Superintendent of
Oral Health

MOH
Dental Administration

National Oral Health Program

Operational Guide for School Oral Health Program

Superintendent of Oral Health
Second Edition 2012
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Index

Operational Guide for School Oral Health Program

Preface…….

Over the years, School Oral Health Program (Kuwait-Forsyth) has set a standard in delivery of oral health care for school children. Today, this program has become a model for oral health planners from neighboring countries.

This new edition of "Operational Guide for School Oral Health Program" is intended to guide our clinical staff and also other oral health planners on the functioning of this program.

This edition is updated according to the best level of scientific evidence available and will go a long way to improve and maintain the standards this program has set.

Dr. Sabiha Al-Mutawa

Superintendent of Oral Health

Acknowledgements…..

Following members were involved in preparing this manual titled "Operational Guide for School Oral Health Program".

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Introduction

School Oral Health program (SOHP) is a joint venture of Ministry of Health (MOH), Kuwait and Forsyth Research Institute, Boston catering to the oral health needs of Kuwaiti school children. In 1983 it had a modest beginning in capital region. Based on that, the MOH decided to start similar program at Ahmadi in 1986 and subsequently in the year 1994 at Hawally, Farwaniya and Jahra governorates. In 2002, school based dental clinics were established by SOHP in three schools for special needs to meet the dental needs of approximately 2500 children. In the year 2004, a new program was opened at Mubarak Al Kabir governorate.

SOHP is a school-based program with education, prevention and treatment components. More emphasis is on oral health prevention and promotion. SOHP is one of the unique school based oral health programs in the world and only one of its kind in the middle east region making this program a role model program for oral health planners from neighboring countries. Delivery of oral health care by the program is multidimensional in nature. It functions through centre based clinics at all the governorates, school based clinics, mobile preventive teams, health education teams and a mobile van. Apart from all pediatric treatment procedures, the preventive procedures carried out by program are biannual fluoride varnish application and the placement of fissure sealants. Prevention is supported by a strong oral health education campaign. All our staff is comprehensively trained and evaluated according to our protocol and is the hallmark of the program.

Through strong health education and preventive campaign, program has managed to change the lifestyle of Kuwaiti people and stabilize the level of oral disease to a great extent. The program has a long way to go to achieve the goals it has set. So much has been achieved and so much needs to be done if we have to maintain the standards this program has already set.

Operational Guide for School Oral Health Program

Regulations for Dentist Joining School Oral Health Program

Regulations for Dentists Joining School Oral Health Program

Superintendent of Oral Health set up specific regulations to practice dentistry in the School Oral Health Program (SOHP). New dentists should undergo professional training in the SOHP protocol. This training is followed by written and practical evaluation of all the trainees. The training and the evaluation is done by well trained team (dentists and dental assistants) appointed by the Superintendent of Oral Health. Dentists who passed the evaluation process successfully will be appointed by the SOHP.

Objectives:

The objectives of the training courses are to:

- Standardize the clinical skills and knowledge of dentists who are graduated from different dental schools, to practice dentistry in the SOHP.
- Ensure that dentists have acquired the knowledge and understanding of clinical dental sciences to practice dentistry in consistent with the contemporary standards of care.
- To obtain high quality of care and high standard of care for the children.

Training Curriculum

New dentists joining the SOHP should undergo a training course divided into four sessions as follows:

A. Theoretical course.
B. Phantom head training.
C. Clinical training.
D. Computer training on patient data entry.

A. Theoretical Course

The duration of this session is two weeks. The syllabus includes the following topics:

- Introduction to School Oral Health Program in Kuwait.
- Principles of dental public health.
- Principles of health education and prevention.
- Principles of work simplification.

- Behavior management.
- Dental anatomy.
- Pulp histology and pathology of primary and permanent teeth.
- Radiographic interpretation.
- Dental management of medically compromised patients.
- Clinical protocol.
- Examination, charting, diagnosis, and treatment planning.
- Instruments and materials used in the program.
- Local anesthesia.
- Topical fluoride application.
- Fissure sealant, preventive resin restoration (PRR), and composite fillings.
- Stainless steel crown for primary and permanent teeth.
- Cross Infection control.
- Maintenance of dental equipments.
- Common mistakes in dental practice.
- Prescribing medicine.
- Recording the clinical productivity.

B. Phantom Head Training

The duration of this session is one week. Skills that will be learned after this session:

- Instruments and materials used in the program.
- Dental examination and charting.
- Topical fluoride application.
- Rubber dam application.
- Fissure sealants application.
- Preventive resin restoration (PRR).
- Composite fillings (Class I, II, III, IV, V).
- Pulpotomy/SSC for primary teeth.
- Pulpotomy/SSC for permanent teeth.
- Proper cross infection control practices.

C. Clinical Training

This session take place between two weeks to 6-months and it has two parts:

- Observation for two weeks:
  - The trained dentists observe the clinical procedures that done by a well trained dentist during patient visits to the dental clinic.
- Working under direct supervision for 2- 6 months:
  - Step by step introduction to clinical practice on patients.

D. Electronic Patient File

Currently, the SOHP is using unique software as an electronic patient record for data entry in all the centers. The electronic record is called Titanium. All the staff in the program receives a 3 day hands-on training at our computer lab. Any updates on the software are conveyed to all the staff immediately. Re- training courses are conducted on regular basis.

This training is followed by a practical assessment conducted on the last day of the training course.

Eligibility

All dentists working with the School Oral Health Program should have:

- Kuwait Dental Association (KDA) membership.
- Valid dental license.
- Continued Medical Education (CME) membership from Kuwait institute for medical specialization (KIMS).

Continuing Education Program

As a CME/CPD provider, SOHP receives accreditation from the CME center of the Kuwait Institute for Medical Specialization (KIMS) for planning and conducting CME/CPD activities. The scheme of CME/CPD is structured, so that it runs in five year cycle. Dentists registered in the Maintenance of Professional Competence(MPC) program are required to acquire 250 credit points within the five-year cycle i.e., a minimum of 50 CME credit points are required every year. SOHP had planned and conducted a series of workshops, seminars, lecture series, and group learning sessions that are accredited by the CME center for dentists. Our staff is also encouraged to attend the lectures, conferences, and hands on courses organized by KDA, Kuwait University and KIMS.

Operational Guide for School Oral Health Program

Code of Ethics

Code of Ethics[2]

Preamble

This Code of Ethics is a set of principles of professional conduct to which dentists must aspire to fulfill their duties to their patients, to the public, to the profession, and to their colleagues.

This code affirms or clarifies principles that are definitive of professional and ethical dental care. For those about to join school oral health program, this code identifies the basic moral commitments of dentistry and will serve as a source for education and reflection.

For those within the profession, this code provides direction for ethical practice, in so doing; it also serves as a basis for self-evaluation.

For those outside the profession, this code provides public identification of the profession's ethical expectations of its members. Therefore, this code of ethics is educational, guides behavior and expresses to the larger community the values and ideals that we adopt by reason of trust and commitment.

Principles

This code expresses the values shared by the dental profession in the SOHP.

A dentist's foremost responsibility is to the patient. Dentistry is a profession, in part, because the decisions of its members involve moral choices. Every dental practitioner makes decisions that involve choices between conflicting values while providing care for patients.

These values should be carefully considered by a dentist and decisions regarding them should be made prior to providing treatment. Among these are the particular values to which the dental profession is especially committed. These are listed here in the order of priority beginning with the most important and include:

Life and Health: The primary concern is the life and general health of the patient.

Appropriate and Pain Free Oral Function: The specific nature of dental health for each individual patient depends on variables including the patient's age, general health, underlying anatomy, and compliance with oral hygiene.

Patient Autonomy: The patient/parent has the right to choose, on the basis of adequate information, from alternate treatment plans that meet professional standards of care. The treatment plan chosen by the patient may or may not be that which the dentist would prefer.

Practice Preferences: Dentists vary in the range of services performed and the method of delivery of those services.

A dentist's individual preference in the delivery of dental care plays an important role in treatment recommendations and decisions. This preference should be acknowledged by the patient.

Aesthetic Values: Oral and facial appearance is important to the self image of the patient and an important consideration of dental practice.

Responsibilities to Patients

Article 1: Service

As a primary health care provider, a dentist's first responsibility is to the patient. As such, the competent and timely delivery of quality care within the bounds of clinical circumstances presented by the patient shall be the most important aspect of that responsibility.

Article 2: Competency

The privilege of dentists to be accorded professional status rests primarily in the knowledge, skill, and experience with which they serve their patients and society. All dentists, therefore, must keep their knowledge of dentistry contemporary, and must provide treatment in accordance with currently accepted professional standards in SOHP.

A practitioner should inform the higher authority when a serious injury, dependency, infection or any other condition has either immediately affected, or may affect over time, his or her ability to practice safely and competently.

Article 3: Consultation and Referral

Dentists shall provide treatment only when qualified by training or experience; otherwise a consultation and/or referral to an appropriate practitioner is warranted.

Article 4: Emergencies

A dental emergency exists if professional judgment determines that a person needs immediate attention to relieve pain, or to control infection or bleeding. Dentists have an obligation to consult and to provide treatment in a dental emergency.

Article 5: Delegation of Duties

Dentists must protect the health of the patients by delegating duties or

procedures only to those persons qualified by skill, training and licensure.

Article 6: Arrangements for Alternate Care

A dentist having undertaken the care of a patient shall not discontinue that care without first having given notice of that intention and shall endeavor to arrange for continuity of care with colleagues.

Article 7: Choice of Treatment

A dentist must discuss with the patient's parents, treatment recommendations including benefits, prognosis, risks and reasonable alternatives.

Article 8: Confidentiality

Patient information acquired in the practice of dentistry, shall be kept in strict confidence except as required by law.

Article 9: Guarantee

A dentist must, neither by statement nor implication, warrant nor guarantee the success of operations, appliances or treatment. A dentist has the responsibility to provide a high standard of care and accept responsibility for treatment rendered.

Article 10: Provision of Information

A dentist is obligated to provide to the parents of the child fair comment and opinion of their oral health.

Article 11: Records

A dentist must establish and maintain adequate records of medical, Dental history, clinical findings, diagnosis and treatment of each patient.

Responsibilities to the Public

Article 1: Representation

Dentists should represent themselves in a manner that contributes to the esteem of the profession. Dentists shall not represent their education, qualifications or competence in any way that would be false or misleading.

Article 2: Contractual Services

A dentist, by entering into a contract with SOHP, neither reduces personal professional responsibilities nor transfers any part of those ethical or legal responsibilities to the SOHP.

Article 3: Choice of Dentist

A dentist shall at all time respect and support the public's right to a free choice of dentist. A dentist must not participate in any plan, scheme or arrangement which might limit or interfere with a person's freedom or ability to choose a dentist.

Article 4: Fees

All the services provided for the students treated in SOHP are free of charges according to the regulations of MOH, Kuwait

Article 5: Community Activities

Dentists by virtue of their education and role in society are encouraged to support and participate in community affairs, particularly when these activities promote the health and well-being of the public under the umbrella of SOHP.

Article 6: Market Advocacy

Dentists must not lend their name or provide written testimonial for reward or not, to any product or material offered to the public.

Responsibilities to the Profession

Article 1: Support of the Profession

Society provides the profession the privilege of self-regulation. This responsibility is borne and implemented by professional associations. Therefore, dentists have an obligation to participate in the advancement of the profession, support of its professional organizations and to observe applicable Codes of Ethics.

Article 2: Inappropriate Conduct

A dentist has an obligation to report to the SOHP administration, unprofessional conduct or behavior of a colleague which may lower the dignity of the profession.

Article 3: Professional Equality

The profession should be viewed as a partnership of equals. Although interests and expertise may vary, all dentists are colleagues that have equal moral status and obligation in the decision making process of the activities of the profession.

Responsibilities to Colleagues

Article: Judgments in Peer Relations

A dentist should not make disparaging comments of the procedures or qualifications of a colleague to a patient or the public. In the interest of the public, dentists are encouraged to consult with a previous dentist, concerning treatment rendered. Through discussion, it should be possible to advise a patient how to achieve an appropriate resolution.

Operational Guide for School Oral Health Program

Activities Performed by the SOHP

Activities Performed by the SOHP

The main goal of the School Oral Health Program is to prevent and control oral disease of school children.

The School Oral Health Program functions through:

1. Oral Disease Prevention Services:
   - ➢ Oral Health Education and Health Promotion Programs.
   - ➢ Using of preventive measures.
2. Treatment Services.

1. Oral Disease Prevention Services:

➢ **Oral Health Education and Health Promotion Programs**

- The SOHP has adopted a need-based approach for health education.
- Oral health presentations are given to all the children in kindergarten (KG), primary, intermediate schools, and to children in the special needs schools. Presentations also given to the parents and teachers of all the previously mentioned schools. Oral health education is done by organizing lectures, distributing pamphlets, conducting cultural activities, exhibitions, and utilizing the media.
- Oral hygiene instructions and demonstrations are given individually or in groups to all the children in using tooth brushes, fluoridated tooth pastes, dental floss, and disclosing tablets. Posters, models, and videos are used for this purpose.

➢ **Preventive Measures**

- Topical fluoride application: Fluoride varnish is applied to all children in the SOHP with positive consent form 4- 16 year olds.
- Fissure sealant application: Fissure sealant is applied to permanent teeth from 6-16 year olds.

2. Treatment Services

➢ These services are provided in conjunction with the other services to school children in the centers and schools. The treatment services will be covered in the clinical protocols section of this operational guide.

Target Population:

Kindergarten children (Grades 1&2):

The following services are provided:

- Oral health education.
- Oral health promotion (tooth brushing, dental flossing).
- Topical fluoride application.

Primary school children (Grades 1- 5)

The following services are provided:

- Oral health education.
- Oral health promotion (tooth brushing, dental flossing).
- Topical fluoride application.
- Fissure sealants.
- Treatment procedures.

Intermediate school children (Grades 6- 9)

The following services are provided:

- Oral health education.
- Oral health promotion (tooth brushing, dental flossing).
- Topical fluoride application.
- Fissure sealants.
- Treatment procedures.

Oral health education and promotion are done to all students in the schools. All preventive and treatment procedures are performed to children with positive consent

The above mentioned services are delivered to the school children through:

1. Center based clinics.
2. School based clinics.
3. Preventive mobile clinics.

1. Center Based Clinics

The SOHP has six dental centers, one in each governorate. The number of clinics in these centers may vary from 8- 20 clinics and these clinics work for 14 hours daily throughout the year. Two clinics, one at each centers; Al-Ahmadi and Hawally centers function in holidays and weekends as emergency clinic.

Each center may have the following facilities:

- Administrative office.
- Reception.
- Record or file storing and sorting machine. Can store up to 35000 files.
- Patient waiting area.
- X-Ray room.
- Central sterilization area.
- Local store.
- Computer server room (server for electronic patient file).
- Health education room.
- Meeting room.
- Security room.
- Dental Laboratory.

Working Hours of SOHP Centers:

- **Morning Hours:** During the school day, the preventive procedures (fluoride and sealants application) mainly done in the morning.
- **Afternoon/ Evening Hours:** Services are provided for the walk in patients and the procedures are performed on quadrant basis.

In morning and afternoon/ evening hours, one to two clinics for walk in emergency cases and one to two clinics for endodontic treatment appointments.

2. School Based Clinics

These are dental clinics located mostly within the primary schools' setting. A dentist and two dental assistants work in each school clinic. This team provides comprehensive oral health care to all the students with positive consent.

Dental Team Duties:

1. The team has to build up a friendly atmosphere with the school administration, teachers, and students.
2. Undertake or/ and supervise oral health promotion and education activities in their school.
3. To order inventory or/ and supplies, a request form has to be filled and sent to their administration office at each program.
4. One of the responsibilities is to maintain students' records in the school clinic.
5. Perform the preventive and the clinical procedures in the school clinic in accordance with the clinical protocol of the SOHP.
6. May refer students to the center for further treatment if needed such as root canal treatment, uncooperative patients, medically compromised patients, and those students who need extraction for permanent teeth.
7. Prepare productivity reports on a monthly basis and submit it to their administration office at each program.
8. Report any kind of complaints in the equipments in the clinic to the maintenance department.
9. At the end of the academic year, make inventory and send all the materials and instruments back to the center and cover the dental unit and other equipments.

First Period (September– March):

First two weeks of the academic year:

1. Report any civil defects in the clinic.
2. Check up the dental unit and autoclave (all equipments) and report the needed repair.
3. Check up the instruments for any replacement.
4. Request the needed supplies and materials.
5. Distribute consent forms according to the regulations in protocol 1.
6. Collect the consent forms and report a summery to the main office in the

official form; total students, positive consent; negative consent, and not returned consents by the end of the second week.

7. Arrange the paperwork in order (daily, monthly, patient file, etc).
8. Arrange the patient for treatment according to:
    - Permanent dentition.
    - Primary dentition.

1. Treatment performed on emergency basis.
2. In this period of time, the dental team may complete:
    - Two applications of fluoride varnish.
    - Sealant application of fully erupted permanent teeth.
    - Treatment of permanent teeth.

Second Period (April– May):

Treatment performed on emergency basis with preference for 1st and 2nd grades for the primary dentition starting with the low risk followed by medium and high caries risk

Emergency treatment is a priority

3. Preventive Mobile Clinics

The preventive mobile teams work in schools without functional dental clinics.

Preventive Mobile Team Duties:

Fluoride Varnish Application:

1. Consent forms distribution and collection.
2. Application for the 1st and 2nd KG children.
3. Application for the primary school students (from 1st to 5th grades).
4. Application for the intermediate students.

Fissure Sealants Application:

1. Consent forms distribution.
2. Placement of fissure sealants for permanent molars and premolars in the following order:

Primary Schools

A. Students of the 3rd, 4th, and 5th grades are selected first.

B. Then the 2nd and 1st grade students in the same school.

C. Once the school preventive procedures are over, the team moves to another school.

Intermediate schools

It is performed according to the program resources.

- Mobile Units

The mobile units supplied are of two types:

1. Fully equipped portable unit.
2. Simple portable unit.

- Mobile Teams

Team A: This consists of the following:

1. One dentist.
2. Two dental assistants.

A fully equipped portable unit is supplied for this team.

Team B: This consists of the following:

1. Hygienist.
2. One dental assistant.

A simple portable unit is supplied for this team.

Duties of the Dentist Working In Preventive Mobile Team

Objectives:

a. To apply fissure sealants on the erupted sound first and second permanent molars and premolars.

b. To apply fissure sealants to permanent molars and premolars with early non-cavitated carious lesions.

Dentist Should:

1. Make necessary arrangements with the school authorities in advance.
2. Preferably work in those schools that do not have a fixed dental clinic.
3. Distribute consent forms for preventive procedures at the schools that are assigned to him/her by the team leader with the help of his team members.
4. Get the required materials and instruments from the center/store in advance.
5. Contact the maintenance department to set up the mobile unit in the school where he/she will be working.
6. Perform simple charting along with preventive procedures to students with positive consent.
7. Refer the emergency/complicated cases to the program center.
8. Complete all the preventive procedures in one appointment.
9. Complete preventive procedures for a minimum of 10 students per day and team should cover all the schools allotted by program management.
10. Not perform any procedures under local anesthesia, but can use topical anesthesia if necessary.
11. Perform only the following preventive procedures:
    a) Fluoride varnish application.
    b) Fissure sealant application.
    c) PRR on erupted permanent molars and premolars.
    d) Scaling and polishing if necessary.
12. Perform procedures with/without rubber dam according to his/her judgment.
13. Abstain from performing any other clinical dental procedures (can only do temporization of deep carious lesions).

Duties of the Dental Hygienist Working In Preventive/ Health Education Team

Objectives:

Perform health education activities and apply fluoride varnish to the target population

Dental Hygienist (DH) will be responsible for the following duties:

1. Make necessary arrangements with the school authorities in advance.
2. Work in those schools that do not have a dental clinic/fixed unit.
3. Distribute consent forms for fluoride varnish application at the schools that are assigned to her by the team leader.
4. Should contact the parents over phone if the students have not returned the consent forms.
5. Should get the required materials and instruments from the center/store in advance.
6. Perform the following preventive procedures:
   a) Fluoride varnish application.
   b) Supervised tooth brushing and dental flossing sessions.
   c) Monitor the children with bad oral hygiene.
   d) Perform oral health education activities as assigned by the health education leader.

Job Description of the Preventive Team Leader

1. He/ She must be an experienced dentist.
2. He/ She must preferably be part of one of the preventive mobile teams.
3. He/ She must co-ordinate the work of all the preventive teams.
4. He/ She must set short-term and long-term targets for all the teams.
5. He/ She must meet up with other teams on regular basis and find solutions to problems if any.
6. He/ She should report about the progress and working of the teams to their respective clinical supervisor/coordinator.
7. He/ She must also be in constant communication with the store and maintenance departments.

