thus expected that this guideline will serve as useful reference for managers as well as clinicians.
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GLOSSARY OF TERMS AND ABBREVIATIONS

Primary oral healthcare  Oral healthcare provided by dental officers / dental nurses.

Specialist oral healthcare  Oral healthcare provided by dental specialists.

Dentist  Person who holds a recognised qualification in dentistry and is registered with the Malaysian Dental Council as a dental surgeon under the Dental Act 1971.

Dental Specialist  Dental surgeon who holds a clinical post-graduate qualification.

Dental Officer  Dental surgeon in the public sector.

Dental Nurse  Operating auxiliary who can examine and treat children up to 17 years of age under the supervision of a dental officer.

Dental Technologist  Non-operating auxiliary who carries out laboratory work e.g. fabrication of prostheses, maintenance of dental equipment.

Dental Surgery Assistant  Non-operating auxiliary who provides chairside assistance to dental officers and dental nurses.

Primary school children  Children who attend six years of formal education from Primary One (seven years old) to Primary Six (twelve years old).

Secondary school children  Children who attend five or six years of formal education from Remove Class or Form One to Form Five.

Outreach initiative  Oral healthcare provided to school children through mobile dental teams or mobile dental clinics.

School dental clinic  A permanent dental clinic set up in a school usually with an enrolment of more than 1,000 children.

DMFX  Index for measurement of dental caries and treatment need. It indicates the total number of teeth decayed (D), missing due to caries (M), filled (F) and needing extraction due to caries (X).
Incremental oral healthcare: Systematic and comprehensive oral healthcare provided to school children on an annual incremental basis from Primary One to Form Five.

Orally fit: Oral health status where all necessary treatment needs have been completed.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDDH (OH)</td>
<td>State Deputy Director of Health (Oral Health)</td>
</tr>
<tr>
<td>SDO</td>
<td>Senior Dental Officer</td>
</tr>
<tr>
<td>DS</td>
<td>Dental Specialist</td>
</tr>
<tr>
<td>DO</td>
<td>Dental Officer</td>
</tr>
<tr>
<td>DN</td>
<td>Includes Dental Matron, Dental Sister and Dental Nurse</td>
</tr>
<tr>
<td>DSA</td>
<td>Dental Surgery Assistant</td>
</tr>
<tr>
<td>OHP</td>
<td>Oral Health Promotion</td>
</tr>
<tr>
<td>OHE</td>
<td>Oral Health Education</td>
</tr>
</tbody>
</table>
APPENDICES
## DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>PLANNING</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 1.  | **1.1.** Do a situational analysis based on the following:  
- Previous year’s achievements.  
- Strategies and targets set by national / state level.  
- Availability of resources (human and financial).  
- Feedback from meetings with the education department.  
- Requests from Parents & Teachers Association, community leaders etc.  
- Suggestions for improvement. | SDDH(OH) / SDO / DO / DN |
|     | **1.2.** Brief oral health personnel on ‘Guidelines On Oral Healthcare For School Children’. | SDDH(OH) / SDO / DO |
|     | **1.3.** Standardise dental officers and dental nurses on scheduled basis e.g. annually, to minimise variability in the diagnosis of dental caries and periodontal conditions. Update of case management shall emphasise current concepts of disease and prevention, maintenance of oral health such as:  
- Minimal intervention in the management of dental caries.  
- Updated caries and periodontal risk assessment.  
- Current concepts of cavity preparation. | SDDH(OH) / SDO / DO |
|     | **1.4.** Obtain list of schools with enrolment and contact numbers from the State / District Education Office and compare with the previous year’s list. | SDO / DO / DN |
### DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>Set annual targets, prioritise school selection and implement strategies.</td>
<td>SDDH(OH) / SDO / DO / DN</td>
</tr>
<tr>
<td>1.6</td>
<td>Determine the mode of service to be delivered to the schools i.e. : Outreach initiative or School clinic-based</td>
<td>SDO / DO / DN</td>
</tr>
</tbody>
</table>