Operational Guide for School Oral Health Program

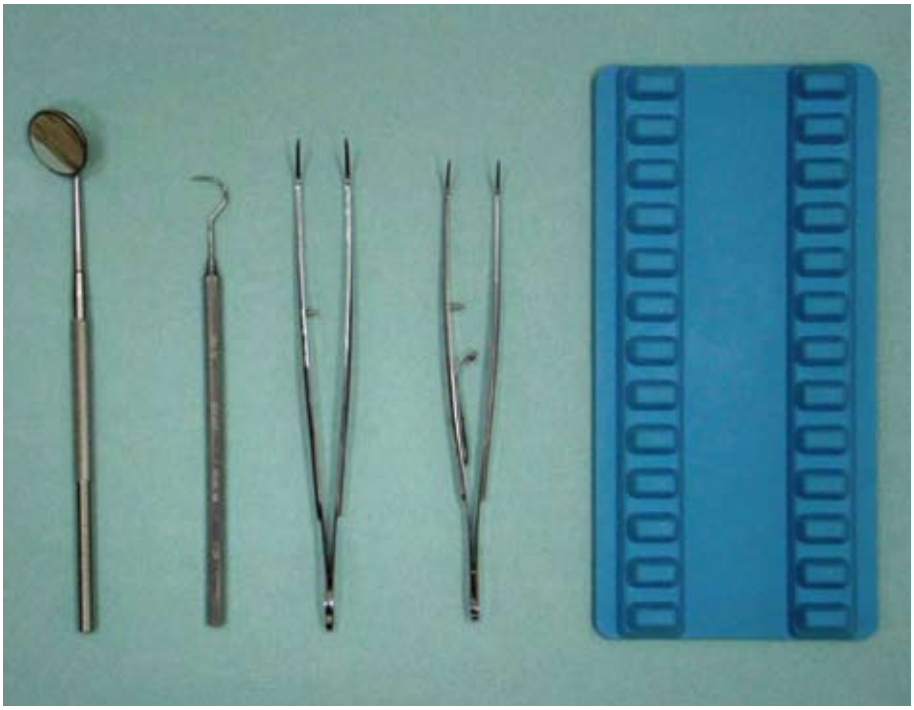
Instruments Used In the Program

Instruments Used In The Program

The following lists of instruments are unified for all dental clinics in SOHP.

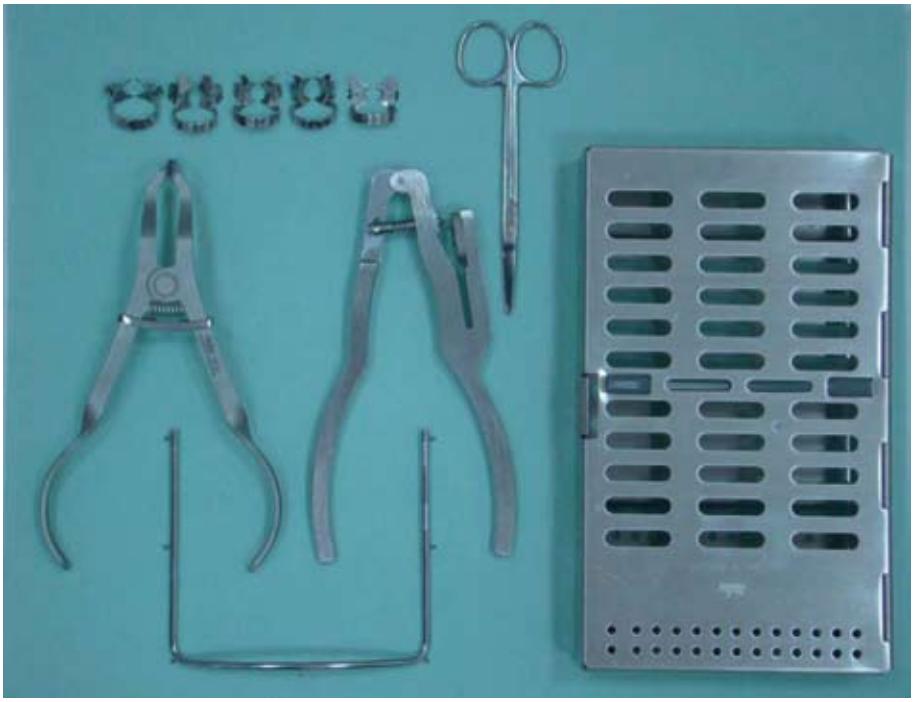
- **Basic Examination Set**

1. Dental mirror.
2. Explorer.
3. Cotton pliers, non locking.
4. Cotton pliers, locking.
5. Instrument lift, plastic tray.



(Fig.1)

- **Rubber Dam Set**
    1. Rubber dam clamps # 8A, 2A, 14A, 14, 3.
    2. Rubber dam scissor.
    3. Rubber dam clamp forceps.
    4. Rubber dam punch.
    5. Rubber dam frame # 5.
    6. Rubber dam metal box.



(Fig. 2)

- **Restorative Set**
    1. Small spoon excavator.
    2. Large spoon excavator.
    3. Plastic filling instrument PFI # 3.
    4. Plastic filling instrument PFI # 4.
    5. Cement spatula.
    6. Dycal applicator.

(Fig. 3)

- **Stainless Steel Crown Set**
    1. Cotton pliers, locking.
    2. T3 carver.
    3. Pliers, How, straight # 110.
    4. Pliers, Gordon #137.
    5. Curved crown scissor.

(Fig. 4)

- ## Extraction Instruments

1. Mandibular posterior permanent molar teeth forceps.
2. Maxillary posterior permanent molar teeth forceps (right).
3. Maxillary posterior permanent molar teeth forceps (left).
4. Mandibular posterior primary teeth forceps.
5. Mandibular anterior primary teeth forceps.
6. Maxillary posterior primary teeth forceps.
7. Maxillary anterior primary teeth forceps.
8. Warwick – James, elevator, right.
9. Warwick – James, elevator, left.
10. Small straight elevator.

(Fig. 5)

Arranging the Mobile Cabinet in School Clinics

1. The top container of each mobile cabinet may contain the following items. (Fig. 6)

(Fig. 6)

- Cotton Roll dispenser.
- IRM, Cavit.
- Mixing pad.
- Polycarboxylate cement .
- Formocresol, Ferric Sulphate
- Topical anesthesia.
- Local anesthetic carpules (lidocaine, citanest, scandonest).
- Anesthetic needles (short & long).
- Wedges.
- Dental floss.
- Dappen dish (3-well).
- Articulating papers.
- Composite fillings and applicator.
- Topical fluoride.
- Fissure sealants.
- Etching Gel.
- Bonding agents (primer & adhesive).
- Disposable applicators.
- Celluloid & finishing strips.
- Disposable prophylaxis cups.
- Pumice.
- Disposable needle guards.
- Patient protective glasses.
- Glass – Ionomer liner.
- Disposable air/water syringes.

2. The following additional materials may be in the pull drawers of the cabinet as follows:

I. First upper drawer: - (Fig. 7)

- Basic examination sets.
- Restorative sets.

II. Second drawer: - (Fig. 8)

- Rubber dam sets and latex.
- Hand pieces (High speed – Low speed).
- Local Anesthetic syringes.

III. Third drawer: - (Fig. 9)

- Extraction Forceps.
- Elevators.
- SSC sets.

IV. Last drawer: - (Fig. 10)

- Masks.
- Suction tips.
- Saliva ejector tips.
- Patient Napkins.
- Face mirror.
- Sterile packaged gauze and cotton pellets.

(Fig. 7 – 10)

Notes:

- Only sterile, packed instruments should be stored in the drawers of the cart.
- The mobile cabinet should be cleaned and disinfected daily.

Operational Guide for School Oral Health Program

Basic Principles of Work Simplification

Basic Principles of Work Simplification[3,4,5]

Time management is an element of survival for the dental practitioners. Dentistry is a "hands on" profession, where the office team must maximize the usage of time effectively through proper planning to provide an optimal treatment for each patient.

Stress is a by-product of various pressures, created by a demand for increased productivity. To reduce stress, each team member must follow the methods that will simplify the work and reduce the fatigue.

Techniques for making work easier, safer and more effective have been developed over the years by major industries in an attempt to make better products at a competitive price. As a result of the researches done by industrial engineers, four basic principles of work simplification have been established. These principles can be applied in the dental office to simplify work and make a more comfortable working environment. All aspects of the dental practices should be analyzed by applying the following four principles of work simplification:

1. Elimination: A 100% saving can be accomplished by elimination of unnecessary equipment, instruments, steps in procedures and movements.

2. Combination: If the functions performed by two instruments or pieces of equipment can be combined into one instrument or a piece of equipment, or if two steps in a procedure can be combined to accomplished in one step, a 50% saving can be realized.

3. Rearrangement: It may be possible to rearrange equipments and materials in the operatory, scheduling of patients, or steps in clinical procedures to take better advantage of available space and time.

4. Simplification: Every effort should be made to simplify dental office equipment and patient treatment procedures in order to introduce a minimum number of variables and permit the team to function most effectively.

Motion economy

When a dentist works alone preparing an average class II Amalgam restoration, his or her eyes and hands must leave the operating field an average of 150 times to get needed instruments or materials to restore the tooth. Since wasted motions use time and reduce efficiency, the dental team must eliminate unnecessary motion in the treatment area.

When working with a chair side dental assistant, the dentist should be able to complete an entire dental procedure without having to take his/her eyes or

hands out of the operating field. Motions required exchanging instruments with the dental assistant should be confined to Class I, II and III movements. If the dentist frequently uses class IV and V motions, it is apparent that the dental team is not utilizing the principles of 4 - handed dentistry.

Classification of motion

Motions are classified into five categories from the simple to the more complex patterns.

Class 1 motions involve the movement of only fingers.

(Fig. 11)

Class II motions involve movement of the fingers and wrist.

(Fig. 12)

Class III motions involve movement of the fingers, wrist and elbow.

(Fig. 13)

Class IV motion involves movement of the entire arm from the shoulder.

(Fig. 14)

Class V motions involve movement of the arm and twisting of the body.

(Fig. 15)

Class IV and V motions are fatiguing and time consuming. They require arm and body movement, re-focusing and re-accommodation of the eyes. Efficient dentistry will require elimination of Class IV and V movements whenever possible. Applying the following principles of motion will conserve time, save energy, increase production and reduce fatigue.

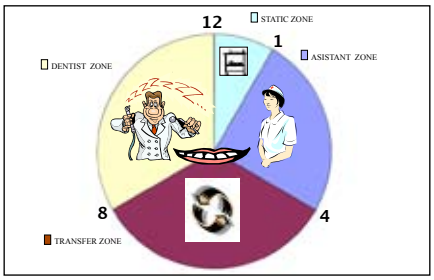
Principles of motion

1. Use body motions requiring the least amount of time and energey.
2. Minimize the number of body motions.
3. Reduce the length of motions.
4. Smooth, continuous motions are preferable to zigzag jerky motions.
5. Minimize the number of eye fixations.
6. Design the work environment to accommodate natural and consistent movements.

Work zones in the dental operatory (Fig. 16)

Work zones refer to four specific areas around the patient's chair, which designate the location of the dentist, assistant and equipment with reference

to the dental patient. If the patient's chair is superimposed over the face of a clock with the patient's face being at the center of the clock, the work zones can then be referred to certain time positions i.e. 12 o'clock, 1 o'clock, etc.



(Fig. 16)

Note: The designation of clock position will be exactly opposite for right and left-handed operators.

When working efficiently with a dental assistant, the operator must limit his/her location to one side of the patient chair. This area should be free from equipment, hoses or other material, which will hinder movement of the operator.

The operator zone for a right-handed dentist will permit the dentist to work within the area bounded by the 8 o'clock to 12 o'clock positions. (12 o'clock to 4 o'clock - for left handed operator). When the patient's head is properly positioned, the operator will find good access and visibility to most areas of the mouth while working in the 12 o'clock to 10:30 o'clock position. (12 o'clock to 1:30 o'clock - for left handed operator).

The work area between the dentist and assistant around the patient's head is normally an area of low activity, (unless a behind-the-patient delivery system is followed). Equipment, which does not need to be adjusted frequently (cavitron, curing light for composites) are usually placed in the static zone. The static zone is bounded by the 12 o'clock to 1 o'clock positions for the right-handed operator and by the 11 o'clock to 12 o'clock positions for the left handed operator.

The assistant's zone is bounded by the 1 o'clock to 4 o'clock positions for the right handed operator and by the 8 o'clock to 11 o'clock for the left handed. If the dental operatory is arranged for efficiency, the assistant will not have to significantly change his/her location. Usually the assistant sits at the 3 o'clock position. This places the hips of the dental assistant at about the patient's shoulder area. The legs of the assistant are normally directed toward the patient's face. Obviously, the assistant sits sideways with reference to the patient and has access to the transfer zone for instrument transfer, as well as

to the static zone. The assistant's mobile cabinet is also located partially in the assistant's zone.

Everything that enters or leaves the patient's mouth must pass through the transfer zone. As the area extends away from the mouth, it spreads like a triangle toward the foot of the patient's chair and is bounded by the 4 o'clock to 8 o'clock positions for right-handed operators.

The boundaries for the left-handed operator are the 4 o'clock to 8 o'clock positions. The dentist and assistant exchange all instruments in the transfer zone, as close to the patient's mouth as practical. Over-the-patient delivery systems are placed in this zone.

Positioning the operating team

Webster defines posture as the position or bearing of the body, whether characteristic or assumed, for a special purpose. The posture taken by the dentist for the special purpose of delivering dental care is governed by the dentist's work environment. Observations of dentists at works verify that many dentists ignore the bearing of their bodies and operate in postures, which are stressful. Whenever possible, work environments must be altered so that the dentist can utilize work positions which are more characteristic to human form.

Work posture, which is characteristic to human form, will relieve the force of strain resulting from imbalance and will provide relaxation for the muscular, vascular and skeletal systems. Posture characteristic to human body form will permit even distribution of body weight to the body parts that are best designed for support. A balanced work posture is less fatiguing, more efficient and healthier than a strained work posture. Health maladies (i.e. varicosities, scoliosis and back and neck pain) are associated with inappropriate dental work posture. A seated work position can be less stressful than a standing position, but appropriate sitting posture means more than just sitting to work.

The profile of a dentist's work posture, which is characteristic to human form, will include:

1. The dentist is in a seated work position.
2. The weight of the operator's head is centered over the spinal column.
3. The operator's back is upright and the neck is only slightly forward with the head slightly titled.
4. The vertebral column is slightly flattened in the lumbar area.
5. The top of the shoulders is parallel to the floor.

6. The operator's elbows are close to his/her body.
7. The face and knees of the operators are fixed in the same direction so that there is no twisting of the trunk.
8. A line drawn parallel to the operator's femur is on a horizontal plane and the operator's feet are flat on the floor.
9. The distance from the dentist's nose to the patient's mouth is 14 to 18 inches.

To obtain this type of work posture, the dental team must manipulate their work surroundings.

The dentist operating stool – (Should have the following features): (Fig.17)

1. The stool must be adjusted low enough to relieve pressure on the blood vessels under the knee and thighs of the operator.
2. The stool must permit upper body weight of the dentist to be evenly distributed over the seat portion.
3. The chair should provide support in the operator's lumbar area without impending to his/her movements.
4. The stool must be stable, but mobile enough for the operator to easily change his or her work position.

(Fig. 17)

The patient chair must be positioned to maximum access to the mouth and visibility for operating team. After obtaining maximum benefit from operator stool adjustment, the dentist should establish the following dentist-to-patient work environment:

1. The patient's head will be placed in the midline of the dentist and as close as possible.
2. The height of the patient's head will be just above the height of the dentist's

elbows. (Elbows are at the dentist's side and they create an approximate 90° angle with the forearms).

3. The dentist's thighs will be placed under the patient's chair with the patient's head over the dentist's lap.
4. The patient will be in a reclined chair position with his/her eyes directed towards the ceiling.
5. The patient's mouth will be open and the head will be rotated laterally or tilted upward or downward to provide maximum access and visibility for the operating team.
6. An attempt is made to bring the patient to the dentist, rather than to distort the dentist's work posture by bringing the dentist to the patient.

The dental assistant stool must permit the assistant to: (Fig. 18)

1. Work seated with his/her legs directed toward the patient's head.
2. Position his/her hips in line with the patient's shoulders.
3. Sit higher than the dentist to gain best visibility into the mouth.
4. Lean forward and still have upper body support via an abdominal rest.
5. Experience no pressure on the blood vessels under the knees or thighs. (A foot rest is usually necessary for the assistant to achieve balanced posture)
6. Meet the requirements of work posture characteristic to human form, which apply to the dentist, (with the exception of leaning forward and twisting slightly at the trunk).

(Fig. 18)

Balanced posture must be considered for each treatment procedure and must be reinforced by each team member. To receive the health benefits from good work posture, it must be practiced and perfected. Posture that is characteristic to human form will require proper positioning of the dentist, assistant and the patient.

Seating the dental patient

The following procedures should be done by the dental assistants before seating the patient:

1. The patient chair is lowered to its minimum height.
2. The patient chair back is raised to a semi-reclining position.
3. If the armrest of the patient chair is movable, it must be lowered/raised on the side of the chair where the patient will enter.
4. The operating light is to be moved away from the patient chair to prevent accidental bumping of the patient's head.
5. If an over-the-patient delivery system is used, the dental unit is moved from the patient's entry path.
6. A preset instrument tray is placed in position on top of the work cabinet.
7. The anesthetic syringe is set up and made ready for use.
8. The patient's radiographs are placed on the view box. (If available)

Procedure for seating patients:

1. As the dental assistant leads the patient into the operatory, he/she directs the patient to the dental chair and verbally explains the seating instructions. After the patient is seated, the assistant lowers/raises the arm of the chair, place a napkin on the patient.
2. The patient is then asked to relax against the chair backrest as the entire chair is tilted into a reclining position. The patient is moved slowly and is reassured that the chair placement will provide maximum support for the patient and best access and visibility for the operating team. As the chair is being tilted to a fully supine position, the chair base may be raised or lowered to the desired operating height.

Remember: The operator's thighs must fit under the backrest of the patient chair when the operator is seated on the operating stool.

Final preparations before beginning treatment:

1. When the dentist enters the clinic, the dental assistant after washing his/her hands, gets properly seated on the assistant's stool and pulls the mobile cabinet into work position.
2. The dentist greets the patient, washes his/her hands and checks the patient chart and radiographs to confirm the treatment plan.

3. The dentist then seats himself/herself so that his/her thighs are approximately parallel to the floor and makes final adjustments to the patient's chair height.
4. The assistant turns on and positions the operating light.
5. The assistant places the mouth mirror and explorer into the dentist's hand and immediately brings the air-water syringe and aspirator tip to the work zone to dry the treatment area.

Exchange of instruments between the dentist and the assistant

The exchange of dental instruments has been a task of the dental team right from the first known hiring of a dental assistant in 1885. The technique of instrument exchange described below is referred as the "pick up and delivery method of instrument transfer". This procedure can be carried out using only one hand of the assistant; thereby freeing the assistant's other hand for holding the oral evacuator, air-water syringe or for mixing dental materials. To properly perform this chair side procedure, both the dentist and the dental assistant must perform specific responsibilities or duties.

Dentist duties

1. To be as predictable as possible in your work by establishing a definite routine for each procedure.
2. To anticipate and communicate the need for supplies and instruments which may be used out of the routine sequence of cavity preparation.
3. To maintain a finger rest for assuring a smooth transfer of instruments.
4. To maintain his/her hands and eyes in the operating field during the entire dental procedure.
5. To use preset instrument trays for all dental restorative procedures.

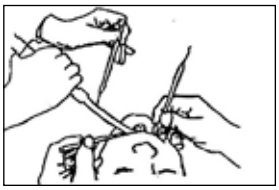
Dental assistant duties

1. Remain attentive to signals from the dentist which indicate a need for the next instrument.
2. Anticipate the next instrument which would normally be used in the sequence and hold it in a position ready for the next exchange.
3. Return each used instrument to the preset tray in its proper place.
4. Be organized and systematic.
5. Learn to efficiently exchange instruments using only one hand.

Instrument Exchange Sequence

1. Ready position/preparation: (Fig. 19)

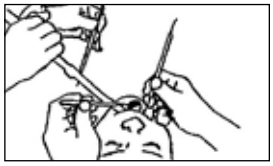
The dental assistant holds the instrument to be delivered in his/her thumb and first fingers at a distance of 8 - 10 inches from the patient's mouth. The instrument must be held close to its non-working end to allow space at the working end for the operator to grasp the instrument. The operator should receive the instrument properly oriented for the quadrant being treated. Burs and cutting edges of hand instruments should be directed toward the area of the planned operation.



(Fig. 19)

2. Signal by dentist: (Fig. 20)

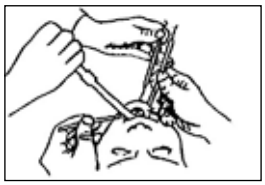
The operator signals a readiness to exchange instruments by lifting the instrument out of the patient's mouth, using only the thumb and first finger.



(Fig. 20)

3. Paralleling of instruments: (Fig. 21)

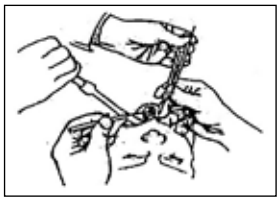
At this moment the assistant positions the instrument to be exchanged close to and parallel to the instrument in the dentist's hand.



(Fig. 21)

4. Instrument pick up: (Fig. 22)

The assistant will extend his/her two fingers and remove the unwanted instrument from the hand of the operator at the end of the instrument, most distant from the patient's mouth. By folding the pick up fingers into the palm, the assistant will lift the unwanted instrument out of the operating field.



(Fig. 22)

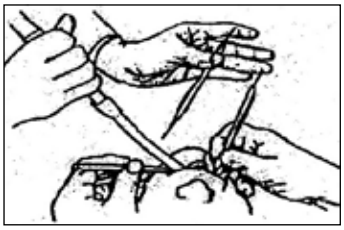
5. Delivery: (Fig. 23)

The instrument to be delivered is then lowered into the operator's hand and he/she can resume work in the patient's mouth.

(Fig. 23)

6. Rolling movement used delivery position: (Fig. 24)

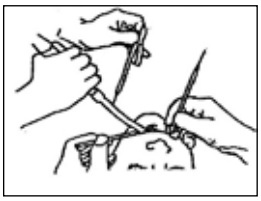
If the instrument taken from the operator is to be reused immediately, the assistant must move the instrument from his/her pickup fingers back into the delivery portion of the hand. This can be accomplished by rolling the instrument between the thumb and pickup fingers back into the ready position.



(Fig. 24)

7. Ready for next exchange: (Fig. 25)

If the instrument taken from the operator is not to be used again, the assistant returns the used instrument to the instrument tray and selects the next instrument in the sequence according to the treatment. This instrument is then held in the ready position until the dentist makes another signal for exchange.



(Fig. 25)

Certain instruments will require that the dentist release his/her finger rest at the patient's mouth when executing an instrument transfer to the dental assistant. When exchanging a double-handed instrument such as dental pliers, scissors or rubber dam forceps, the operator must give up the finger rest to receive the new instrument in his/her palm.

When the instrument transfer method is performed properly, the dentist should not have to wait more than 1-2 seconds for any needed instrument. If the dentist is required to wait as long as 4 seconds for each exchange, the time utilized is the same as the dentist is working alone without the help of dental assistant. Since an average of 150 instrument exchanges are performed during a routine class II amalgam restoration, the time wasted by poor exchange techniques may significantly reduce production.

Note: When working with a right-handed dentist, the assistant will use his/her left hand to exchange instruments. When working with a left-handed dentist, the assistant will use his/her right hand to exchange instruments.

Operational Guide for School Oral Health Program

Cross Infection Control

Cross Infection Control[6,7,8,9,10]

o Introduction

Sterilization and barrier techniques are intended to minimize the risk of cross-infection, between patients, patient and operator and patient and dental assistant. All dental health care workers are exposed to a wide variety of micro-organisms such as tuberculosis (T.B), human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), Herpes and pneumonia in dental practice. Most carriers of viruses such as HBV, HCV and HIV are unaware of their condition. So it is mandatory that all the patients should be treated as potential carriers. Operative dental procedures generate a high level of potentially infected splash and aerosol. High standard clinical techniques are therefore required for all operating staff, their assistants and sterilization staff to avoid transmission of any infection.

o Vaccination against Hepatitis B:

Dental health care workers are at a greater risk for acquiring hepatitis B, through contact with patients, instruments and infected surfaces. It is the policy of SOHP that all dentists & their staff should be vaccinated against hepatitis B immediately once they join the program.

Infection Control in Dental Clinics:

1. Critical precautions before each procedure:

1.1 Hands Hygiene: for standard procedures hands should be washed with a liquid disinfectant soap for 15 seconds

- Before and after treating each patient.
- Prior to wearing gloves
- After removing protective wears.
- After touching any contaminated object.
- Before leaving the work place.

Disposable paper towels should be used to dry the hands.

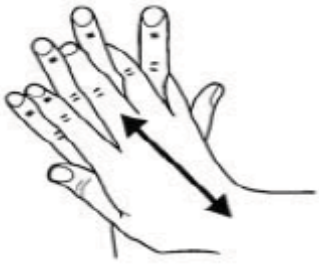
1.2 Proper technique for hand washing[8]

(Ensure hands are held higher than the elbow)

Step 1: Apply cleansing agent on wet hands, lather hands and wrist using rotary motions. (Fig. 26)

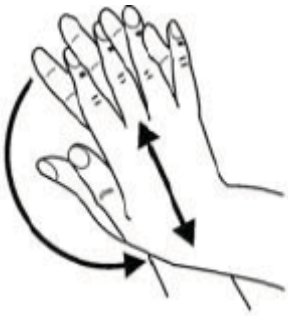
(Fig. 26)

Step 2: Rub palms over backs of palms. (Fig. 27)



(Fig. 27)

Step 3: Rub palms together with fingers linked. (Fig. 28)



(Fig. 28)

Sep 4: Link fists together and rub backs of fingers in a circular motion. (Fig. 29)

(Fig. 29)

Step 5: Wash thumbs in palms in a circular motion. (Fig. 30)

(Fig.30)

Step 6: Rub tips of fingers across palms. (Fig. 31)

(Fig. 31)

1.3 Recommendations for hand care during clinical sessions include:–(Table 1)

- Removal of rings, jewellery and watches.
- Covering all cuts and abrasions with waterproof adhesive dressings.
- Methodical hand washing using a good quality liquid soap preferably containing a disinfectant – a full hand wash and thorough drying is recommended before donning gloves.
- Removing gloves and washing hands after each patient (gives the hands time to recover from being covered).
- Regular use of an emollient hand cream to prevent the skin from drying, especially after every clinical session.

1.4 Barrier protection should be worn in the form of surgical gloves, eye glasses, masks, full-face shields, and protective clothing's to protect against any foreign bodies, splatter and aerosols, which may arise during operative procedures.

1.5 Gloves must be worn routinely by all persons who are in direct patient contact and those who are handling body fluids, tissues or objects contaminated with the above materials. A new pair of gloves should be worn for each patient.

1.6 Patients must also be given eyeglasses to protect against possible injury and splash.

1.7 When any operative procedure is undertaken, surgical facemasks of the pleated fiber type or papier maché dome type and face shield should be worn. If masks become wet during procedures, they should be discarded and put a new mask.

1.8 Protective clothing, which covers areas likely to be contaminated, should be worn. Sleeves must be long and have about 5cm. of elasticized cuff and gloves can be drawn over this. The clothing material should be of sufficient quality to withstand the complete hottest cycle wash at 95˚C, in an automatic washing machine.

2. Preparation of the clinic before each procedure:

2.1 Work surface, equipments and other furniture should be cleaned and disinfected with a disinfectant solution used for the purpose of cleaning. Alcohol and glutaraldehyde are not recommended for surface disinfections.

2.2 Cotton rolls, cotton pellets and sundries should be provided in small quantities to avoid excessive exposure to contamination as the treatment

Table 1. Hand-hygiene methods and indications

Method	*Agent*	*Purpose*	*Duration (Minimum)*	*Indications*
Routine handwash	Water and nonantimicrobial soap (e.g.,plain soap)	Remove soil and transient microorganisms	15 seconds	Before and after treating each patient (e.g., before glove placement and after glove removal).
Antiseptic handwash	Water and antimicrobial soap (e.g.,chlorhexidine, iodine and iodophors, chloroxylenol [PCMX], triclosan)	Remove or destroy transient microorganisms and reduce resident flora	15 seconds	After barehanded touching of inanimate objects likely to be contaminated by blood or saliva. Before leaving the dental operatory or the dental laboratory. When visibly soiled.
Antiseptic hand rub	Alcohol-based hand rub	Remove or destroy transient microorganisms and reduce resident flora	Rub hands until the agent is dry	Before regloving, after removing gloves that are torn, cut, or punctured.
Surgical antisepsis	Water and antimicrobial soap (e.g., chlorhexidine, iodine and iodophors, chloroxylenol [PCMX], triclosan). Water and non-antimicrobial soap (e.g., plain soap†) followed by an alcohol-based surgical hand-scrub product with persistent activity	Remove or destroy transient microorganisms and reduce resident flora (persistent effect)	2–6 minutes Follow manufacturer instructions for surgical hand scrub product with persistent activity.	Before donning sterile surgeon's gloves for surgical procedures

involves a number of sessions.

2.3 The dental assistant should conduct the patient to the chair, seat them and place protective covering such as eyeglasses and bibs and wash his or her hands according to the procedure explained above and put on treatment gloves.

3. Important concerns during the procedure:

3.1 A good medical history is essential and assists in identifying patients who require special care. Direct questioning and discussion between patient/ parent and dentist must support medical history sheets. The history should be reviewed during each subsequent recall.

3.2 Ensure that barrier techniques remain unimpaired. Check for tears or excessive contamination of masks, gloves, eyeglasses and protective clothing.

3.3 Ensure that the high-speed evacuation system functions effectively to remove aerosol sprays, saliva, blood and other contaminated materials.

Sharp instruments and needles

3.4 Needles, scalpel blades, burs, endodontic files and other sharp instruments should be considered as potentially infective and must be handled with extreme care. Needles should not be recapped by hand. Custom devices are made for this purpose and used when available. Alternatively, recap the needle single handedly by scooping up the cap with the end of the needle and then firmly clicking the cap into place with the other hand.

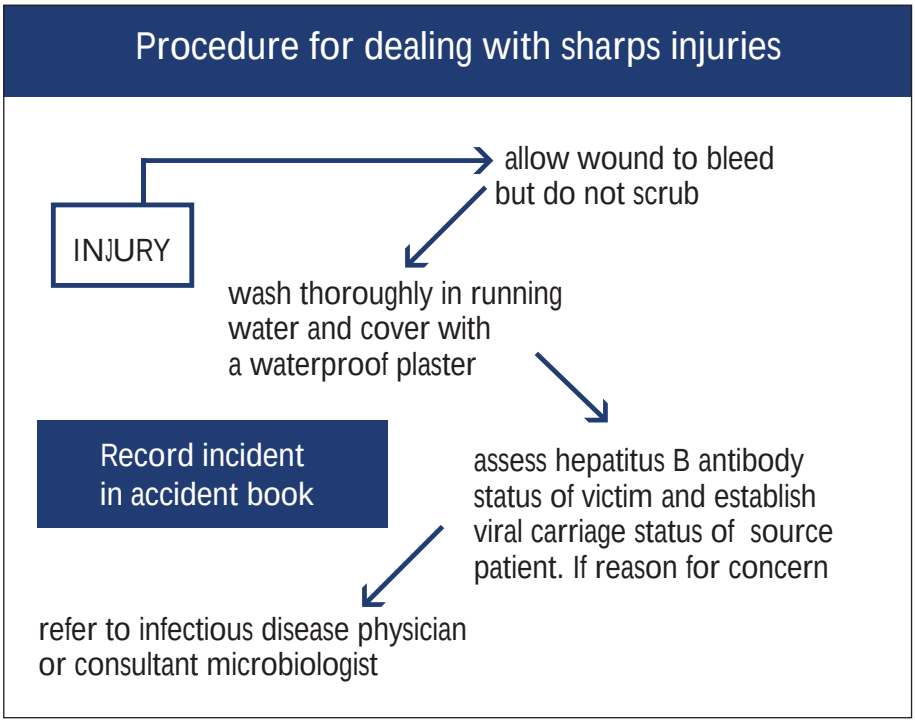
3.5 Inoculation injuries (Fig. 32)

Inoculation injuries are the most likely route for transmission of bloodborne viral infections in dentistry. The definition of an inoculation injury includes all incidents where a contaminated object or substance breaches the integrity of the skin or mucous membranes or comes into contact with the eyes. The following are typical examples: –

- Sticking or stabbing with a used needle or other instrument.
- Splashes with a contaminated substance to the eye or open lesion.
- Cuts with contaminated equipment.
- Bites or scratches inflicted by patients.

Inoculation injuries must be dealt with promptly and correctly. After an occupational blood exposure, first aid should be administered as necessary. Puncture wounds and other injuries to the skin should be washed with soap

and water; mucous membranes should be flushed with water. No evidence exists that using antiseptics for wound care or expressing fluid by squeezing the wound further reduces the risk of bloodborne pathogen transmission; however, use of antiseptics is not contraindicated. The application of caustic agents (e.g., bleach) or the injection of antiseptics or disinfectants into the wound is not recommended.



Source: BDA advice sheet A12, Infection control in dentistry, Feb 2003, Page:14

(Fig. 32)

Exposed Dental Health Care Provider (DHCP) should immediately report the exposure to the infection-control coordinator or other designated person, who should initiate referral to the qualified health-care professional and complete necessary reports. Because multiple factors contribute to the risk of infection after an occupational exposure to blood, the following information should be included in the exposure report, recorded in the exposed person's confidential medical record, and provided to the qualified health-care professional:

- Date and time of exposure.
- Details of the procedure being performed, including where and how

the exposure occurred and whether the exposure involved a sharp device, the type and brand of device, and how and when during its handling the exposure occurred.

- Details of the exposure, including its severity and the type and amount of fluid or material. For a percutaneous injury, severity might be measured by the depth of the wound, gauge of the needle, and whether fluid was injected; for a skin or mucous membrane exposure, the estimated volume of material, duration of contact, and the condition of the skin (e.g., chapped, abraded, or intact) should be noted.

- Details regarding whether the source material was known to contain HIV or other bloodborne pathogens, and, if the source was infected with HIV, the stage of disease, history of antiretroviral therapy, and viral load, if known.

- Details regarding the exposed person (e.g., hepatitis B vaccination and vaccine-response status).

The risk of acquiring HIV infection following an inoculation injury is small. If the injury is risk-assessed as significant for transmission of HIV and the source patient is HIV infected, the use of antiretroviral drugs taken prophylactically as soon as possible after exposure – ideally within one hour – is recommended. Post-exposure prophylaxis (PEP) involves the use of a short course (four weeks) of treatment with anti-retroviral drugs in an attempt to reduce even further the risk of infection with HIV following exposure.

3.6 Disposable needles, root canal files and scalpel blades should be placed into puncture resistant sharps container and disposed off at an approved disposal areas. Containers should be filled only up to the maximum level (3/4th) marked on it.

3.7 Where centralized evacuation systems are not installed, blood, suctioned fluids and other liquid wastes should be carefully poured into a drain connected to a sanitary sewerage system. (Toilet bowl)

4. Clinic disinfection after each procedure:

4.1 Between clinical sessions all work surfaces including those apparently uncontaminated, should be thoroughly cleaned and decontaminated using the disinfectant solution provided. Protective gloves must be worn and care is taken to minimize the inhalation and direct contact with the disinfectants.

4.2 The suction system should be cleaned at the end of treating each patient. The outer surfaces should be disinfected with a proprietary cleaner and the

interior should be cleaned by flushing warm water for 20 to 30 seconds by the dental assistant. He/She should wear a facemask during this procedure. At the end of each session aspirate a mixture of water and aspirator cleanser (Purevac).

4.3 Hand pieces should be brushed with a brush having nylon bristles and rinsed under running water to remove the debris. Any dental device connected to the dental air/water system that enters the patient's mouth should be run to discharge water, air, or a combination for a minimum of 20--30 seconds after each patient. This procedure is intended to help physically flush out patient material that might have entered the turbine and air and waterlines. Dry, lubricate and autoclave at 134˚C. (Cycle 1)

4.4 Containers holding cotton rolls, pellets and sundries should be cleaned using a mild detergent solution and sterilized with an instrument disinfectant once a week.

4.5 Contaminated solid waste should be placed in double plastic bags, labeled as "biohazard" and disposed off in a regulation disposal area.

4.6 Floor spillage of blood and other body fluids should be mopped off and the surface should be cleaned with surface disinfectant.

5. Instrument sterilization after each procedure: (Fig. 33)

5.1 Designate a central processing area. Divide the instrument processing area, physically or, at a minimum, spatially, into distinct areas for 1) receiving, cleaning, and decontamination; 2) preparation and packaging; 3) sterilization; and 4) storage. Do not store instruments in an area where contaminated instruments are held or cleaned

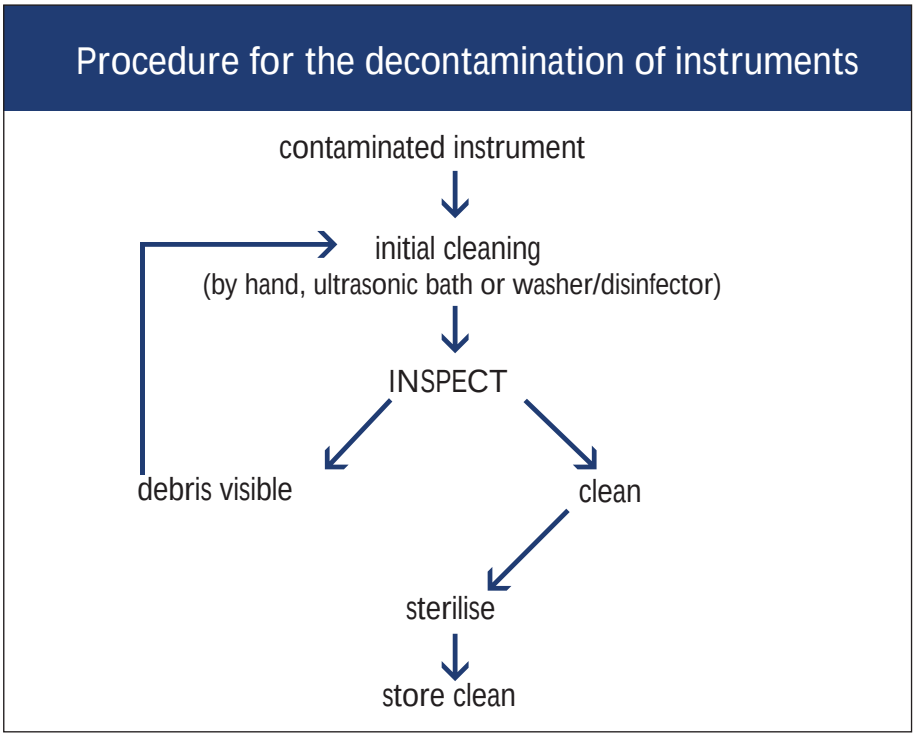
5.2 Clean all visible blood and other contamination from dental instruments and devices before sterilization or disinfection procedures. Use automated cleaning equipment (e.g., ultrasonic cleaner or washer-disinfector) to remove debris to improve cleaning effectiveness and decrease worker exposure to blood. Use work-practice controls that minimize contact with sharp instruments if manual cleaning is necessary (e.g., long-handled brush).Wear puncture- and chemical-resistant/heavy-duty utility gloves for instrument cleaning and decontamination procedures.

5.3 Instruments are then dried, packed and sealed for steam sterilization. Place the packages in the autoclave at 134˚C and 2.2 bars pressure. The date and the operator name have to be recorded on each pouch.

5.4 Rotary instruments such as burs should be cleaned with a wire brush to remove all visible debris. Cleaned root canal instruments, burs and used

stainless steel crowns should be then treated in an ultrasonic cleaner. Root canal files and burs are arranged on an autoclavable root canal tray and bur holder, sealed with pressure sensitive tape, and sterilized in the autoclave.

5.5 Autoclaved instruments are stored according to their use. Instruments should remain bagged until opened for use.



Source: BDA advice sheet A12, Infection control in dentistry, Feb 2003, Page:12

(Fig. 33)

6. Environmental management:

6.1 Floors and walls of clinics and sterilizing rooms should be cleaned with a detergent solution and disinfected with surface disinfectant once in three months or more than once if necessary.

6.2 Colored disposable thrash bags are used to dispose off the contaminated materials.

- Yellow labeled plastic bags- for disposable items that may contain blood or other body fluids such as gloves, bibs, rubber dam etc. (inside clinic)

- Red labeled plastic bags- (toilets).
- Non-hazardous wastes are disposed in blue or black labeled plastic bags.
- Blue labeled plastic bags- (in office).
- Black labeled plastic bags- (less important areas like kitchen).

6.3 Staff, particularly cleaners, who deal with disposal of waste materials, should wear protective clothing consisting of heavy-duty gloves (use the same color that of thrash bag used) and plastic aprons.

7. Sterilization monitoring program:

7.1 Sterilization is best monitored using a combination of mechanical, chemical, and biological indicators.

A complete monitoring program includes

- Use of rapid change indicators on the outer side of each instrument pack,
- Daily use of a slow change integrator inside the pack of instruments.
- Daily Bowie-Dick test
- Regular biological monitoring.

Details of the monitoring process to be used in SHOP are given below.

1. Mechanical monitoring

7.2 Record cycle time, temperature, and pressure as displayed on the sterilizer gauges for each instrument load.

2. Chemical monitoring

7.3 Chemical monitoring involves the use of:

1. Rapid change indicators.

2. Slow change or integrator indicators.

3. Bowie-Dick type test.

7.4 Rapid change indicators, (autoclave tapes and special markings outside the autoclave bags and pouches) are used on the outer side of every pouch that is processed through the autoclave. The purpose of rapid change indicator is to eliminate the possibility of using non-sterile instruments.

7.5 A slow-change or integrator strip should be used once daily. The integrator strip is placed inside a pouch together with instruments and packed. The pouch should be placed in the middle of the autoclave along with a typical load and processed under standard conditions. After processing, the strip should be removed from the pouch and evaluated for color change. If the strip has changed color, the autoclave can be considered safe to use. If the strip has not changed color; evaluate the processing steps and using another strip retest the autoclave unit. DO NOT use the instruments processed in that load until they are processed again. If the second strip fails to change color; do not sterilize any more instruments in that autoclave. Call headquarters and report the malfunction.