## 2. IMPLEMENTATION

### 2.1 Preparation

2.1.1. Prepare a schedule for schools to be treated under the outreach initiative. | SDO / DO / DN |
2.1.2. Notify teacher-in-charge of the scheduled date of visit and collect name list by class. | SDO / DO / DN |
2.1.3. Obtain consent for Primary 1 and any other new students. | DO / DN |
2.1.4. Ensure adequacy of equipment and supplies. | DO / DN |
2.1.5. For the outreach initiative, ensure treatment room and vehicles are available and ready for use. | DO / DN |

### 2.2 Delivery of Care

2.2.1. Clinical – Curative and Preventive

a. Conduct oral examination for all students as planned. Assess oral hygiene and gingivitis free mouth status (Appendix 3 and Appendix 4 respectively). | DO / DN |

b. Identify high risk cases by using suggested criteria for tagging for better management of patients. Conditions tagged red are high risk cases (Appendices 5 and 6). | DO / DN |
### DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.</td>
<td>2.2.1. <strong>Clinical – Curative and Preventive (cont…)</strong></td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>c. Children at high risk shall be given priority care irrespective of the class the child is in.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>d. For children not at high risk, commence treatment in Primary 6 first whereas children in Primary 1 to be treated later.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>e. Provide appropriate care with emphasis on the following:</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Ensure care is delivered in a caring, safe and professional manner.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Use appropriate technology e.g. minimal intervention, high speed unit.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● High risk cases be given priority e.g. large cavities in permanent teeth be treated urgently.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Prioritise treatment of caries in anterior permanent dentition.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Render basic emergency procedures e.g. dressing and clearing oral sepsis.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Institute clinical preventive measures e.g. fissure sealants etc</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Improve periodontal health e.g. scaling where necessary.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>f. Identify the need for referral based on the following criteria:</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>Referral from Dental Nurse to Dental Officer</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Medically compromised cases.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Orthodontic cases.</td>
<td>DO / DN</td>
</tr>
<tr>
<td></td>
<td>● Traumatised teeth e.g. fractured, avulsed or subluxated teeth.</td>
<td>DO / DN</td>
</tr>
</tbody>
</table>
### DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| 2.2 | 2.2.1. Clinical –Curative and Preventive (cont…)  
- Prosthetic cases.  
- Endodontic cases.  
- Children with special needs (Children with hearing and visual impairment who are not medically compromised need not be referred.)  
- Any other conditions requiring further management e.g. soft tissue lesion  
**Referral from Dental Officer to Dental Specialist**  
- Any treatment requiring specialist intervention based on good clinical judgement of the dental officer.  
g. Refer cases as identified for further management.  
h. Follow-up of referred cases. | DO / DS  
| 2.2.2. Promotive  
a. Prepare a schedule on oral health promotion activities for the school comprising oral health talks, tooth brushing drills, exhibitions, puppet shows, role play, video show etc. | DO / DN  
b. Notify teacher-in-charge. | DO / DN  
c. Ensure availability of equipment and audio visual aids. | DO / DN  
d. Conduct oral health promotion activities as planned. | DO / DN |
### DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td><strong>Data Collection</strong> &lt;br&gt; 2.3.1. Record details of daily returns in the appropriate HMIS forms. &lt;br&gt; 2.3.2. Submit soft and hard copy of the returns through the appropriate channels at specified intervals. &lt;br&gt; 2.3.3. Notify school on oral health status of children and activities conducted</td>
<td>DO / DN / DSA &lt;br&gt; SDDH(D) / SDO / DO / DN &lt;br&gt; SDO / DO / DN</td>
</tr>
<tr>
<td>3.</td>
<td><strong>MONITORING</strong> &lt;br&gt; 3.1. Prepare a schedule (meetings and field visits) to monitor the implementation of activities as planned and to assess performance at clinic / district / state levels.</td>
<td>SDDH(OH) / SDO / DO / DN</td>
</tr>
<tr>
<td></td>
<td>3.2. Implement the monitoring activities as scheduled.</td>
<td>SDDH(OH) / SDO / DO / DN</td>
</tr>
<tr>
<td></td>
<td>3.3. Determine whether targets set have been achieved</td>
<td>SDDH(OH) / SDO / DO / DN</td>
</tr>
<tr>
<td></td>
<td>3.4. Take the necessary corrective actions.</td>
<td>SDDH(OH) / SDO / DO / DN</td>
</tr>
<tr>
<td>4.</td>
<td><strong>EVALUATION</strong> &lt;br&gt; 4.1. Conduct evaluation on a regular basis.</td>
<td>SDDH(OH) / SDO</td>
</tr>
<tr>
<td></td>
<td>4.2. Determine whether objectives have been achieved.</td>
<td>SDDH(OH) / SDO</td>
</tr>
<tr>
<td></td>
<td>4.3. If objectives have not been achieved, take corrective measures. Repeat situational analysis as in 1.1.</td>
<td>SDDH(OH) / SDO</td>
</tr>
<tr>
<td></td>
<td>4.4. Continue to review the policies, objectives, strategies and targets for continual improvement.</td>
<td>SDDH(OH) / SDO</td>
</tr>
</tbody>
</table>
Appendix 2

FLOW CHART FOR DELIVERY OF ORAL HEALTHCARE FOR SCHOOL CHILDREN

1. PLANNING PHASE

1.1. Situational Analysis

1.2. Brief personnel

1.3. Update and standardise operators

1.4. Obtain school list

1.5. Set targets, prioritise school selection and implement strategies

1.6. Determine mode of service

Outreach Initiative

School Clinic-Based

2. IMPLEMENTATION PHASE

2.1. Preparation

2.1.1. Prepare schedule

2.1.2. Notify and collect student name list

2.1.3. Obtain consent

2.1.4. Ensure adequate equipment / supplies

2.1.5. Ensure availability of treatment room / vehicle

2.1.2. Notify and collect student name list

2.1.3. Obtain consent

2.1.5. Ensure availability of treatment room / vehicle

A
2. IMPLEMENTATION PHASE (CONT…)

2.2. Delivery of Care

2.2.1. Clinical - Curative and Preventive

- a. Conduct oral examination
- b. Identify risk
- c. Treat as priority
- d. Commence treatment Primary 6 - 1
- e. Provide appropriate care

Choose:
- High risk
- Not high risk

- f. Need for referral

  Yes
  - g. Refer cases as identified
  - h. Follow-up of referred cases

  No
  - a. Prepare OHP schedule
  - b. Notify teacher-in-charge
  - c. Ensure availability of equipment
  - d. Conduct OHP activities

2.2.2. Promotive

A

B
2. IMPLEMENTATION PHASE (CONT…)

2.3. Data Collection

2.3.1. Record returns in HMIS forms

2.3.2. Submit soft & hard copy of returns

2.3.3. Notify school on oral health status & activities conducted

3. MONITORING PHASE

3.1. Prepare a schedule

3.2. Implement monitoring activities

3.3. Determine targets achieved

Yes

No

3.4. Take necessary corrective actions

4. EVALUATION PHASE

4.1. Conduct evaluation

Yes

No

4.2. Determine objectives achieved

4.3. Take corrective measures

4.4. Review policies, objectives and targets for continual improvement
1. **EXAMINATION PROCEDURES**

   Look for the presence of soft debris deposits (material alba) on the specified surface of the index teeth or their substitutes.

   1.1 Examine only fully erupted teeth. A tooth is deemed to be fully erupted when only its occlusal or incisal surfaces has reached the occlusal plane.