7.6 Bowie-Dick pack is designed to be used for testing air removal efficiency of pre-vacuum steam sterilizers. Bowie-Dick pack contains a test sheet that is printed with a chemical indicator which changes from light yellow to dark brown/black when processed according to the instructions. The test must be carried out each day the sterilizer is used, before the first processed load. A shortened cycle (without post vacuum drying) should be run first to properly heat up the sterilizer. If the sterilizer is in use for 24 hrs per day, the test may be made at any time, but should be made at the same time every day. Place the test pack in the horizontal position with label facing up in an empty pre-vacuum sterilizer chamber. Run the sterilizer for not more than 3.5 minutes at 134^0 C. A *satisfactory* test is indicated by a test sheet that shows uniform dark brown/black color development. A non-uniform color indicates incomplete air removal from the chamber and the *failure* of the cycle. Sterilizer should not be used until examined for possible malfunction. If the test sheet have a grey or silvery appearance, overexposure is indicated; a retest is required since the test is invalid.[38]

Biological monitoring

7.7 Biological test pack- It is a disposable test pack with biological indicator for use in monitoring pre vacuum and gravity displaced autoclaves.

Basic principle: The test pack is placed on the bottom shelf near the door in a normally loaded autoclave and an appropriate sterilization cycle is run at 134^0C. Following the cycle, the test pack is opened and the chemical indicator is examined. The biological indicator is removed from the pack and processed according to manufacturer's instruction. Appearance of color change from purple to yellow shows bacterial growth. All control vials should be yellow color within 48 hrs and all test (autoclaved) vials should remain purple. If test vials demonstrate a positive test, report this sterilization failure immediately.

Dispose used biological indicators after autoclaving at 134^0 C for 15 minutes.

8. Storage of sterilized items and clean dental supplies

8.1 The storage area should contain enclosed storage for sterile items and disposable (single-use) items. Packages containing sterile supplies should be inspected before use to verify barrier integrity and dryness.

8.2 Some health-care facilities date every sterilized package and use shelf-life practices, and other facilities have switched to event-related practices. This approach recognizes that the product should remain sterile indefinitely, unless an event causes it to become contaminated (e.g., torn or wet packaging). Even for event-related packaging, minimally, the date of sterilization should be placed on the package, and if multiple sterilizers are used in the facility, the sterilizer used should be indicated on the outside of the packaging material to facilitate the retrieval of processed items in the event of a sterilization failure.

8.3 If packaging is compromised, the instruments should be recleaned, packaged in new wrap, and sterilized again.

8.4 Clean supplies and instruments should be stored in closed or covered cabinets, if possible. Dental supplies and instruments should not be stored under sinks or in other locations where they might become wet.

At the end of the day

8.5 At the end of the day drain autoclave chamber and water reservoir to remove all residual water and leave to dry. The same procedure should be followed for the dental unit.

9. Infection control in the dental laboratory

9.1 Sterilization and disinfection

- Metal trays that hold impression materials inside the patient's mouth should be autoclaved after each use just like all other autoclavable dental instruments.
- Impressions which have been in the patient's mouth must be rinsed to remove saliva, blood and debris and disinfected by immersing in a compatible disinfecting solution prior to shipment to dental laboratory. It should be labeled properly to prevent duplication of the disinfection protocol. The use of disinfectant that requires time not more than 30 minutes for disinfecting is recommended.

Practices for the dental laboratory

Dental laboratories should institute appropriate infection control programs. Such programs should be coordinated with the dental office.

9.2 Receiving area: A receiving area should be established separate from the area of production. Countertops and work surfaces should be cleaned and then the receiving area is disinfected daily with an appropriate surface disinfectant.

9.3 Incoming cases: ll incoming cases should be disinfected as they are received unless the laboratory employees know that the dental office has disinfected the case. Containers should be sterilized or disinfected after each use. Packing materials should be discarded to avoid cross contamination.

9.4 Production area:

1. Persons working in the production area should wear a clean uniform or laboratory coat, a facemask, protective eyewear and disposable gloves.
2. Work surfaces and equipment should be kept free of debris and disinfected daily. Any instruments, attachments or materials to be used with new prostheses/appliances should be maintained separately from those to be used with prostheses/appliances that have already been inserted in the mouth.
3. Rag wheels can be washed and autoclaved after each use.
4. Brushes and other equipment should be disinfected daily.
5. Pumice should be dispensed in small amount. The excess should be discarded. A liquid disinfectant (1:20 sodium hypochlorite) can serve, as mixing medium for pumice.

9.5 Outgoing cases: Each case should be disinfected before it is returned to the dental office. Dentists should be informed about infection control procedures used in the dental laboratory.

10. Disposal of waste materials:

10.1 Disposable materials such as gloves, masks, wipes, paper drapes and surface covers that are contaminated with body fluids should be discarded in a sturdy, impervious plastic bag to minimize the human contact.

10.2 Blood, disinfectants and sterilants are carefully poured into a drain that is connected to a sanitary sewer system. Care should be taken to ensure

compliance with applicable local regulations. It is recommended that drains be flushed or purged each night to reduce bacterial growth and accumulation.

10.3 Sharp items, such as needles and scalpel blades should be placed in puncture resistant containers marked with the biohazard label.

10.4 Human tissue may be handled in the same manner as sharp items and should not be placed in the same container.

10.5 Extracted teeth are potentially infectious material and should be disposed in medical waste containers. Extracted teeth sent to a dental laboratory for shade or size comparisons should be cleaned, surface-disinfected with an Environmental Protection Agency (EPA) registered hospital disinfectant and transported. However, extracted teeth can be returned to patients on request. Extracted teeth containing dental amalgam should not be placed in a medical waste container that uses incineration for final disposal.

10.6 Regulated medical waste (e.g. Sharps, tissues) should be disposed off according to the requirements established by state environmental regulatory agencies.

10.7 Solid waste that is soaked or saturated with body fluids should be placed in sealed, sturdy impervious bags. The bag should be disposed accordingly.

11. Blood spill

If blood is spilled, either from a container or as a result of an operative procedure, the spillage should be dealt with as soon as possible. The spilled blood should be completely covered either by disposable towels, which are then treated with 10,000 ppm sodium hypochlorite solution or by sodium di-chloro-iso-cyanurate granules. At least 5 minutes must elapse before the towels etc are cleared and disposed of as clinical waste. The dental health care worker who deals with the spillage must wear appropriate protective clothing, which will include household gloves, protective eyewear and a disposable apron and, in the case of an extensive floor spillage, protective footwear. Good ventilation is essential.

12. X-Ray equipment and films

12.1 To prevent microbial contamination of equipments and controls, disposable protective coverings (plastic wrap) or disinfectants should be used.

12.2 Reusable X-ray film holders should be sterilized after each patient, while disposable ones should be disposed off immediately after each patient.

12.3 Film packets are placed in protective pouches before use. The

uncontaminated film packets can then be dropped out of the pouch each time.

12.4 Intra-orally exposed contaminated film packets should be handled carefully to prevent cross contamination. After exposure of the radiograph and before glove removal, the film should be dried with disposable gauze or a paper towel to remove blood or excess saliva and placed in a container (e.g., disposable cup) for transport to the developing area.

12.5 These packets should be opened in the dark room, using disposable gloves. The film should be dropped out of the packets without touching it. The contaminated packets should be accumulated in a disposable towel. After all packets have been opened, they should be discarded and remove the gloves.

12.6 The film can be then processed without contaminating the equipments in the darkroom.

Digital radiography:

12.7 Digital radiography sensors and other high-technology instruments (e.g., intra-oral camera, electronic periodontal probe, occlusal analyzers, and lasers) come into contact with mucous membranes and are considered semi critical devices. They should be cleaned and ideally heat-sterilized or high-level disinfected between patients.

12.8 Semi critical items that cannot be reprocessed by heat sterilization or high-level disinfection should, at a minimum, be barrier protected by using a Food and Drug Administration (FDA) cleared barrier to reduce gross contamination during use. Use of a barrier does not always protect from contamination. To minimize the potential for device-associated infections, after removing the barrier, the device should be cleaned and disinfected with an (EPA)-registered hospital disinfectant (intermediate-level) after each patient.

12.9 Manufacturers should be consulted regarding appropriate barrier and disinfection/sterilization procedures for digital radiography sensors, other high-technology intra-oral devices, and computer components.

Infection control checklist

At start of day/session

- ✓ Fill the autoclave reservoir and run the autoclave for a complete cycle
- ✓ Record the sterilisation parameters reached in your autoclave logbook
- ✓ Compare these with the manufacturer's recommended parameters

Before patient treatment

- ✓ Ensure that all equipment has been sterilised or adequately disinfected (if it cannot be sterilised)
- ✓ Put disposable coverings in place where necessary
- ✓ Place only the appropriate instruments on bracket table
- ✓ Set out all materials and other essential instruments
- ✓ Update patient's medical history

During patient treatment

- ✓ Treat all patients as potentially infectious
- ✓ Wear gloves, masks and protective eyewear and protective clothing
- ✓ Provide eye protection for patient
- ✓ Wash hands before gloving; a new pair of gloves must be used for each patient
- ✓ Change gloves immediately if they are torn, cut or punctured
- ✓ Use rubber dam to isolate where appropriate
- ✓ Use high-volume aspiration
- ✓ Ensure good general ventilation of the treatment area
- ✓ Handle sharps carefully and only re-sheath needles using a suitable device

After patient treatment

- ✓ Dispose of sharps via the sharps container
- ✓ Segregate and dispose of clinical waste
- ✓ Clean and inspect all instruments to ensure visibly clean before placing in an ultrasonic cleaning machine or washer/disinfector
- ✓ Sterilise cleaned instruments using an autoclave and store covered
- ✓ Clean and disinfect all contaminated work surfaces
- ✓ Clean and disinfect impressions and other dental appliances before sending to laboratory
- ✓ Prepare surgery for next patient

At the end of each session

- ✓ Dispose of all clinical waste from the surgery area
- ✓ Clean and disinfect all work surfaces thoroughly
- ✓ Disinfect the aspirator, its tubing and the spittoon
- ✓ Clean the chair and the unit
- ✓ Empty and clean ultrasonic cleaning machine and leave to dry.

At the end of the day

- ✓ Drain autoclave chamber and water reservoir to remove all residual water and leave to dry

Source: BDA advice sheet A12, Infection control in dentistry, Feb 2003, Page: 7

(Fig. 34)

Operational Guide for School Oral Health Program

Clinical Protocols

Protocol 1

Consent Forms:

The forms are supplied by program administration.

1. Distributed in school clinic by dental assistants under the supervision of dentist.
2. Student's names, civil ID's and their classes are taken from the school administration during the first working days of the school.
3. Dental assistants should collect the consent forms in period not longer than 2 weeks from the date of first distribution.
4. Feed back of positive and negative as well as not returned forms should be delivered to the program administration.
5. Prevention and treatment are not provided to the students without positive consent form.
6. Medical history should be taken and updated periodically.
7. Positive consent form should be without exception for any specific procedure.

- **Types of consent forms**

  The consent forms are two types:

A. Treatment consent forms.

B. Prevention consent forms.

Consent is valid for 2 years for KG (KG1&2) and for 5 years for primary school (Grade 1-5).

Guidelines of the Treatment Procedures

1. Treat the patient, not the tooth.

The policy of school oral health program is to treat the child, not the tooth. This helps to gain confidence and co-operation of the child and also bring a positive behavior towards dental treatment.

2. Treat the child in the shortest possible time.

- This is made possible by:
- Four handed dentistry.
- Use of rubber dam.
- Quadrant treatment.
- Have all what you need before you start.

Protocol 2

First Appointment:

1. Establish friendly atmosphere.
2. Oral Examination, charting and treatment plan.
3. Oral hygiene instructions.
4. Seal sound permanent teeth in caries free patient.

Protocol 3

Fluoride Varnish[11, 12, 13]

- **Materials:**

1. Fluoride varnish (Single Application Dose)
2. Dental mirror
3. Disposable Gloves
4. Face Mask
5. Gauze pads 2x2
6. Cotton rolls
7. Napkins

- **Procedure:**

1. Open the sealed unit dose from the designated place which contains an application brush and 0,4ml varnish.
2. Because the natural resin may settle during storage, Stir the contents of the well thoroughly with the brush provided.
3. Remove any obvious plaque or calculus.
4. Isolate the teeth with cotton rolls.
5. Dry the upper teeth by a piece of gauze 2x2.
6. Uniformly apply a thin layer of varnish on all surfaces of the teeth with the applicator brush.
7. Once the varnish is applied, it sets quickly in the presence of saliva.
8. The yellow color of the varnish allows the dentist to visualize the application.
9. Start with the lower arch.
10. Record the patient name in the fluoride varnish record.

- **Post Application Instructions:**

1. Wait for 4-6 hours before eating.
2. Eat soft, non abrasive diet for the rest of the day and avoid hot drinks.
3. Do not brush or floss the teeth until the next day.
4. The yellow color of the varnish is temporary and will brush off.
5. On the day of application, other fluoride preparations should not be administered .Routine regimens of fluoride tablets should be suspended for several days after treatment.
6. Give the child a copy of post application instructions.

- **Contraindications:**

1. Avoid applying varnish on large open carious lesions.
2. Ulcerative gingivitis.
3. Intraoral severe inflammation.
4. Known sensitivity to colophony or colophonium or other product ingredients.
5. In case of adverse reaction, remove varnish with a soft toothbrush and floss, and then rinse with warm water.
6. Direct Ingestion should be avoided.

Protocol 4

o Fissure Sealants[14,15,16]

Indications:

1. All susceptible pits and fissures of permanent teeth (occlusal fissures, pit of cingulum, buccal and palatal pits). Teeth should be sealed as soon as it is sufficiently erupted for adequate moisture control.
2. Early non-cavitated carious lesions.*[17]

Procedure:

1. Isolate the tooth with rubber dam or cotton roll.
2. Polish the tooth using pumice & rubber cup.
3. Flush with water, suction and dry.
4. Etch occlusal surface, buccal pits of lower molars and palatal grooves of the upper molars for 20-30 seconds.
5. Rinse, suction and dry - at this stage the tooth will give a chalky frosted appearance.
6. Apply sealant and cure for 20 seconds.
7. Evaluate sealant retention & integrity. Rinse the sealed tooth with a stream of water, dry and then remove the rubber dam or cotton roll.
8. Check occlusion and adjust as necessary.
9. Periodic follow up: the sealants should undergo routine periodic evaluation and should be repaired as needed to ensure maximum caries prevention.

Note:

- ❖ If contamination has occurred after etching, rinse, dry and re- etch again for 5-10 seconds, blow gentle air and apply sealant.
- ❖ The sealant should not extend up to the cuspal inclines or to the interproximal area.
- ❖ Fissure sealants are not usually recommended in SOHP for primary molars.

***Noncavitated carious lesion:**

- Refers to pits and fissures in fully erupted teeth that may display discoloration not due to extrinsic staining, developmental opacities or fluorosis.
- The discoloration may be confined to the size of a pit or fissure or may extend to the cusp inclines surrounding a pit or fissure.
- The tooth surface should have no evidence of a shadow indicating dentinal caries, and, if radiographs are available, they should be evaluated to determine that neither the occlusal nor proximal surfaces have signs of dentinal caries.

JADA 2008; 139(3):257-267.

Protocol 5

Preventive Resin Restoration (P.R.R)

- **Definition:**

Is a conservative occlusal restoration that involves replacement of discrete areas of carious tooth structure with composite, followed by application of an overlying fissure sealant.[18]

- **Indications:**[19]

- Incipient lesions just into dentine.
- Small class I lesions (including buccal and palatal pits).

- **Procedure:**

1. Anesthetize and isolate the tooth with rubber dam.
2. Polish the tooth using pumice & rubber cup.
3. Remove the carious lesion with bur #330 FG.
4. Etch the cavity and the occlusal surface for 20-30 seconds.
5. Rinse & dry gently (do not desiccate).
6. Apply primer for 10 seconds & gently dry (for the cavity only).
7. Apply thin layer of bonding agent (for the cavity only) & cure for 20 seconds.
8. Place composite in the cavity & cure for 40 seconds.
9. Seal unprepared pits & fissures.
10. Remove rubber dam, check the occlusion & adjust as necessary with the finishing bur.

Protocol 6

Composite Restoration for Posterior Teeth[20, 21]

- **Indications:**

- Class I cavity preparations.
- Class II cavity preparation in permanent dentition.
- Class V cavity preparation.

- **Procedure:**

1. Anesthetize, Isolate the tooth with rubber dam.
2. Polish the tooth using pumice & rubber cup.
3. Prepare the cavity, eliminate all sharp line angles within the preparation, and gently smoothen the cavosurface line angle.
4. Rinse and blot dry.
5. Apply glass Ionomer liner on exposed dentin and extend the lining up to the Dentino Enamel Junction (DEJ) & cure.
6. Etch enamel for 20-30 seconds, rinse for 30 seconds & blot dry.
7. Apply primer for 10 seconds & gently dry.
8. Apply thin layer of bonding agent and cure for 20 seconds.
9. Select hybrid composite.
10. Place composite in the cavity in increments less than 2mm & cure each increment for 40 seconds. Finish with finishing instruments.
11. Seal unprepared pits & fissures.
12. Remove rubber dam, check occlusion & adjust as necessary.

Note:

- Eugenol containing materials should not be used in conjunction with composite restorations.
- For class II cavity restoration, matrix band or T- band should be used & a wedge to be inserted interproximally.

Protocol 7

Composite Restoration for Anterior Teeth[20, 21]

- **Indications:**

1. Restoration of class III, IV, V preparations in permanent anterior teeth.
2. Restoration of discoloured teeth due to developmental defects or trauma.
3. Correction of disfigurement due to malposition.

- **Procedure :**

1. Anesthetise if needed.
2. Polish the tooth using pumice &rubber cup.
3. Determine the tooth shade while it is wet with saliva in day light.
4. Isolate the tooth with rubber dam..
5. Prepare the tooth as conservatively as possible.
6. Bevel visible margins to aid in creating invisible restoration.
7. Place appropriate liner or base.
8. Etch the enamel for 20-30 seconds, rinse for a minimum of 30 seconds, air dry enamel & blot the dentin. If dentine is dry moisten with a wet cotton pellet.
9. Apply primer & bond and light cure according to the manufacturer directions.
10. Place the composite (use celluloid strip interproximally).
11. One type or a combination of microfilled & hybrid composite can be used for filling.
12. Place composite in increments less than 2mm & cure each increment for 40 seconds.
13. Finish& polish the restoration with appropriate instruments.

Protocol 8

Pulp Capping for Primary Teeth:

1. Indirect Pulp Capping

It is not recommended for primary teeth in SOHP.

2. Direct Pulp Capping[25]

It is generally contraindicated and unwise to perform direct pulp capping on primary teeth because of the extremely high failure rate due to internal resorption caused by calcium hydroxide use.

Protocol 9

Vital Pulpotomy for Primary Teeth[22, 23, 24]

- **Indications :**

1. Inflammatory pulpal involvement.
2. Mechanical exposure of coronal vital pulpal tissue.
3. Absence of prolonged spontaneous pain, particularly at night.

- **Contraindications :**

1. Necrotic pulp.
2. Profuse pulpal hemorrhage.
3. Root resorption (more than 2/3 of the root).
4. Draining fistula.
5. Pathological or physiological mobility.
6. Irrestorable teeth.

- **Procedure :**

1. Diagnose, anesthetize and isolate the tooth with rubber dam.
2. Remove and excavate all carious lesions.
3. Access the pulp chamber and remove coronal pulpal tissue by a large spoon excavator or a low speed handpiece with a large round bur, avoiding the floor of the pulp chamber.
4. Wash and then dry with sterile cotton pellet.
5. Control hemorrhage very well by sterile cotton pellet.
6. Apply formocresol-dampened cotton (not socked) for 4 minutes and then remove it.
7. Place IRM over amputated pulp.
8. Prepare and restore the tooth with stainless steel crown.

Note:

Ferric sulphate can be used as a second choice for formocresol

- Apply 15.5% Ferric Sulphate ($FeSO_4$) solution on the pulp stumps with a micro brush for 15 seconds to achieve hemostasis, followed by thorough rinsing and then drying with cotton pellets.
- Non vital primary teeth are indicated for extraction.

Protocol 10

Treatment Options for Immature Permanent Teeth [25]

Description:

Root formation of permanent teeth is completed within 3 years of eruption into the oral cavity. During this formative period, treatment options should be oriented toward maintenance of vitality to allow completion of root formation.

Further deposition of dentin will strengthen the root and help diminish future root fractures.

Diagnosis of (Pulpal status) Immature Permanent Teeth:

Diagnosis is based mainly on observation of clinical symptoms and radiographic evidence of pathosis. This requires thorough medical and dental history taking and thorough clinical examination.

Assessment of the pulp status (vital / nonvital):

- **Reversible pulpitis:** pulp is vital, but has some local area/s of inflamed tissue that will heal after conservative vital pulp therapy.
- **Irreversible pulpitis:** the pulp is still vital but is severely inflamed so that healing is an unlikely outcome with conservative pulp therapy. Thus, ultimately, pulp necrosis and infection is the predicted outcome if vital pulp therapy is attempted.
- **Necrotic pulp:** partial (below the cemento-enamel junction) or total pulp space with no vital structures. The distinction between partial and total necrosis can be very important in cases of immature teeth. The only way to confirm vitality in those cases is to enter the pulp chamber and remove the necrotic debris down to a vital pulp stump. If the pulp is completely necrotic in a tooth with underdeveloped root, it is now possible in some cases to disinfect the canal space and stimulate the root to continue formation.

- **Radiographic assessment of the tooth**
  - **Periapical radiographs:** to determine stage of root development, Periapical rarefaction, etc.
  - **Bite wing radiographs:** to detect proximity of lesions to the pulp, previous Pulpal treatment, etc.

Step By Step Treatment options

It is necessary to give chance for pulp tissue to heal. Therefore, the following procedures should be considered before proceeding into apexogenesis or apexification procedures.

1. Indirect Pulp Capping

- **Indications:**

  Asymptomatic tooth with deep caries.

- **Procedure:**

1. Diagnose, anesthetize and isolate the tooth with rubber dam.
2. Remove the entire carious lesion from the walls of the cavity.
3. Remove soft carious lesion from the cavity floor.

   (Carefully use low speed handpiece with large round bur or large spoon excavator).
4. Leave a very thin layer of carious dentine on the pulpal floor (by removing it, pulp exposure is likely to occur). [22]
5. Apply thin layer of calcium hydroxide on the deepest area only.
6. Apply glass-ionomer liner to achieve a good seal.
7. Restore as indicated in composite restoration protocol.
8. Remove rubber dam, check occlusion and adjust as necessary.

Note:

An observation period of at least 1 year is necessary to evaluate the pulp condition of the tooth, confirmed by radiological examination and vitality test.

2. Direct Pulp Capping:

- Patient presents with no pain or provoked pain by irritants (eg: thermal, chemical or mechanical) with normal periradicular tissue.
- Caries exposure site is less than 1mm in diameter.

- **Procedure:**

1. Diagnose, anesthetize and isolate with rubber dam.
2. Remove the entire carious lesion from the walls of the cavity.

3. Remove soft carious lesion from the cavity floor by careful use of low speed handpiece with a large round bur- keeping in mind to avoid the exposure site as much as possible.
4. Use sterile cotton pellets to dry the cavity and the exposure site.
5. Control Bleeding.
6. Apply a thin layer of calcium hydroxide or Mineral Trioxide Aggregate (MTA) on the exposure site and allow setting.
7. Apply glass-ionomer (liner) to achieve a good seal.
8. Restore as indicated in composite filling protocol.
9. Remove rubber dam, check occlusion and adjust as necessary.

Note:

If exposure site is larger than 1mm or hemostat is not achieved, move to the following measure.

3. Partial Pulpotomy:

1. Patient presents with provoked pain by irritants (reversible pulpitis) with normal periradical tissue.
2. Carious exposure site is larger than 1mm in diameter.
3. Uncontrolled bleeding is seen at site of caries exposure.
4. Remove inflamed pulp tissue (2mm) with sharp spoon excavator or slow speed round bur.
5. Complete restoration as described earlier
6. If homeostasis is not achieved, move to the following measure.

4. Coronal Pulpotomy:

1. Patient presents with spontaneous pain that may indicate irreversible pulpitis with normal periradicular tissue.
2. Extensive carious exposure.
3. Inflamed coronal pulp tissue should be removed with sharp spoon excavator or slow speed round bur.
4. Adequate homeostasis should be achieved.

5. If bleeding is controlled, the apexogenesis should be performed.
6. If bleeding continues, pulpectomy and apexification are recommended.

Protocol 11

Apexogenesis

- **Definition:**

Vital pulp therapy procedure performed to encourage continued physiological development and formation of the root end. (AAE Glossary of Endodontic Terms, 2003)

- **Indications:**

- Restorable immature permanent tooth.
- Vital radicular pulp tissue.
- Failure of all attempts to save the vitality of the coronal pulp tissue.

- **Contraindications:**

- Irrestorable immature permanent tooth.
- Non vital necrotic radicular pulp tissue.
- Most root fractures
- Restoration which requires a post placed into root canal for retention.

- **Procedure at center based clinic:**

- Use local anesthesia.
- Place rubber dam.
- Remove all carious lesion with:
  - Sharp spoon excavator or large round slow-speed tungsten carbide bur.
  - Coarse high-speed diamond bur with copious irrigation.
- Flush the cavity with sodium hypochlorite (NaOCl)2.5% to decrease the bacterial load.
- Remove entire coronal pulp tissue with sharp spoon excavator or slow speed round bur.
- Achieve homeostasis by either:
  - Irrigate with sodium hypochlorite 2.5 %.
  - Cotton pellet moistened with sodium hypochlorite 2.5 % pressed gently on pulp chamber.

- Re-evaluate exposed pulp tissue and confirm complete homeostasis, then apply either:
  - Layer of non setting calcium hydroxide covered with a layer of setting calcium hydroxide.
  - Layer of MTA, 1-2 mm in thickness. (it should be placed and mixed according ton the manufacturers recommendations)
- A layer of glass ionomer liner should be placed to ensure good seal.
- Final restoration should be placed according to vital pulp therapy material used:
  - If calcium hydroxide was applied, final restoration can be placed immediately.
  - If MTA was applied, wet cotton pellet and a temporary filling are recommended for the first 24 hours. Final restoration should be placed as soon as possible.
- Frequent recall appointments are required every 3-6 months for up to 3 years. This is essential to evaluate:
  - Pulp vitality
  - Extent of apical maturation
- **If the above measures fail then apexification is justified.**

Protocol 12

Apexification [26]

- **Definition:**

- **Traditional apexification :**

It is a method to induce a calcified barrier in a root with an open apex or the continued apical development of an incompletely formed root in the teeth with necrotic pulps.

- **One step apexification :**

Non-surgical condensation of a biocompatible material into the apical end of the root canal. The rationale is to establish an apical stop that would enable the root canal to be filled immediately. There is no attempt at root end closure. Rather an artificial apical stop is created.

- **Indications:**
  - Restorable immature permanent tooth.
  - Necrotic pulp tissue.
- **Contraindications:**
  - Extreme short roots
  - Ankylosis
- **Procedure at center based clinic:**
  - Use local anesthesia.
  - Place rubber dam.
  - Remove all carious lesions with sharp spoon excavator or large round slow-speed tungsten carbide bur or coarse high-speed diamond bur with copious irrigation.
  - Flush the cavity with sodium hypochlorite (NaOCl) 2.5% to decrease the bacterial load.
  - Remove entire coronal pulp tissue with sharp spoon excavator or slow speed round bur.
  - Irrigate with sodium hypochlorite 2.5%.
  - Remove necrotic pulp tissue with barbed broaches.
  - Complete pulpectomy with a thorough cleaning.

- Irrigate with sodium hypochlorite 2.5%.
- Place intracanal medicament (non setting calcium hydroxide) for 2 weeks.
- Next visit irrigate with sodium hypochlorite 2.5% and dry the canals, then place 3-4 mm of MTA at the apex (apical plug) and place moist cotton pellet at the canal orifice and temporize.
- Recall the patientt after 24h and obturate with softened gutta percha and composite restoration as a coronal seal.
- Recall the patient every 3,6,12 months.
- Note: If MTA is not available and calcium hydroxide is used, you have to call the pt every 3, 6, 12, 18 months, once the apical barrier is formed obturate with softened gutta percha and place permanent restoration.

Apexogenesis and apexification procedures are technique sensitive procedures. Therefore, they should be performed by well trained dentist and in a fully equipped clinic with the availability of radiographic facilities.

School Oral Health Program have school based clinics with limited capabilities, it is essential to emphasize that all procedures to maintain pulp vitality should be performed when necessary. However, if the case requires advanced procedures such as apexogenesis or apexification it should be referred with detailed information to the center based clinics

Protocol 13

Stainless Steel Crown for Primary Teeth [24,27,28]

- **Indications:**

1. Extensive carious lesion.
2. Hypoplastic Teeth.
3. Teeth with developmental anomalies (Dentinogenesis or Amelogenesis imperfecta).
4. Restoration after pulp therapy.
5. For crown and loop space maintainer.
6. For habit-breaking appliances.
7. Restoration for fractured teeth.
8. In high-risk patients, who have multiple carious lesions and/or tooth demineralization and who exhibit poor oral hygiene and compliance with daily oral hygiene, and where maintenance is considered unlikely.
9. Severe tooth loss due to bruxisim/erosion.

- **Procedure:**

1. Anesthetize and isolate with rubber dam.
2. Prepare the tooth:
   - Occlusal reduction by 1-1.5 mm
   - Approximal reduction (approximately 20o from vertical direction) without producing a ledge at the gingival margins.
   - Round off all sharp lines or angles.
3. Apply dressings as necessary.
4. Select the crown and check for height and extension into the gingival sulcus, trim and crimp as required.
5. Remove rubber dam and check occlusion.
6. Adjust the position of the patient from the supine to the upright position and place a piece of gauze to avoid accidental swallowing/ inhalation of the crown.
7. Remove the crown.
8. Fill 2/3 of the crown with a creamy mix of luting cement and set it onto the tooth.
9. Ask the patient to gently bite on a bite block or cotton roll.

10. Allow the cement to completely set in a dry field; gently remove the excess cement and use knotted floss to clear cement from the contact areas.
11. Check occlusion and extension.
12. Provide the parents with the printed instructions.

Note:

- ❖ Whenever possible, the rubber dam clamp should be placed on the tooth distal to the one being restored.
- ❖ Check occlusion before applying rubber dam.
- ❖ Over extended crown may be detected by persistent blanching of the gingiva. This condition should be always monitored and corrected by proper trimming and crimping.
- ❖ SSC is not indicated for patients with known nickel allergy.

Protocol 14

Stainless Steel Crown for Permanent Teeth[24, 27, 28, 29]

- **Indications:**

1. Extensive carious lesions.
2. Hypoplastic Teeth.
3. Teeth with developmental anomalies (Dentinogenesis or Amelogenesis imperfecta).
4. Restoration after pulpotomy in which there is an increased risk of fracture.
5. Before endodontic procedure where a tooth cannot be isolated to obtain moisture control (isolation support).

- **Procedure:**

1. Check occlusion before applying rubber dam.
2. Administer anesthesia and isolate the tooth with rubber dam.
3. Prepare the tooth:
   - Occlusal reduction by 1-1.5 mm
   - Approximal reduction (approximately 20° from vertical direction) without producing a ledge at gingival margins.
   - Round all sharp lines or angles.
4. Apply dressings as necessary.
5. Select the crown and check for height and extension into the gingival sulcus, trim and crimp as required.
6. Remove rubber dam and check occlusion.
7. Send the patient for a bite- wing x ray for the determination of the biological width (2-4 mm).
8. Adjust the position of the patient from the supine position to the upright position to avoid accidental swallowing of the crown.
9. Remove the crown.
10. Fill 2/3 of the crown with luting cement and set it onto the tooth.
11. Ask the patient to gently bite on a bite block or cotton roll.
12. Allow the cement to completely set in dry field, gently remove the excess cement and floss the contact areas.
13. Provide the parents with the printed instructions.

Note:

- Refer to protocol 13

Protocol 15

Extraction[21,30]

- **Definition:**

  It is the painless removal of the whole tooth with minimal trauma to the investing tissues, so that wound heals uneventfully with no postoperative complications.

- **Indications:**

Primary Teeth

1. Irrestorable symptomatic teeth.
2. Root resorption (external or internal – if symptomatic).
3. Periapical pathology.
4. Furcation involvement.
5. Necrotic teeth.
6. According to the recommendation of orthodontist.
7. Irrestorable traumatized teeth.

Permanent Teeth

1. Irrestorable teeth that can't be treated by restorative procedures.
2. Teeth with periapical pathology which can't be treated by endodontic procedures (with or without apicectomy).
3. Vertical fracture extends beyond cervical margin where restoration is not possible.
4. Supernumerary teeth that causes malocclusion or malfunction (with orthodontic consultation if needed).
5. Teeth involved in bony pathology like neoplasms or involved in cyst formation.
6. According to the recommendation of orthodontist.

- **Contraindications :**

Local Factors:

1. Acute infection with uncontrolled cellulitis.
2. Acute infections like severe gingivitis and stomatitis.
3. Acute pericoronitis.

Systemic Factors:

1. Uncontrolled diabetes mellitus.
2. Uncontrolled bleeding disorders.
3. Medically compromised or debilitating patients.

In all the above mentioned systemic contraindications, the extraction should not be done unless the patient‘s physician is contacted and his recommendations are followed.

Regulations for Permanent Tooth Extraction:

1- X- Ray should be taken (periapical or other x-rays if required).

2- Clinical supervisor should be consulted.

Post Extraction Instructions:

A. Post extraction instructions should be explained to the parents.

B. Provide the parents with the printed instructions.

Protocol 16

Guidelines for the Management of Traumatic Dental Injuries [31, 32, 33,34,35,36]

Highest incidence of injuries in children occurs between the age of 2 – 4 years in the primary dentition and 7 – 10 years in the permanent dentition.

An accurate history should be recorded regarding:

1. Status of the dentition.
2. Prognosis of injuries.
3. Other injuries.
4. Medical complications.
5. Possible litigation.

Questions to ask, like:

1- When and where did the trauma occur?

2- Was there any vomiting, nausea or loss of consciousness?

3- How did the trauma occur?

4- What initial treatment was given?

Clinical examination:

A careful methodical clinical examination should be done and the findings are recorded including:

1. Soft tissues.
2. Facial bones.
3. Teeth (Fracture, mobility, displacement, injury to the periodontal ligament, alveolus and pulpal trauma).
4. Follow up evaluation.

A radiographic examination may be necessary to support any clinical situation.

1. Fractures and Luxations of Primary Teeth

o Fractures:

Clinical Findings	Treatment
Uncomplicated crown fracture • Involves enamel or dentin and enamel. • Pulp is not exposed.	**Enamel fracture**: Smoothen the sharp edges. **Enamel and dentine fracture**: Restore with composite.
Complicated crown fracture • Involves enamel and dentin. • Pulp is exposed.	Pulpotomy if possible, otherwise extraction is indicated.
Crown-root fracture • Involves enamel, dentin and root with or without pulp exposure.	Extraction of the primary tooth (Care should be taken not to traumatize the subjacent tooth bud).
Root fracture • Coronal fragment is mobile and maybe displaced.	• Extract only the displaced fragment • Apical fragment: If difficult to remove, can be left to be resorbed or exfoliated.
Alveolar fracture • Involves the alveolar bone. • Tooth is mobile. • Occlusal interference.	Reposition any displaced segment and then splint. General anesthesia is often indicated.

(Table 2)

o Luxations:

Clinical findings	Treatment
Concussion • Tooth is tender to touch. • Limited mobility.	• No treatment is needed. • Kept under observation. • Reassure the patient. • Instruct soft diet and prescribe analgesics if needed.
Subluxation • Increased mobility. • No displacement.	• No treatment is needed. • Kept under observation. • Reassure the patient. • Instruct soft diet and prescribe analgesics if needed.
Extrusive luxation • Tooth appears elongated. • Excessive mobility.	• For minor extrusion (<3mm), careful reposition or leave the tooth. • For severe extrusion, extraction.
Lateral luxation • Tooth appears displaced.	• In minor luxations with no occlusal interference, leave for spontaneous reposition. • In severe luxation, extraction.
Intrusive luxation • Tooth is displaced through the labial bone or impinged upon the succedaneous tooth bud.	Allow spontaneous re-eruption except when displaced into the developing permanent successor, then extraction is indicated.
Avulsion • The tooth is completely out of the socket.	It is not recommended to replant avulsed primary tooth.

(Table 3)

2. Fractures and Luxations of Permanent Teeth

o Fractures :

Clinical Findings	Radiographic Findings	Treatment
Uncomplicated crown fracture • Fracture involves enamel or dentin and enamel. • Pulp is not exposed.	Several projections maybe recommended, like: periapical / occlusal or lateral view to : • Rule out any root fracture. • Search for any tooth fragment or foreign material in the lip or cheek.	• Enamel Fracture: Smoothen the sharp edges. • If tooth fragment is available, it can be bonded to the tooth or • Place glass ionomer to cover the exposed dentin and restore with composite as a permanent restoration.
Complicated crown fracture • Fracture involves enamel and dentin. • Pulp is exposed.	• Same radiographic findings as in uncomplicated fracture and the stage of root development can be determined from the radiograph.	Pulp capping,Cvek's partial pulpotomy,full coronal pulpotomy or root canal treatment according to the : 1. Tooth development. 2. Status of the pulp (vital or necrotic).
Crown-root fracture • Fracture involves enamel, dentin and root surface. • Pulp may or may not be exposed. • Sensibility test is positive.	• More than one radiograph angle maybe necessary to detect fracture lines in the root.	Same as for complicated crown fracture.
Root fracture • Coronal segment maybe mobile or displaced. • Tooth maybe tender. • Sensibility test maybe negative. • Transient crown discoloration (red or grey).	• Fractures in the cervical 1/3 and horizontal fractures can be detected by periapical radiograph. • Apical, middle 1/3 or diagonal fractures can be detected using occlusal film.	If crown is displaced : 1. Reposition. 2. Stabilize with flexible splint for 4 weeks. 3. Monitor for at least 1year to determine pulp status.

(Table 4)

o Luxations:

Clinical Findings	Radiographic Findings	Treatment
Concussion • Tooth is tender to touch or tapping. • No mobility/ displacement. • Sensibility test maybe positive	No radiographic abnormalities.	• No treatment is needed. • Monitor pulpal condition. • Reassure the patient. • Instruct soft diet and prescribe analgesics if needed.
Subluxation • Tooth is tender to touch or tapping. • Increased mobility without displacement.	No radiographic abnormalities.	• Reassure the patient. • Instruct soft diet and prescribe analgesics if needed. • If extreme mobility : Flexible splint for 2 weeks.
Extrusive luxation • Tooth appears elongated. • Excessive mobility. • Sensibility test negative.	Widening of the periodontal ligament space apically.	1. Reposition the tooth gently into its socket. 2. Flexible splint 2 weeks. 3. Monitor with radiographs and sensibility test. • Risk of pulp necrosis or root resorption or crown discoloration.
Lateral luxation • Tooth is displaced in labial and lingual direction. • High metallic percussion sound.	Widening of the periodontal ligament space.	1. Reposition the tooth with digital pressure and some force. 2. Flexible splint 4 weeks. • Risks of pulp necrosis or pulp canal obliteration are common complications in mature teeth.
Intrusive luxation • Tooth is displaced axially into the alveolar bone. • High percussion sound.	Periodontal space is absent.	1. Teeth with open apices: Avoid reposition and allow spontaneous eruption. If no movement within 3 weeks, orthodontic reposition is needed. 2. Teeth with closed apices: reposition orthodontically or surgically. Root canal treatment is needed.
Avulsion See next tables.	See next tables.	See next tables.

(Table 5)

Avulsion of Permanent Teeth with [Closed Apex]

Clinical Situation	Treatment
Tooth replanted prior to the patient arriving at the dental clinic	1. Clean the area with water spray, saline or chlorhexidine 2. Do not extract the tooth. 3. Suture gingival lacerations if present. 4. Verify the tooth position clinically & radiographically 5. Flexible splint for up to 2 weeks. 6. Administer systemic antibiotics. 7. Refer to a physician for evaluation & need for a tetanus booster if tooth has contacted soil. 8. Root canal treatment 7-10 days after replantation and before splint removal. 9. Soft diet for 2 weeks. 10. Brushing teeth with soft tooth brush. 11. Chlorhexidine(0.1%) mouth rinse twice daily for1week 12. Follow up the case.
The tooth has been kept in storage media: [Hank's balanced salt solution, milk – saline – saliva].The extra-oral dry time is less than 60 minutes.	1. If contaminated, clean root surface with a stream of saline. 2. Remove coagulation from the socket with a stream of saline. 3. Replant the tooth slowly with slight digital pressure. 4. Follow the above steps from step 3 to step 12.
Extraoral dry time longer than 60 minutes.	Delayed replantation has a poor long-term prognosis. The periodontal ligament will be necrotic & not expected to heal. The goal in doing delayed replantation in this situation is to promote alveolar bone growth to encapsulate the replanted tooth. The expected outcome is ankylosis and resorption of the root. 1. Clean & remove attached necrotic tissues from the root surface with a gauze. 2. Root canal treatment can be done prior to replantation or 7-10 days later. 3. Remove coagulum from the socket with a stream of saline. 4. If there is a fracture of the socket wall, reposition it with suitable instrument. 5. Immerse the tooth in a 2% sodium fluoride solution for 20 minutes. 6. Replant the tooth slowly with slight digital pressure. 7. Stabilize the tooth for 4 weeks using a flexible splint. 8. Administer systemic antibiotics, and refer to a physician for evaluation & need for a tetanus booster if tooth has contacted soil. 9. follow the steps 9 to 12 (Clinical situation no. 1)

(Table 6)

Avulsion of Permanent Teeth with [Open Apex]

Clinical Situation	Treatment
Tooth replanted prior arriving the dental clinic	• Same measures in avulsed closed apex tooth management is taken, Except in this situation the tooth have a chance of revascularization. If this does not occur, root canal treatment may be recommended.
The tooth has been kept in storage media: [Hank's balanced salt solution, milk – saline – saliva].The extra-oral dry time is less than 60 minutes.	• Same measures in avulsed closed apex tooth management is taken (Clinical situation no. 2), Except in this situation the tooth have a chance of revascularization. If this does not occur, root canal treatment may be recommended.
Extraoral dry time longer than 60 min	• Same measures in avulsed closed apex tooth management is taken (Clinical situation no. 3).