   1.2 Examination is done on specified surfaces of the index teeth.

<table>
<thead>
<tr>
<th>buccal</th>
<th>labial</th>
<th>buccal</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td>46</td>
<td></td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>labial</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>lingual</td>
<td>lingual</td>
</tr>
</tbody>
</table>

   1.3 **Alternative teeth**

   - If any of the 6s is/ are not present, examine the adjacent premolar or the adjacent Es, whichever is present.
   - If 11 or/ and 31 is not present, examine the contralateral tooth i.e. 21 or 41. If either or both of these teeth have not erupted, examine the corresponding As (51 or 71).
   - When the index tooth or its substitute is not present, do not score for that sextant.

1.4 Do not examine teeth which have been indicated for extraction.

1.5 When in doubt, record as absent.

2. **SCORING CRITERIA**

   To obtain the debris scores, the index tooth, or its substitute, is examined by running the side of the No.9 probe along the specified surface to estimate the surface area covered.
by debris. The occlusal or incisal extent of the debris is noted as the passed along the tooth surface.

2.1 The following scoring system is used:

<table>
<thead>
<tr>
<th>SCORE</th>
<th>EXTENT OF DEBRIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No debris present.</td>
</tr>
<tr>
<td>1</td>
<td>Soft debris covering not more than 1/3 of the tooth surface examined</td>
</tr>
<tr>
<td>2</td>
<td>Soft debris covering more than 1/3 but less than 2/3 of the surface</td>
</tr>
<tr>
<td>3</td>
<td>Soft debris covering more than 2/3 of the tooth surface</td>
</tr>
</tbody>
</table>

2.2 The sum of the scores of the index teeth gives the total score. The total score is converted into oral health grading in the following way:

<table>
<thead>
<tr>
<th>0 - 4</th>
<th>A</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - 9</td>
<td>C</td>
<td>Moderate</td>
</tr>
<tr>
<td>10 - 18</td>
<td>E</td>
<td>Poor</td>
</tr>
</tbody>
</table>
1. **EXAMINATION PROCEDURES**

Look for the presence of soft debris deposits (material alba) on the specified surface of the index teeth or their substitutes.

1.1 Examine only fully erupted teeth. A tooth is deemed to be fully erupted when only its occlusal or incisal surfaces has reached the occlusal plane.

1.2 Examination is done on specified surfaces of the index teeth.

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<thead>
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<tr>
<td>46</td>
<td>31</td>
<td>36</td>
</tr>
</tbody>
</table>

1.3 **Alternative teeth**

- If any of the 6s is/ are not present, examine the adjacent premolar or the adjacent Es, whichever is present.
- If 11 or/ and 31 is not present, examine the contralateral tooth i.e. 21 or 41. If either or both of these teeth have not erupted, examine the corresponding As (51 or 71).
- When the index tooth or its substitute is not present, do not score for that sextant.

1.4 Do not examine teeth which have been indicated for extraction.

1.5 When in doubt, record as absent.

1. **SCORING CRITERIA FOR GINGIVITIS-FREE MOUTH**

The index teeth are examined for the obvious presence of calculus and/ or gingivitis using a mirror and probe. Assessment is mainly done by visual examination; the probe is used to confirm the presence of calculus.
Appendix 4 (cont.)

2.1 Presence/ absence of Gingivitis

Look for any sign of gingivitis:

- redness,
- ulceration,
- oedema
- glazing and bleeding.

If gingivitis is present around any of the index tooth, the following score is given:

Gingivitis present = 1

If gingivitis is absent at this stage of examination, proceed to look for calculus.

2.2 Presence/ absence of calculus.

Look for the presence of supra- and subgingival calculus on the designated surfaces of the index teeth, or their substitutes, using a mirror and probe. The probe is used to confirm the presence of subgingival calculus. If calculus is present, score 1.