(Table 7)

Follow-up procedures for avulsed permanent teeth

- **Root canal treatment (RCT)**

If RCT is indicated (teeth with closed apex), the ideal time to begin treatment is 7-10 days post replantation. Calcium hydroxide is recommended for intra-canal medication for up to 1 month followed by RCT with an acceptable material. An exception is a tooth that has been dry for more than 60 minutes before replantation –in such cases root canal treatment may be done prior to replantation.

In teeth with open apexes, that have been replanted immediately or kept in appropriate storage media, pulp revascularization is possible. RCT should be avoided unless there is clinical and radiographic evidence of pulp necrosis.

- **Clinical Control**

Replanted teeth should be monitored by frequent controls during the first year (once a week during the months 1, 3, 6, and 12) and then yearly thereafter. Clinical and radiographic examination will provide information to determine outcome.

Splinting

○ Definition:

Splinting is the immobilization of traumatized teeth in the correct anatomical position.

○ Types:

Functional /Flexible Splint	Rigid Splint
This splint allows tooth movement.	For fixation with no tooth movement.
Used in short term periods [1-2 weeks].	Used in long periods 4-8 weeks.
Examples : Nylon wire splint (fishing wire). Flexible orthodontic wire splint. Trauma titanium splint (TTS).	**Examples :** Rigid orthodontic wire splint. Total resin splint. Fiber glass splint.

(Table 8)

○ Splinting Times:

Type of Injury	Splinting Time (up to)
- Subluxation.	- 2 weeks.
- Extrusive luxation.	- 2 weeks.
- Avulsion.	- 2 weeks.
- Lateral luxation.	- 4 weeks.
- Root fracture [middle 1/3].	- 4 weeks.
- Root fracture [cervical 1/3].	- 4 weeks.
- Alveolar fracture.	- 4 months.

(Table 9)

○ Splint Construction:

- Bend a flexible orthodontic wire.
- Fit it on the middle third of the labial surface.
- Stabilize the injured tooth in the correct anatomical position.
- Clean the labial surface.
- Isolate, dry and acid-etch for 20 seconds, wash and dry.
- Apply 3 mm diameter circle of composite to the centre of the crowns.
- Cure for 40 seconds.
- Smooth any sharp edges. Note:

❖ The abutment teeth should be selected properly, to provide sufficient retention and stability for the traumatized tooth (Ant's Law).

Protocol 17

Space Maintainers(SM) [37]

A space maintainer is an intra-oral appliance used to preserve arch length following the premature loss of primary teeth/tooth. This allows the permanent teeth to erupt unhindered into proper alignment and occlusion.

Basic concepts of space maintenance:

The role of Chronological age and Dental age is important when considering space maintenance.

1. Space closure occurs during the first 6 months after extraction. It is best to insert the appliance as soon as possible following the extraction.
2. Loss of space occurs primarily due to a tipping movement of teeth (mesially or distally). In the maxillary molar region, space loss occurs due to rotation in conjunction with mesial tipping.
3. Erupting premolars usually require 4-5 months to move through 1mm of bone as measured on a BW X-ray.

Indications:

1. The premature loss of primary molars to prevent the migration of the adjacent teeth, depending upon the teeth present and the arch length.
2. The premature loss of primary canines to prevent midline deviation and/or loss of arch length, perimeter and/or circumference.
3. The premature loss of primary incisors does not usually require the placement of a dental appliance for the maintenance of space because mesial movement of the adjacent teeth is not generally expected.

Contraindications:

1. A space maintainer is usually not necessary if there is a sufficient amount of space present to allow for eruption of permanent tooth/ teeth.
2. A space maintainer may not be recommended if severe crowding exists, such that space maintenance is of minimal effect and subsequent orthodontic intervention is indicated.
3. A space maintainer may not be necessary if the succedaneous tooth will be erupting soon.

Types of SM Used in SOHP:-

1. **Band and Loop:**

Indicated for unilateral or bilateral loss of primary molars.

2. **Crown and Loop:**

Indicated for unilateral or bilateral loss of primary molars.

This type of SM restores a grossly decayed abutment tooth. Removal of appliance for adjustments is difficult.

3. **Nance Appliance:**

Indicated for loss of multiple primary teeth (bilaterally) in the maxillary arch.

Acrylic button provides increased stability. Appliance prevents tipping and rotation movement of molars.

4. **Lower Lingual Arch (LLA):**

Indicated for:

- Bilateral loss of primary teeth in the mandibular arch during transitional dentition.
- Maintenance of arch perimeter and incisor positions.

5. **Removable Space Maintainers:-**

Indicated for:

- Loss of multiple teeth bilaterally (anterior and/or posterior).
- In the absence of abutment teeth.

- **Procedure:**

Clinical procedure for Band and Loop SM is as follows:

1. Select the smallest band that will fit snugly over the height of contour of the tooth.
2. First, seat band with digital pressure.
3. Then, fully seat the band over the tooth using band seater.
4. Using the band adapter, adapt the margins of the band to the tooth morphology.
5. Select the appropriate size of the impression tray, for both upper and lower arches.

6. Mix the impression material (Alginate) and adequately fill upper impression tray to avoid uneventful vomiting.
7. Tilt the patient head forward and downward to minimize the flow of the impression material into his throat.
8. Wait for 2 minutes, to allow the material to set.
9. Remove the tray carefully but firmly to avoid damaging it.
10. Evacuate the patient's mouth and make sure to remove any excess material left in his mouth.
11. Repeat the procedure for the lower arch.
12. Wash the impression under running water.
13. Remove the band from the tooth using band removing pliers.
14. Put the band back on the tray and stabilize it with a sticky wax on buccal and lingual margins at the occlusal aspect of the band.
15. Put the trays in a container containing a cold stereliant or according to the recommendations of the manufacturer.
16. Impressions covered with wet gauze should be sent to the lab with a referral letter.

Post SM construction procedures:

1. Try the appliance in the patient's mouth, considering not interfering with normal functions (with eating and speech).
2. Cement the appliance in place; make sure that the child can close his mouth normally after placement of an appliance.

Post insertion instructions:

It is very important to stress with the parents to bring the child for regular recall appointments so that the appliance can be removed before it interferes with the normal eruption of permanent teeth.

Protocol 18

Local Anesthesia[38]

1. Apply topical anesthesia. (To be effective – it should remain in contact with the dry mucosa 90 – 120 second).
2. Always prepare the syringe just before use.
3. Give local anesthetic injection either infiltration or regional block according to the anatomical landmarks.
4. Inject small amount (1 drop) of the anesthetic solution at the injection site before progressing deeper.
5. Aspirate before depositing the solution.
6. Deposit the local anesthetic solution in a very slow motion (1 minute to 1.5 minute).
7. Maximum dosage for children is 2 cartridges.
8. The child should be instructed carefully and repeatedly to be aware not to chew his lips or tongue and not to drink anything that is too hot.
9. In school based clinics follow up the child during the school day.

Note:

- ❖ Bring the anesthetic solution to be injected to the room temperature before use.
- ❖ Health history should be taken before the procedure.
- ❖ During the procedure, carefully watch the patient's reaction.
- ❖ Don't forget that good anesthesia; leads to hassle free treatment and excellent results.

Local anesthesia is a technique sensitive procedure. We should be aware of:-

1. Anatomical land marks.
2. Types of local anesthesia used.
3. Maximum recommended dose.
4. Indications that your anesthesia is working or not.
5. Aspirating technique.
6. Medical conditions that may contraindicate the use of different types

of local anesthesia (LA.).

7. Possible complications and its management.

In school oral health program we are using the following types of LA:-

1. **Lidocaton 2% (1: 100,000) with Epinephrine.**

   We can use it for all cases except:

   - Thyrotoxicosis.
   - Asthmatic patients.

   For cardiac patients use the minimum recommended dose.

   (Maximum recommended dose 4.4 mg/kg. Do not exceed 300 mg).

   Each cartridge contains 36 mg.

2. **Citanest 4 % with Felypressin**

   We can use it safely for the following cases:

   - Hyperthyroid.
   - Diabetic patients.

   Not recommended to be used for cardiac, hypertensive and aneamic patients as well as those with congenital methemoglobinemia.

   (Maximum recommended dose 6.0 mg/kg. Do not exceed 400 mg).

   Each cartridge contains 72 mg.

3. **Scandonest 3 % (plain Mepivacaine hydrochloride).**

   This type is recommended for the use in:

   - Asthmatic patients
   - Cardiac patients
   - Cases that does not recommend the use of vasoconstrictor.

   (Maximum recommended dose mg/kg is 4.4 mg/kg. Do not exceed 300 mg).

   Each cartridge contains 54 mg.

Protocol 19

Rubber Dam [21, 39]

Rubber dam is the most preferable method for isolation in dentistry.

- **Advantages:**

1. Moisture Control.
2. Protection against aspiration of dental instruments or materials.
3. Improved visibility.
4. Retraction of cheek, tongue away from the operating field.
5. Good access.
6. Time saving.
7. Used as an educational aid for child & parents.
8. Limits cross infection.
9. Aids in behavior management.
10. Prevents gagging.

In the child who has complete nasal obstruction, and is thus a mouth breather, a hole is cut, high up in the dam away from the isolated teeth to enable the child to breath through the mouth.

- **Clamps:**

Clamp holds the rubber dam on the tooth. It comes in different sizes and shapes according to the size, location & shape of the tooth. The clamps are available with and without wings.

Wingless Clamps: Are identified by the letter "W" written before the clamp number. These clamps are usually placed on the teeth prior to the rubber dam and the rubber- dam is stretched over the positioned clamp.

Winged Clamps: is identified by number only. They are placed first into the punched hole of the rubber dam and then the clamp and the rubber dam are carried to the mouth and placed on the tooth together.

- **Application of Rubber Dam**

There are two major techniques for application of rubber dam. Choosing the technique depends on the type of clamp used and the technique used by the dentist.

Using a Wingless Clamp

1. Select the proper clamp.
2. Tie a long dental floss on the bow of the clamp.
3. Punch a hole in the latex.
4. Place the clamp on the tooth by forceps.
5. Stretch the rubber dam latex with fingers toward and under the lingual jaw & then the facial jaw.
6. Attach the rubber dam frame with the help of the dental assistant.

Using a Winged Clamp

1. Select the proper clamp.
2. Tie a long dental floss on the bow of the clamp.
3. Punch a hole in the latex.
4. Mount the clamp wings into the most distal hole of the Rubber dam (in case of multiple teeth isolation).
5. Engage the forceps into the clamp.

   Optional: The rubber dam frame can be attached to the latex at this stage.
6. Squeeze the forceps to open the clamp and then position on the selected tooth.
7. Use the plastic filling instrument to flick the Rubber dam off each wing.

Some Clamps Used in the Program

Clamp No.	Place of use
2A	Premolars and maxillary central incisors.
3	Small molars.
8A	Partially erupted or irregularly shaped small molars.
14	Partially erupted or irregularly shaped molars.
14A	Partially erupted or irregularly shaped larger molars.
12A	Small molars (lower right & upper left)-Optional clamp.
13A	Small molars (lower left & upper right)-Optional clamp.

(Table. 10)

(Fig. 35)

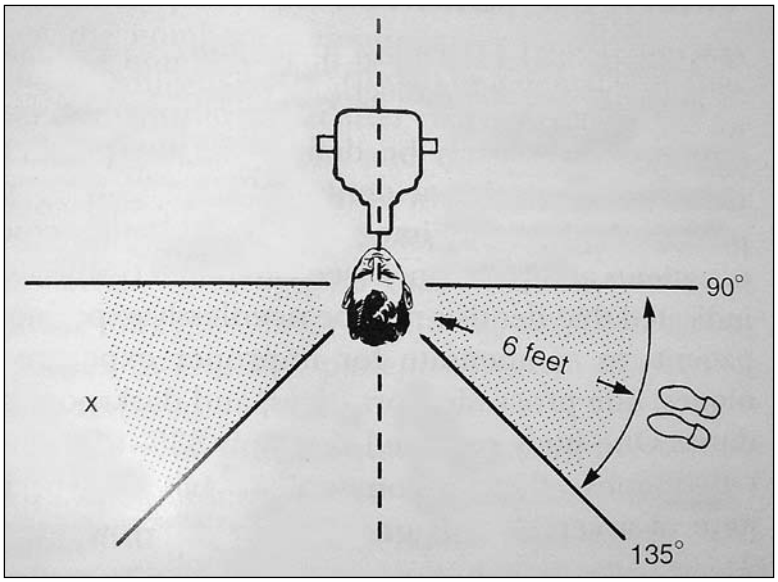
Protocol 20

Dental Radiography [40, 41, 42]

Dental Radiograph: Is a photographic image produced on film by the passage of x-rays through teeth and related structures.

Radiation Protection Guidelines:

1. Use of proper equipment to reduce patient exposure to radiation.
2. A thyroid collar, a lead apron, fast film and film holding devices are used to protect the patient from excess exposure to radiation.
3. The dental radiographer must never hold a film or tube head in place for patient during x-rays exposure.
4. The dental radiographer must follow operator protection guidelines (maintain an adequate distance, proper position and shield protection).
5. Careful film holding and processing techniques should be followed.



Position and distance rule. If no barrier is available, the operator should stand at least 6 feet from the patient, at an angle of 90 to 135 degrees to the central ray of the x-ray beam when the exposure is made.[41]

(Fig. 36)

Dental Radiography Types and Techniques
A-Intra Oral Views (Table 11)

Types	Indications	Techniques	Recommended Vertical Angulation Ranges (Degrees)
Periapical View	Is used to detect the tooth and its periapical area problems: (pulp stone, pulpal obliteration and sclerosis, external and internal resorption, granuloma, cyst, abscess…etc) and eruption of permanent teeth under primary teeth.	Paralleling Technique A film holder aligns the film parallel to the tooth and at 90 degrees to the x -ray tube.	
		Bisecting Angle Technique The film placed against the back of the tooth and the x-ray tube is aligned at 90 degrees to the plane halfway angel between the tooth and the film.	Maxillary / Mabdibular Canines +45 to +55 / -20 to -30 Incisors +40 to +50 / -15 to -25 Premolars +30 to +40 / -10 to -15 Molars +20 to +30 / -5 to 0
Bite – wing View	Is used to detect the crowns of the teeth in arches, interproximal caries and the crestal bone levels between teeth.	X-ray tube is positioned at 90 degrees to the dental arch and the beam passes between the contact points.	The x- ray tube is directed at +10 degrees toward the center of the film to avoid overlapping the cusp tips.
Occlusal View	Is used to detect foreign bodies, impacted teeth, supernumary teeth, un erupted teeth, root positions, salivary stones, broken needles and instruments, and jaw fractures.	Upper occlusal. Upper occlusal lateral (right or left). Upper occlusal pediatric. Lower occlusal. Lower occlusal lateral (right or left). Lower occlusal pediatric.	+65 +60 +60 90 -55 -55

B-Extra Oral Views (Table 12)

Types :	Indications :
Panoramic View (Orthopantomogram.OPG)	To evaluate impacted teeth. To evaluate eruption patterns, growth, and development. To evaluate trauma and jaw fractures. To examine the extent of large lesions, and conditions of the jaws.
Lateral Cephalometric View	To examine large areas of the skull and jaws (facial profile). To evaluate growth and development, and planning of orthodontic treatment.
Lateral Jaw View (Body of mandible)	To evaluate impacted teeth, fractures, and lesions located in the body of the mandible (premolar, molar, and inferior border).
Lateral Jaw View (Ramus of mandible)	To evaluate impacted teeth, large lesions, and fractures of the ramus.

C-Digital Views

- Radiation dose of digital view (50-80%) less than conventional radiation.
- Very efficient image storage.
- No conventional processing.
- Used for intra oral and extra oral views.

Dental X-ray Film Sizes (Table 13)

TYPES:	Film Size			
	0	1	2	4
Periapical Film	Anterior and posterior teeth (child 3-5 years)	Anterior teeth (adult). Anterior and posterior teeth (child: 6-8 years)	Anterior and posterior teeth (child and adult)	
Bite-wing Film	Posterior teeth (child: 3-5 years)	Anterior teeth (adult) –Vertical position Posterior teeth (child) –Horizontal Position	Posterior teeth (adult)	
Occlusal Film				Child and adult.

Dental x-ray Film speed (Table 14)

Types	Film Speed
Intra Oral Film	D film
	E film (faster)
	F film (fastest)
Extra Oral Film	Intensifying screen.

Dental X-Ray Film Mounting

(Labial mounting as recommended by American Dental Association (ADA.)

1 - Examine and handle x-ray film by edges only.
2 -The raised side convex of the dot facing occlusaly.
3 -The raised side convex of the dot (patient) facing the viewer.
4 -The anatomical order of the teeth can be used to distinguish right from left.

Common Errors of Dental X-Ray Film (Table 15)

Appearance	Problem
Clear Film	The film is not exposed to x-ray.
Clear Cone- Cut	The entire film is not exposed to x-ray.
Black Film	The film exposed to white light.
Light Film	Inadequate exposure time or inadequate developing time of the film.
Dark Film (Poor contrast)	Excessive exposure time or excessive developing time or inadequate fixing time.
Foreshortened Images	Excessive vertical angulation.
Elongated Images	Insufficient vertical angulation.
Double Images	Double exposure film to x-ray.
Dark Spots	Developer comes in contact with the film before processing.
White Spots	Fixer comes in contact with the film before processing.
Yellow Brown Color	Insufficient fixation time or rinsing time of the film, exhausted developer or fixer solution.
White Line	Scratched film by sharp object.
Straight White Border	Low level of developer solution.
Straight Black Border	Low level of fixer solution.
Blurred Images	Patient moved during film exposure.

Operational Guide for School Oral Health Program

Prescribing Medicine

Prescribing Medicine [43, 44, 45]

The Kuwait drug index is the only authoritative source on pharmacology & prescribing medicine in Kuwait.

The most commonly used drugs in the school oral health program clinics are:

- Analgesics.
- Antibiotics.
- Antifungal drugs.
- Antiviral drugs.
- Mouth ulceration drugs.
- Mouth rinses.

Points to be considered before prescribing therapeutic antibiotics:

1. Before prescribing any medicine, the dentist has to make sure that the patient is not allergic to it.
2. Indications for prescribing antibiotics are: facial swelling of dental origin, elevated body temperature, and evidence of systemic involvement.
3. Penicillin is the antibiotic of choice of 95% of dental infections.

   (Penicillin V for oral administration or penicillin G for injection).
4. In case of infection caused by penicillin resistant organisms, other antibiotic should be prescribed supported by culture & sensitivity test.
5. Allergy or sensitivity to penicillin is an indication for prescription of recommended alternative antibiotic.
6. In allergic cases, either azithromycine or erythromycin or clindamycin can be prescribed.
7. A tooth with chronic abscess which is indicated for extraction needs no pre or post extraction antibiotic.
8. A tooth with acute abscess, drainage is the first line of treatment (if possible). An antibiotic is to be prescribed for 48 hours prior to treatment and for 3 days after treatment.

9. An acute infection is not an indicator of anaerobic infection. If anaerobes are involved, metronidazole or clindamycin is to be prescribed. (e.g. acute ulcerative gingivitis & acute pericoronitis).
10. Don't prescribe antibiotic only to satisfy the parent.
11. Antibiotics are not to be prescribed for viral infection.
12. Antibiotic is not a pain killer.
13. Advice patient to discontinue the medication immediately if any side effects appear.

Analgesics (Table 16)

<table>
<tr><th></th><th>Drug</th><th>Recommended dose</th><th>Contraindications</th><th>Remarks</th></tr>
<tr><td rowspan="4">NSAID</td><td>Diflunisal (Dolobid)</td><td>250mg tablets 2-3 times daily.</td><td>Hypersensitivity to the component(salicylate derivative)</td><td>Gastrointestinal bleeding & peptic ulcer reported</td></tr>
<tr><td>Ibuprofen
(Brufen, Advil, Profenal)</td><td>Available as oral suspension and tablets.
<table><tr><th>Weight/kg</th><th>Age</th><th>Dose (mg)</th></tr><tr><td>22-27</td><td>6-8yr</td><td>200</td></tr><tr><td>28-32</td><td>9-10yr</td><td>250</td></tr><tr><td>33-43</td><td>11yr</td><td>300</td></tr></table></td><td>-Patients on oral anticoagulant or cyclosporine
-Asthma</td><td>Dosage taken every 4-6 hours as needed

Caution: In decreased renal or hepatic function.</td></tr>
<tr><td>Mefenamic acid
(Ponstan)</td><td>Capsules, suspension & tablet forms.
250mg/4hours /day, as needed.
Not more than 7days.</td><td>Impaired renal or hepatic function, patients on oral anticoagulant or cortisone, ulceration & inflammatory bowl diseases.</td><td>Not recommended for children <14 years old</td></tr>
<tr><td>Acetylsalicylic Acid
(Asprin, Cafenol, Jusprin)</td><td>10-15mg/Kg every 4-6 hours,
Tablets, 200mg & 325 mg.</td><td>Hypersensitivity to salicylates, asthma, inherited or acquired bleeding disorders.</td><td>• Do not use for children < 16 years old with viral infection.
• Caution with patients with renal or hepatic dysfunction.
• Erosive gastritis or peptic ulcer.</td></tr>
<tr><td colspan="2">Acetaminophen
(Panadol, Adol, Panamol).</td><td>Syrup, oral suspension
Children 4-12 years125-250mg 1-3 times daily.</td><td></td><td>Caution: In decreased hepatic function and patients with G6PD deficiency.</td></tr>
</table>

Antibiotics (Table 17)

<table>
<tr><th>Drug</th><th>Recommended dose</th><th>Contraindications</th><th>Remarks</th></tr>
<tr><td>Penicillin V (Ospen)</td><td>Children<12 years: Granules for oral suspension 125-250mg/ml every 6-8 hours.
Children>12 years: Tablets 250mg every 6-8 hours/day.</td><td>Penicillin hypersensitivity.</td><td>• Stable to stomach acids.
• Readily absorbed.
• Given 1 hour before or 2 hours after meal.
• Susceptive to β-lactamase.</td></tr>
<tr><td>Penicillin G (Benzylpenicillin)</td><td>Intramuscular injection for children<table><tr><th>Weight</th><th>Dose</th></tr><tr><td>< 14 kg</td><td>600,000 units in single dose</td></tr><tr><td>14-28kg</td><td>900,000-1.2million units in single dose</td></tr><tr><td>Children > 41 kg</td><td>2.4 million units in single dose</td></tr></table></td><td>Penicillin hypersensitivity.</td><td>• Unstable in gastric acid, poor absorption, so usually given intramuscular.
• Susceptible to β-lactamase.</td></tr>
<tr><td>Amoxicillin (Amoxil)</td><td>Oral suspension 125,250mg/5ml.
3 times daily.</td><td>Hypersensitivity to amoxicillin or penicillin.</td><td>• Hydrolysed by β-lactamase.
• Given without regards to meal.</td></tr>
<tr><td>Amoxicillin +Clavulanic acid (WAugmentin)</td><td>Oral suspension 156,312,457mg/5ml. in 3 divided doses / daily.</td><td>Hypersensitivity to amoxicillin or penicillin.</td><td>• Excellent activity against β-lactamase producing bacteria.
• Given without regards to meal</td></tr>
<tr><td>Ampicillin (Polycillin)</td><td>Oral suspension 250mg 4 times daily.</td><td>Sensitivity to ampicillin or other penicillins.</td><td>• Caution in patients with renal insufficiency.
• 1-2 hours before meal.</td></tr>
</table>

Drug	Recommended dose	Contraindications	Remarks
Azithromycin (Zithromax)	10mg/kg as a single dose for 3 days. Powder for oral suspension 200mg/5ml Capsules: 250mg.	Hypersensitivity to azithromycin.	• Caution hepatic impairment. • Given 1 hour before meal or 2 hours after meal. • Not recommended for children < 6 months
Erythromycin (Erythrocin)	Oral suspension 30-50mg/kg body weight in 3 or 4 divided doses. Powder for oral suspension:200mg/5ml and 400mg/5ml. Coated tablets:250mg,500mg	Hypersensitivity to erythromycin. Hepatic Impairment. Asthmatic patients on theophlline.	• Given 1 hour before meal or 2 hour after meal. • Interaction with anticoagulants & cyclosporine.
Clindamycin (Dalacin C)	8-25 mg /kg /day in 3-4 divided doses. Oral suspension 75mg/5ml.	Clindamycin or lincomycin sensitivity. Asthmatic patients on theophlline.	• Given without regards to meal. • Discontinue use if persistent diarrhoea or colitis.
Metronidazole (Norzol)	15-35mg/kg/day in 3 divided doses. Suspension: 125mg/5ml. Tablets: 200mg, 250mg and 400mg.	Hypersensitivity to metronidazole. Hepatic Impairment.	• Given without regards to meal. • Caution with hepatic Impairment and patients on oral anti coagulants. • Unpleasant taste, nausea.

Antifungal Drugs (Table 18)

Drug	Recommended Dose	Contraindications	Remarks
Nystatin (Mycostatin)	**Oral suspension**: 400,000-600,000 units 4 times/day. **Troche**: 200,000-400,000 units 4-5 times/day. **Cream/ointment**: Cover the area of infection 2-3 times after meals and at bedtime.	Sensitivity to Nystatin	• (Rinse & swallow) should be retained in the mouth as long as possible. • Troches should be allowed to dissolve & not chewed or swallowed. • Treatment should continue 48 hours after symptoms disappear.
Ketoconazol (Nizoral)	Children >2 years tablet: 5-10 mg/kg/day as a single dose for 1-2 weeks. 2% Cream applied gently to affected area.	Sensitivity to ketoconazol	Caution: Impaired hepatic function

Antiviral Drugs (Table 19)

Drug	Recommended Dose	Contraindications	Remarks
Acyclovir (Zovirax)	**Tablets Acyclovir**: 40-80mg/kg divided 3-4 doses daily for 5-10 days (maximum 1g/day). **Topical cream**: 5%(50mg/g) in 3g and 15g Applied on skin 5 times daily.	Sensitivity to Acyclovir	• Not recommended for children ≤ 2 years.
Penciclovir (Vectvir)	Topical cream: 1%, 1.5g tube Apply topically at the first sign of cold-sore every 2 hours for 4 days.	Sensitivity to Penciclovir	• Application on the lips & face skin, but not recommended on mucous membrane.

Mouth Ulceration Drugs:

- Chlorhexidine gluconate gel (Elugel).
- Solcoseryl dental adhesive paste.
- Carbinoxolon sodium gel 2% (Bioral).
- Corticosteroids (Kenalog in Orabase).

Mouthwashes:

- Chlorhexidine gluconate 0.2%.
- Hydrogen peroxide.
- Krameria mouth wash (KNF).
- Fluoride mouthwash.

Operational Guide for School
Oral Health Program

Dental Management of Medically Compromised Patients

Dental Management of Medically Compromised Patients [46-54]

Definition:

It is the management of patients in whom the dental treatment may need modification according to their medical condition.

Preoperative Management:

1. Good detailed medical history of the patient should be taken and updated during each visit.
2. The medical condition should be mentioned in the consent form.
3. Any problem in previous dental treatment should be reported precisely.
4. Report any previous hospitalization of the patient and the reason for it.
5. Early morning appointments are preferred except in cardiac patients which are preferred to be in late morning.
6. In school oral health program, severe medically compromised patients are treated at the program centers.

In the next few pages we have highlighted the most common medical conditions that may be encountered by the dental staff and their possible management.

Deficiency Anemia

- Anemia is a decrease in the level of circulating hemoglobin below the normal reference range for a patient's age and sex (Appendix J, page 148).
- Deficiency anemia can be caused by lack of iron, vitamin B12 or folate.
- The different deficiencies produce different effects on the erythrocyte. Iron deficiency produces small cells and lack of vitamin B12 or folate results in large erythrocytes.
- Deficiency states are corrected by replacement therapy. Iron deficiency may be due to
- dietary factors or due to loss of blood. Vitamin B12 deficiency, known as pernicious anemia, is not due to dietary problems but is caused by poor absorption of the vitamin. This is a result of defective intrinsic factor function caused by autoantibody attack. Pernicious anemia is of interest to dentists as it is one of the complications of nitrous oxide abuse.
- The dentist should be aware of the cause and the extent of the patient's anemia.
- Local Anesthesia (LA) is satisfactory for pain control.
- Oral Manifestations: Angular stomatitis, atrophic glossitis, soreness of the tongue.
- Candidosis can be aggravated by anemia and may be the presenting feature.
- Paterson-Kelly (Plummer-Vinson) syndrome of glossitis and dysphagia is uncommon.

Hemolytic Anemia

- Hemolytic anemia can be the result of extrinsic factors (e.g. malaria) or problems with hemoglobin. Included among the conditions that produce defects in hemoglobin are sickle cell disease, the thalassaemias and glucose 6-phosphate dehydrogenase deficiency.
- LA is the safest method for pain control. It is preferred to avoid prilocain which (in over dose) may precipitate methemoglobinemia.
- Drugs that can potentially cause hemolysis such as Aspirin and non steroidal anti- inflammatory drugs (NSAIDs) should be stopped.
- Prophylactic antibiotics (Penicillin V or Clindamycin) should be given for surgical procedures, and infections must be treated vigorously, since the patient may be immunocompromised if the spleen is non-functional

or removed.

- Hepatitis B or C or HIV carriage may be a complication in repeatedly transfused patients.
- Oral manifestations: In sickle cell disease (painful infarcts in the jaws, pulpal symptoms are common in the absence of any obvious dental disease, and hair-on-end appearance on lateral skull x-ray). Thalassaemia major (enlargement of the maxilla caused by bone marrow expansion).

Bleeding Disorders

- Take a family history to determine whether the bleeding disorder is the result of an inherited or an acquired problem.
- Medical report and consultation with the hematologist required (for example patients on anti-coagulant treatment).
- Avoid aspirin and NSAIDs in patient with bleeding tendency (e.g. hemophilia). Avoid erythromycin and ketoconazol in patients taking warfarin. (Inhibit warfarin metabolism).
- Some bleeding parameters can change frequently, therefore laboratory tests are needed within a week or closer to the time of dental treatment.
- Dental procedures should be limited according to the medical condition.
- No surgical procedure, no matter how minor, should be performed on a patient with a bleeding disorder without prior consultation with the patient's hematologist or physician.
- Patients with congenital bleeding disorders should be treated in specialist centers where cooperation between surgeon and hematologist is established.

Cardiac Problems

- Patients should be instructed always to maintain good oral hygiene.
- Effective painless LA is essential, and an aspirating syringe should be used.
- Epinephrine-containing LA should not be given in excessive doses to patient taking beta blockers, which may induce hypertension and cardiovascular complications.
- Citanest is not recommended to be used for cardiac or hypertensive patients.
- Assure the patient. Stress free short, late- morning appointments are recommended.

- Antibiotic prophylaxis is recommended for cardiac patients to prevent infective endocarditis.
- It is given according to the recommendation of the cardiologist in the situations mentioned, from the latest updates given in tables No 20-22 (page No 125-126).
- Flu- like symptoms within 2-4 weeks following procedure may be a sign of bacterial endocarditis, even if prophylaxis was taken.

Diabetes Mellitus(DM)

DM is a complex syndrome characterized by abnormalities in carbohydrate, lipid and protein metabolism that result either from profound or an absolute deficiency of insulin, related to autoimmune destruction of the insulin-producing pancreatic beta cells(Type 1), or from target-tissue resistance to its cellular metabolic effects, related commonly to obesity(Type2)

- A carefully constructed questionnaire can give some indications that a patient could be at risk of being diabetic or be an undiagnosed diabetic, especially type 2.
- The classical symptoms of DM include : polydipsia, polyuria and polyphagia.
- The following findings are also indicative of possible diabetes: recent weight loss, irritability, dry mouth, frequent infections, history of poor wound healing.
- It is recommended that a patient suspected by the dentist to be diabetic, should be referred to a physician for proper evaluation and diagnosis.
- Properly controlled type 1 and type 2 diabetic patients usually can undergo all dental treatments without special precautions.
- The dentist must know the type and dose of insulin as well as any other medications that the patient is taking.
- Consultation with the patient's physician is a must when:

1. The patient has systemic complications of diabetes such as heart or renal disease.
2. The patient has difficult to control diabetes or is under high insulin dosage (Check appendix K, page:149).
3. The patient has an acute oral infection such as periapical or periodontal abscess.

- The main hazard during dental care is hypoglycemia, as dental treatment may disrupt the normal pattern of food intake.

- Blood sugar level (Glucometer) should be checked and controlled.
- Early morning appointments are preferred which will minimize the risk of stress-induced hypoglycemia.
- LA can usually be safely used. The epinephrine level in LA has no significant effect on blood sugar.
- Drugs that can disturb diabetic control (aspirin and steroids) must be avoided.
- Routine dental treatment or short minor surgery under LA can be carried out with no special precautions apart from ensuring that it does not interfere with eating.
- Oral manifestations: have slightly more periodontal diseases, dry mouth, glossitis.
- Orofacial infections should be treated immediately by antibiotics and appropriate incision and drainage if needed.

Epilepsy

- Epilepsy is a term that describes a group of disorders characterized by chronic, recurrent, paroxysmal changes in neurologic function (seizures) that are caused by abnormal electrical activity in the brain. Seizures may either be accompanied by motor manifestations or manifested by sensory, cognitive or emotional changes in neurologic function.
- The first step in the management is identification, which is best accomplished by the medical history(Seizure history: Type, age at onset, cause and medications).
- Make sure patient has taken his medication.
- Schedule patient early morning.
- Epileptics can have good and bad phases and dental treatment should be carried out in a good phase, when attacks are infrequent.
- Poorly controlled patients may require additional anticonvulsant or sedative medications, for these patients a consultation with the physician is advised before dental treatment.
- Mouth prop is to be used during dental treatment.
- Keep equipments as much as possible away from the area of the patient.
- Be alert for any feature that may indicate the start of seizure.
- Aspirin and NSAIDs should not be administered to patients taking valporic acid (medicine used in treatment of epilepsy).

- Propoxyphene (analgesic drug) and erythromycin should not be administered to patients taking carbamazepine.
- Oral Complications: the most significant oral complication is gingival overgrowth associated with phenytoin. The anterior labial surfaces of the maxillary and mandibular gingivae are most commonly and severely affected.

Renal Disease

- Renal disease in children mainly comprises the so-called nephritic syndromes which may
- progress to chronic renal failure (CRF).
- Progression to CRF leads to the need for dialysis and possibly transplantation.
- CRF patients may be taking corticosteroid and other immunosuppression drugs. This can make medical management difficult for these patients.

  Potential problems include:

  - Impaired drug excretion.
  - Anemia.
  - Bleeding tendencies.
  - Associated anticoagulant therapy.
  - Hypertension.
  - Infections e.g. hepatitis B.
  - Renal osteodystrophy.
- The main concern is the bleeding tendency. Careful hemostasis should be ensured if surgery is necessary.
- Local anesthesia is safe unless there is severe bleeding tendency.
- Prophylactic antibiotics are to be prescribed due to immunosuppression.
- Dental treatment is best carried out on the day after dialysis.
- Tetracycline should be avoided in chronic renal failure.
- Aspirin and NSAIDs should be avoided as they affect renal function.
- Codeine and dyhydrocodeine are favored as analgesics and diazepam may be used.
- Retarded teeth eruption can be demonstrated in children with renal failure.

- Dry mouth and decreased salivary flow result in calculus accumulation.
- Alter the dosage of drugs eliminated by kidney i.e. penicillin.

Bronchial Asthma

- Bronchial asthma is a generalized airway obstruction which in the early stages is paroxysmal and reversible.
- The obstruction, leading to wheezing, is due to bronchial muscle contraction, mucosa swelling and increased mucus production.
- Exposure to allergens and/or stress can induce an attack. It is now accepted fact that inflammation is an important etiological factor in asthma and this has resulted in the use of anti-inflammatory medication in the management of the condition.
- Infrequent attacks of asthma can be managed by salbutamol (ventolin) inhalers or can be used prophylactically if an attack is predicted. e.g. before exercise or prior to a stressful event such as dental treatment.
- If the attacks are more frequent, the salbutamol should be used regularly.
- If this is insufficient, inhaled steroids (or cromoglycate in the young) should be used.
- In severe cases systemic steroids may be prescribed.

Dental Management for Patients with Bronchial Asthma

- Avoid anxiety which may precipitate an asthmatic attack.
- Patients are advised to bring their regular medication with them.
- Elective dental care should be deferred in severe asthmatics until they are in a better phase.
- Patient should not be treated during sickness e.g. flu-like symptoms.
- Allergy to penicillin may be more frequent.
- Epinephrine, erythromycin, clindamycin and azithromycin are contraindicated for patients on theophylline.
- Avoid the use of LA containing vasoconstrictor because some asthmatic patients may react to sulphites present as preservatives in it.
- Aspirin and NSAIDs should be avoided as they are considered asthma precipitating drugs.
- Patients on steroid inhalers are prone to oral and pharyngeal thrush and those on ipratroium bromide may have dry mouth.
- Avoid antihistamines such as promethazine and diphenhydramine

because of their drying effect that can exacerbate the formation of tenacious mucus in acute attack.

Liver Disorders

- Liver disorders are important to the dentist due to a potential bleeding tendency, intolerance to drugs (e.g. general anesthetics, benzodiazepines) and the possibility of underlying infective causes for the liver dysfunction.
- Signs of liver disease include jaundice, spider naevi, leuconychia, finger clubbing, palmar erythema, dupuytren's contracture, sialosis and gynaecomastia.
- Patients with parenchymal liver disease have impaired hemostasis and can present serious bleeding problems.
- Disorders associated with an early rise in serum levels of conjugated bilirubin can cause dental hypoplasia and greenish discoloration of the teeth.
- LA is safe given in normal doses, but prilocain or articain are preferred to lidocain.
- Severe bleeding can occur after dental extractions in patients with chronic liver disease and hence the clotting status must be tested. The commonest liver function test (LFT) involves the measurement of aspartate transaminase (AST) and alanine transaminase (ALT). ALT may also be raised in cardiac or skeletal muscle damage and is therefore not specific for liver disease.
- The use of any drug in a patient with severe liver disease should be discussed with the patient's physician. Hepatic impairment will lead to failure of metabolism of many drugs that can result in toxicity. In some cases dose reduction is required; other drugs should be avoided completely. The anti-fungal drug miconazole is contra-indicated if there is hepatic impairment and fluconazole requires dose reduction. Erythromycin, metronidazole and tetracyclines should be avoided.
- Antimicrobials such as pencillins, cephalexin and cefazolin can be safely given in normal doses.
- Acetaminophen can be used for analgesia in lower than normal doses.
- Aspirin and NSAIDs should be avoided because of the risk of gastric hemorrhage.

Hepatitis B

- The main problems are: highly infective disease, bleeding tendency and drug sensitivity.
- Pure saliva does not contain HBsAg, but serum via gingival exudates does.
- Blood, plasma or serum can be infectious as little as 0.0000001 ml of HBsAg.
- Dentist should treat the patient within the current regulations for cross infection control.
- Patients with active acute hepatitis B should have dental treatment after complete recovery only, which take about three months after symptomatic recovery.
- Needle stick injury can transmit the virus. An injection of hepatitis B immuno- globulin (HBIG) within 24h of contact may protect from developing hepatitis.
- **Patients who are hepatitis carriers.** If a patient is found to be a hepatitis B carrier, recommendations from the Center for Disease Control for avoiding transmission of infection should be closely followed. In addition, some hepatitis carriers may have chronic active hepatitis, leading to compromised liver function and interfering with hemostasis and drug metabolism. Physician consultation or laboratory screening for liver function is advised.
- **Patients with signs or symptoms of hepatitis.** Any patient having signs or symptoms suggesting hepatitis should be referred to a physician, and should not be treated. If emergency care becomes necessary, it should be provided as for the patient with acute disease.

Oral complications associated with hepatitis:

The only oral complication associated with hepatitis is the potential for abnormal bleeding in cases of significant liver damage.

If surgery is required, it is advisable to:

- Check the prothrombin time. If it is greater than 35, an injection of vitamin K will usually correct the problem. This should be discussed with the patient's physician.
- Monitor the bleeding time to check platelet function. If it is not less than 20 minutes, the patient may require platelet replacement before surgery. This should also be discussed with the patient's physician.

Guideline on Prevention of Infective Endocarditis in Pediatric Dental Patients at Risk[24]

(Table 20)

Cardiac conditions associated with the highest risk of adverse outcome from endocarditis for which prophylaxis with dental procedures is recommended

1. Prosthetic cardiac valve.
2. Previous infective endocarditis.
3. Congenital heart disease (CHD)*
   - Unrepaired cyanotic CHD, including palliative shunts and conduits
   - Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure.
   - Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialization)**
4. Cardiac transplantation recipients who develop cardiac valvulopathy.

*Except for the conditions listed above, antibiotic prophylaxis is no longer recommended for any other form of CHD.

** Prophylaxis is recommended because endothelialization of prosthetic material occurs within six months after the procedure.

(Table 21)

Dental Procedures for which Endocarditis Prophylaxis is Recommended

All dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa.

The following procedures and events do not need prophylaxis:

- Routine anesthetic injections through non-infected tissue.
- Taking dental radiographs.
- Placement of removable prosthodontic or orthodontic appliances.
- Adjustment of orthodontic appliances, placement of orthodontic brackets.
- Shedding of primary teeth.
- Bleeding from trauma to the lips or oral mucosa.

Antibiotics Prophylaxis Regimens for a Dental Procedure (Table 22)

Situation	Agent	Regimen : Single Dose 30 – 60 Minutes Before Procedure	
		Adults	Children*
Oral	Amoxicillin	2 grams	50 mg/kg
Unable to take oral medication	Ampicillin or Cefazolin or Ceftriaxone	2g; IM or IV 1g: IM or IV	50 mg/kg IM or IV 50mg/kg IM or IV
Allergic to penicillins or ampicillin **Oral**	Cephalexin*# or Clindamycin or Azithromycin or Clarithromycin	2g 600 mg 500 mg	50 mg/kg 20 mg/kg 15 mg/kg
Allergic to penicillins or ampicillin and unable to take oral medication	Cefazolin or Ceftriaxone# or Clindamycin	1g IM or IV 600 mg IM or IV	50 mg/kg IM or IV 20mg/kg IM or IV

IM : Intramuscular

IV : Intravenous

* Or other first or second generation oral cephalosporin in equivalent adult or pediatric dosage.

\# Cephalosporins should not be used in person with a history of anaphylaxis, angioedema or urticaria with penicillins or ampicillin.