2.3 Scoring criteria

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absence of both gingivitis and calculus.</td>
</tr>
<tr>
<td>1</td>
<td>Presence of gingivitis with or without calculus or Presence of calculus with or without gingivitis</td>
</tr>
</tbody>
</table>
### Appendix 5

#### SUGGESTED CRITERIA FOR TAGGING

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CRITERIA</th>
<th>TAG</th>
<th>LINE OF ACTION</th>
</tr>
</thead>
</table>
| 1. Caries | 1. Deep caries  
- Permanent dentition  
- As long as one permanent tooth involved  
- For school clinic, treatment given in < 1 month.  
For outreach initiative, action taken on first day of treatment. |
| | 1.2. Rampant caries  
(Primary teeth) | Red | 1. Render urgent treatment.  
2. Intensify oral health education.  
3. Institute clinical preventive measures eg. fluoride varnish application, fissure sealants and fluoride mouthrinse. |
| | 1.3. dfL ≥ 3 or D ≥ 3 or dfL + D ≥ 3 | Red | 1. Render immediate treatment for relief of pain and control of infection.  
2. Institute appropriate follow-up care.  
3. Refer to dental officer / dental specialist when necessary.  
4. Review. |
| | 1.4. Pain and / or abscess | Red | 1. Intensify oral health education activities.  
2. Institute scaling where necessary.  
3. Review to monitor improvement. |
2. Institute scaling where necessary.  
3. Review to monitor improvement. |
| 3. Medically Compromised | Patients with medical conditions where special precautions need to be taken when providing oral healthcare | Red | 1. Intensify oral health education  
2. Institute early clinical preventive measures e.g. fissure sealants.  
3. Refer to dental officer / dental specialist where appropriate  
4. Follow treatment regime as prescribed by dental officer / dental specialist. |
| 4. Referral to Dental Specialist / Dental Officer | 4.1. Any acute or chronic conditions for example patients with periodontal problems | Red | 1. Determine the appropriate line of management.  
2. Inform patient and parents / guardian.  
3. Refer to dental officer / dental specialist.  
4. Review. |
| | 4.2. Abnormal oral lesions and growths | Red | 1. Intensify oral health education  
2. Institute early clinical preventive measures e.g. fissure sealants.  
3. Refer to dental officer / dental specialist where appropriate  
4. Follow treatment regime as prescribed by dental officer / dental specialist. |
| | 4.3. Orthodontic referral | Red | 1. Intensify oral health education  
2. Institute early clinical preventive measures e.g. fissure sealants.  
3. Refer to dental officer / dental specialist where appropriate  
4. Follow treatment regime as prescribed by dental officer / dental specialist. |
| 5. Not Treated | 5.1. Consent for treatment not given by parents / guardian | Blue | 1. Identify cause.  
2. Notify school principal and class teacher.  
3. Discuss with parents / guardian.  
4. Review |
| | 5.2. Consent given but patient refuses treatment. | Blue | 1. Inform principal / class teacher.  
2. Counsel the patient.  
3. Notify parents / guardian.  
4. Refer to dental officer where necessary  
5. Review. |
| | 5.3. Consent given but not present for treatment. | Blue | 1. Inform class teacher.  
2. Inform parents / guardian.  
3. Counsel the patient.  
4. Review. |
Appenidix 6

DIAGRAMMATIC REPRESENTATION FOR SUGGESTED TAGGING

- **Consent Given**
  - Yes: Line of Action
  - No: Line of Action, Remove tag once consent is obtained

- **Medically Compromised**
  - Yes: Line of Action
  - No: Line of Action, Tag remains throughout school years

**Examination**

- **Caries**
  - *Meet Criteria*: Line of Action

- **Oral Hygiene**
  - *Meet Criteria*: Line of Action

- **Need Referral**
  - *Meet Criteria*: Line of Action

- **Refuse Treatment (Chairside)**
  - *Meet Criteria*: Line of Action

**Line of Action**

- Remove tag only when the criterion is no longer applicable

* No tagging is needed for those who do not meet the criteria.