Operational Guide for School Oral Health Program

Emergency Medicine

Medical Emergencies in The Dental Office [55]

Emergency Kit

The dental clinic should be adequately equipped not only to deliver routine dental care for patients but also should be set up for appropriate management and stabilization of any potential office emergency. This requires that each clinic should be equipped with a minimum of a blood pressure cuff and stethoscope. The clinic should also have the followings available:

1. First-aid kit.
2. Oral airway with a bag system (ambu- bag).
3. High vacuum suction.
4. Disposable syringes (2, 5, and 10 ml) needles (19 and 21 gauge) and a tourniquet, butterfly needles and IV canulae.
5. Alcohol wipes.
6. Oxygen tank (Size E with low flow regulator).
7. Glucometer.

8. Drugs*:

a. Adrenaline: 1:1000 solution.
b. Hydrocortisone: 100 mg and water for injection.
c. Benzodiazepine: 4 mg ampoules or midazolam 10 mg ampoules.
d. Glucose as dextrose 20 % or 50 % solution and oral glucose solution.
e. Chlorpheniramine: 20 mg injection.
f. Flumazenil 100μgm, 5 ml ampoule.
g. Glucagon 1 mg injection.
h. Glyceryl trinitrate spray.
i. Salbutamol inhaler.
j. Atropine 3 mg injection.

*Only authorized dentists with a valid license of training on advanced basic life support are able to use these medications

(Table 23)

Medical condition	Causes		Signs & Symptoms	Management
Diabetes	**Hypoglycemia**	Insufficient carbohydrate intake relative to normal or excessive insulin intake. Excessive exercise.	Warm skin, rapid full pulse, dilated pupils, rapid onset of coma.	1- Give glucose orally if conscious. 2- If unconscious give either 50 ml 50 % dextrose IV or glucagone 1 mg IM, then oral glucose when patient arouses
	Hyperglycemia	Normal to excessive food intake with insufficient insulin. May be history of infection, non compliance with insulin.	Dry skin and mouth, weak rapid pulse, low blood pressure, acetone on breath, vomiting, hyperventilation	Put up an IV infusion of 8.4% bicarbonate.
Chest Pain	**Angina**	If severe may indicate angina or myocardial infarction. Both exhibit severe retrosternal pain (Heavy and crushing).	1 – Substernal pressure 2 – Sensation of heaviness 3 – Radiate to throat, jaw, or shoulder 4 – May last for 15 minutes 5 – Short breath 6 – Nausea 7 – Relieved by nitroglycerin	1-Stop the procedure. 2-Give glyceryl trinaitrate 500 μg tablets sublingually or 400 μg spray. 3-Isosorbide 5 mg sublingually.
	Myocardial infarction		1 – Retrosternal pain. 2 - Radiate to throat, jaw, or shoulder. 3 – Lasts longer than 15 minutes. 4 – Not relieved by nitroglycerin. 5 – Sweating. 6 – Nausea. 7 – Vomiting. 8 – Cyanosis.	1-Stop the procedure. 2-Call for help. 3-Give oxygen. 4-Give diamorphene 5 mg IM or IV. 5-Give 12.5 mg prochlorperazine IM as antiemetic. 6-Lay the patient flat only if he is hypotensive

(Table 24)

Medical condition	Causes	Signs & Symptoms	Management
Cardiac Arrest	Myocardial infarction, hypoxia, anesthesia overdose.	1- It is recognized by sudden loss of consciousness and absence of arterial pulses. 2- Pallor. 3- Cyanosis.	1- Call for help. 2- Clear and maintain airway. 3- Institute cardiopulmonary resuscitation. 4- Give IV infusion of 8.4 % sodium bicarbonate.
Anaphylactic Shock	Penicillins are the commonest offender, the reaction start few minutes after paranteral injection.	Loss of consciousness, facial flushing, itching, numbness, wheezing, facial swellings, cold clammy skin with a thin pulse, and falling blood pressure.	1- Place patient supine with legs raised. 2- Call for help. 3- 0.5 ml of 1:1000 adrenaline IM. 4- Up to 500 mg of hydrocortisone IV. 5- Up to 20 mg of chlorphenaramine slowly IV. 6- Oxygen by mask.
Corticosteroid Insufficiency	Stress or trauma in patients on steroids.	It is recognized by : 1- Collapse. 2- Weakness. 3- Nausea. 4- Hypotension that does not respond to laying the patient flat.	1- Lay the patient flat with legs raised. 2- Call for help. 3- Give 200 mg Hydrocortisone IV. 4- Give glucose if there is hypoglycemia. 5- Put up an IV infusion of the normal saline or glucose – saline.
Epilepsy	1- Some drugs. 2- Starvation. 3- Menstruation 4- Not taking anticonvulsants. 5- Fever (children between 3 months and 5 years). 6- Local anesthetic toxicity.	1- Loss of consciousness. 2- Widespread jerking. 3- Incontinence.	1- Stop the procedure. 2- Clear the airway. 3- Protect the patient from hurting himself. 4- Most fits resolve within 5 minutes, failing this treat as status epilepticus as follow:- 1- Control seizures with 10mg diazemuls IV for adults and rectal diazepam for young children. 2- Maintain hydration. 3- Treat hyperthermia as required.

(Table 25)

Medical condition	Causes	Signs and Symptoms	Management
Respiratory Obstruction	1- Mechanical obstructions. 2- Pressure on airway. 3- Bronchospasm.	1- Audible wheezes and coughing. 2- Increased respiratory effort. 3- Rapid pulse. 4- Cyanosis. 5- Inability to speak. 6- Respiratory arrest.	If the patient cannot cough the object out : 1- Young children should be held upside down. 2- Do not slap the patients back. 3- The Heimlich maneuver may clear the airway. 4- Failing this, the object must be removed by the endoscope.
Asthmatic Attack	Precipitating factors: 1- Respiratory infection. 2- Seasonal change. 3- Allergies. 4- Exercise. 5- Pollutants. 6- Anxiety.	1- Tachypnea. 2- Shortness of breath. 3- Pressure on chest. 4- Wheezing. 5- Prolonged expiratory phase. 6- Rapid pulse. 7- Cyanosis.	1- Keep the patient upright. 2- Patients normal bronchodilator (sulbutamol, Ibratraupuem- bromide). 3- Call for help. 4- Oxygen. 5- Hydrocortizone 200 mg IV. 6- Sulbutamol 2.5 mg or terbutaline 5 mg / nebulizer. 7- Aminophylline 250 mg given slowly IV over 15 minutes.
Hyperventilation	1- Psychogenic etiology. 2- Low arterial carbon dioxide levels.	1- Rapid breathing. 2- Paresthesias. 3- Acute anxiety. 4- Light headedness.	1- Stop treatment. 2- Breathing into a bag or cupped hands. 3- Place chair in upright position.
Collapse	1- Syncope 2- Myocardial Infarction. 3- Cardiac arrest. 4- Hypoglycemia. 5- Stroke. 6- Corticosteroide Insufficiency. 7- Epilepsy. 8- Anaphylaxis. 9- Drug reaction.	1- Pallor. 2- Flushed feeling. 3- Sweating. 4- Nausea. 5- Vomiting. 6- Weakness 7- Light headedness. 8- Dimming vision. 9- Bradycardia.	1- Lay the patient flat with legs slightly elevated. 2- Loosen clothing in presence of witness. 3- Inhale ammonia. 4- Call for help. 5- If he does not immediately recover, check the pulse, if slow this may be vasovagal attack, which might respond to atropine. If the pulse is absent this represents cardiac arrest.

(Table 26)

Medical condition	Causes	Signs & Symptoms	Management
Local anesthetic over dose	Iatrogenic	1- Tachycardia 2- Anxiety 3- Tremors 4- Palpitations 5- Seizures	1- Stop further anesthetic administration. 2- Call for help. 3- Give 100% oxygen and maintain airway.
Orthostatic hypotension	Low blood pressure that occurs in change in position.	1- Dizziness 2- Light headedness 3- Dimming lights 4- Pallor 5- Palpitations 6- Diaphoresis* 7- Loss of consciousness	1- Place patient in supine position. 2- Maintain airway. 3- Give oxygen. 4- Call for help if patient does not regain consciousness within seconds.

*__Diaphoresis__: The process of sweating, especially excessive sweating.

Cardio Pulmonary Resuscitation (CPR) Guidelines*
American Basic Life Support
(Table 27)

	Adult (>8 years)	**Child (1-8) years**	**Infant (<1 year)**
Airway	Head – tilt – chin lift	Head – tilt – chin lift	Head – tilt – chin lift
Breath	Initial : 2 breaths @2 sec / breath, then 10 -12 breaths / min	Initial : 2 breaths @ 1-1.5 sec / breath, then 20 breaths / min	Initial : 2 breaths @ 1-1.5 sec / breath, then 20 breaths / min
Obstructed airway	Heimlich maneuver	Heimlich maneuver	Back blows / chest thrusts
Pulse	Carotid	Carotid	Brachial / femoral
Compression / Ventilation ratio	30:2**	5:1	5:1
Compression Landmark	Lower half of sternum	Lower half of sternum	One finger's width below intermammary line
Method of Compression	Heel of hand with other hand on top	Heel of one hand	2 or 3 fingers; or thumbs with hands encircling infant
Compression Depth	1.5" to 2" inch	1" to 1.5" inch	0.5" to 1" inch
Compression Rate	Approx 100/min	Approx 100/min	At least 100/min

* *Hazinski MF, ed, Handbook of emergency cardiovascular care for healthcare providers. The American heart association, 2002.*
** *Changes for the compression/ventilation ratio according to the current recommendations. American Heart Association Journal (Circulation) at http://circ.ahajournals.org/cgi/reprint/circulationaha.106.183095*

Operational Guide for School Oral Health Program

Appendices

Pediatric Vital Signs*

Age	Normal Heart Rate (Per Minute)	Normal Blood Pressure		Normal Respiratory Rate (Per Minute)
		Systolic (mm Hg)	Diastolic (mm Hg)	
Infant, 6 months	100 -160	87 – 105	53 – 66	24 – 40
Toddler, 2 years	80 – 110	95 – 105	53 – 66	22 – 34
School age, 7 years	65 – 110	97 – 112	57 – 71	18 – 30
Adolescent, 15 years	60 - 90	112 – 128	66 – 80	12 – 16

* *Cummins RO, et al, Advanced cardiac life support, Dallas, TX: American heart association,1997.*

Appendix: B

Average Dates of Calcification and Eruption of Primary and Permanent Dentition

Primary Dentition

Tooth	First Evidence of Calcification	Crown Completed	Tooth Erupts	Root Completed
A B	3 Months I.U (Intra uterine)	1 Year later	6 Months	1 1/2 Years later
D	4 Months I.U (Intra uterine)		12 Months	
C	5 Months I.U (Intra uterine)		18 Months	
E	6 Months I.U (Intra uterine)		24 Months	

Permanent Dentition

Tooth	First Evidence of Calcification	Crown Completed	Tooth Erupts	Root Completed
1 2 3	2 – 3 Months	4 Years later	Incisors: 6 – 9 Years Canines & Premolars 9 – 12 Years	3 Years later
4 5	2 – 3 Years			
6	At Birth		6 Years	
7	3 Years		12 Years	
8	9 Years		18 Years	

Appendix: C

Classification of Children's Cooperative Behavior*

The child's behavior should be noted at each appointment. Doing so will provide the dentist how the child behaved in the past & might give a future expectation of his behavior.

The scale used in school oral health program is the Frankl Classification .The scale divides observed behavior into four categories, ranging from definitely positive to definitely negative.

Frankl Behavioral Rating Scale

This scale will allow observing, coding & recording the child's behavior.

F1 – (Definitely negative): Refusal of treatment, crying forcefully, fearful or any other overt evidence of extreme negativism. (=)

F2 – (Relatively negative): Reluctant to accept treatment, uncooperative, some evidence of negative attitude such as sullen or withdrawn but not pronounced. (-)

F3 – (Relatively positive): Acceptance of treatment; at times cautious; willingness to comply, at times with reservation but patient follows the dentist's directions cooperatively. (+)

F4 – (Definitely positive): Good rapport with the dentist, interested in procedures, enjoys situation. (++)

These codes should be entered in the patient's records at every appointment, as the child's behavior may change during each visit. So that is necessary to use codes to illustrate the dynamics of changes.

**MacDonald RE, Avery DR. Dentistry for the Child and Adolescent,7th Edition, 2000.38-39*

Appendix: D

Root Resorption*			
Diagnosis	**Description**	**Treatment**	**Prognosis**
Internal Root Resorption			
Nonperforating	• A defect that occurs within the canal causing obliteration of the dentin. • Cause is unknown.	RCT	Good
Perforating	• A defect that occurs within the canal causing obliteration of dentin and the cementum or enamel. • Communication occurs with periodontium.	RCT and possibly surgery	Poor to guarded
External Root Resorption			
Surface Root Resorption	• Starts on the root surface. • Obliteration of cementum and sometimes dentin. • Cannot be detected on routine radiographs.	RCT with placement of calcium hydroxide (usually self-limiting)	Poor to guarded
Inflammatory Root Resorption	• Starts on the root surface. • Tremendously fast process. • Broad destruction of cementum. • Can be caused by bacteria, trauma to the periodontium or necrotic pulp tissue.	Immediate RCT	Prognosis depends on when the condition is recognized and how soon treatment is implemented
Replacement Root Resorption	• Starts on the root surface. • Chronic process. • Extensive destruction of cementum and dentin can occur; replaced by bone. • Ankylosis will occur.	Possible RCT	Prognosis usually good

**Lehman RA. Handbook of Clinical Dentistry. Lexi- Comps Dental Reference Library, 2005 Page 52.*

Appendix: E

Management of Postoperative Complications*		
Complications	**Description**	**Treatment**
Bleeding	It is normal for the socket to ooze for several hours after the procedure and to have red tinge in sputum for 24 hours after extraction.	Have patient bite on damp gauze and instruct them to replace the gauze every 15-20 minutes until the bleeding stops. Suturing may assist in pressure and maintaining blood clot.
Pain	Patient can expect to experience mild discomfort following a routine extraction. In more complex surgical extraction, moderate to severe pain is expected.	Often Panadol or Ibuprofen is adequate. See prescription medications for listing of commonly used analgesics.
Ecchymosis	Warn patients that this is a possibility and that they should not be alarmed.	The presence of ecchymosis does not increase pain or risk of infection.
Edema	For most simple extractions, little to no swelling will occur. For more complex surgical cases, swelling can be expected to reach its maximum in 48-72 hours.	On day of the surgery, apply ice on and off at 20-minute intervals to prevent swelling. On third day after surgery apply heat to reduce swelling.
Trismus	Make sure to inform the patient of this possibility, as it may be alarming if it arises unexpectedly.	May also be due to inflammation of the muscles of mastication, or inadvertent penetration of the medial pterygoid muscle during an inferior alveolar nerve block. Most often resolves without treatment.
Alveolar Osteitis (Dry Socket)	Patients experience moderate to severe pain with no other signs of infection beginning 3-4 days after extraction. Exam reveals an empty socket, with no blood clot, and the bone exposed. Patient may also experience a bad taste in mouth.	Gently irrigate the socket. Insert a medicated dressing into the socket containing eugenol (obtunds the pain). If a portion of the blood clot remains in the socket, it should not be removed. The dressing should be changed every 1-2 days for the next 3-6 days. The socket should be irrigated at each changing.

**Lehman RA. Handbook of Clinical Dentistry. Lexi- Comps Dental Reference Library, 2005 Page 92.*

Appendix: F

Color Coding of Local Anesthetic Cartridges*

Newly mandated uniform system for local anesthesia cartridges bearing the ADA Seal of Acceptance

Color Code Format		
Product	**Color**	
Lidocaine 2% with Epinephrine 1:100,000	Red	Red 185
Lidocaine 2% with Epinephrine 1:50,000	Green	Green 347
Lidocaine Plain	Light Blue	L. Blue 279
Mepivacaine 2% with Levonordefrin 1:20,000	Brown	Brown 471
Mepivacaine 3%	Plain Tan	Tan 466
Prilocaine 4% with Epinephrine 1:200,000	Yellow	Yellow 108
Prilocaine 4%	Plain Black	Black
Bupivacaine 0.5% with Epinephrine1:200,000	Blue	Blue 300
Articaine 4% with Epinephrine 1:100,00	Gold	Gold 871

- Recommended color coding system for local anesthetic cartridges from the council on Scientific Affairs of the American Dental Association.
- Dental cartridges are suggested to have Color band, specific for each local anesthetic/ vasoconstrictor, with the name in large black letters. This labeling conforms to FDA labeling guidelines.

**From color coding for local anesthesia, ADA News. 34[8]:28, April 21, 2003.*

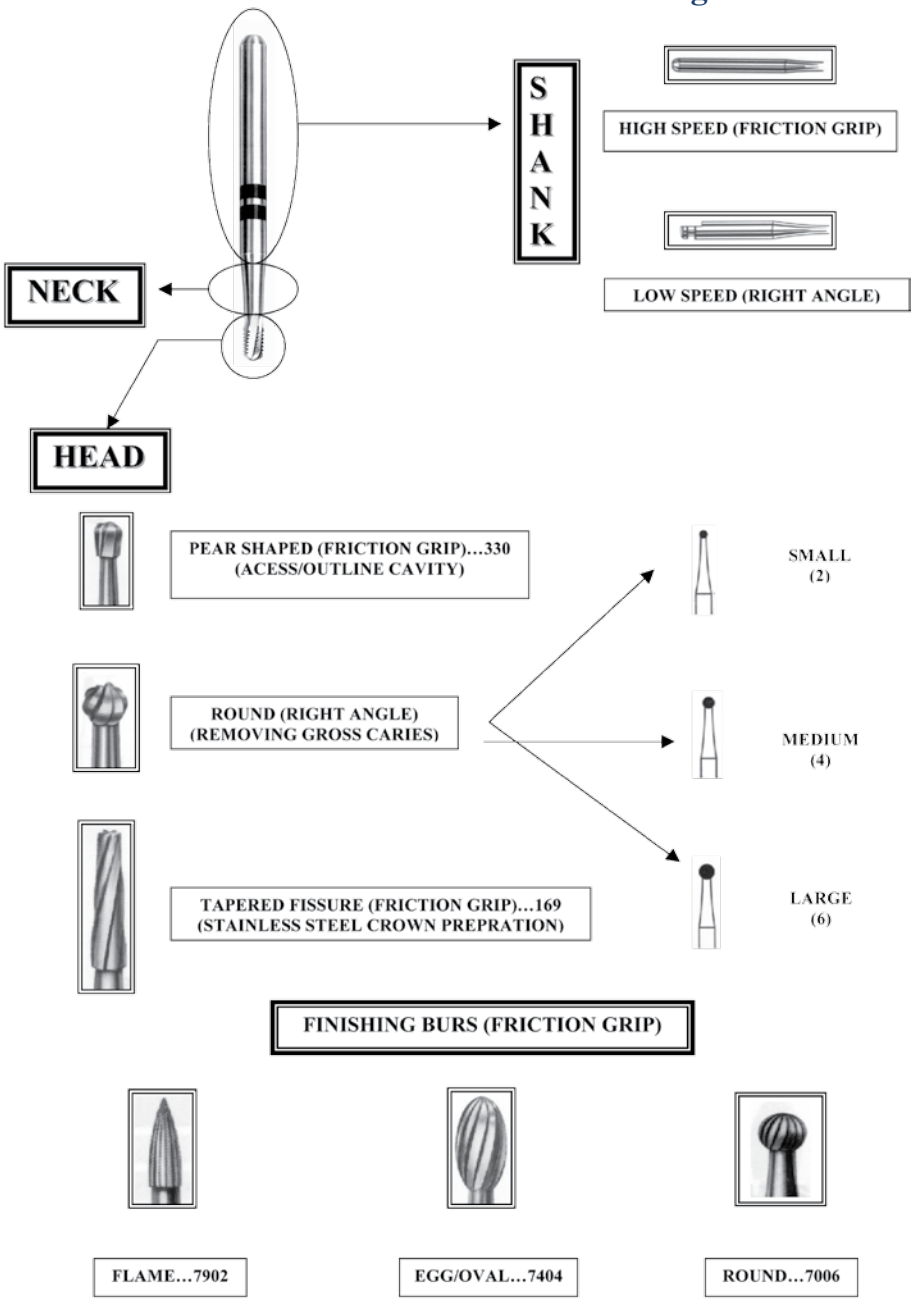
Appendix: G

Standard Bur Shapes & Sizes*								
Head Size	Round	Inverted Cone	Pear	Straight fissure	Tapered fissure	Wheel	Oval	Flame
0.5mm	1/4							
0.6mm	1/2	33 ½		55 ½		11½		
0.7mm			329					
0.8mm	1	34	330 (L) or 245	56		12		
0.9mm					169(L)			
1.0mm	2	35		57				242
1.2mm	3	36		58	171(271)	14		243
1.4mm	4	37		59				244
1.6mm	5	38		60	172(272)	16		245
1.9mm	6	39		61				246
2.1mm	7	40	230	62			218	
2.3mm	8							
2.5mm	9		231				219	
2.8mm	10							
3.0mm	11		232				220	
Add #500 for crosscut burs – Add #900 for end cutting burs								

** American Dental Association," Council on dental research adopts standards for shapes and dimensions of excavating burs and diamond instruments" J Am Assoc, 1963.67.943.*

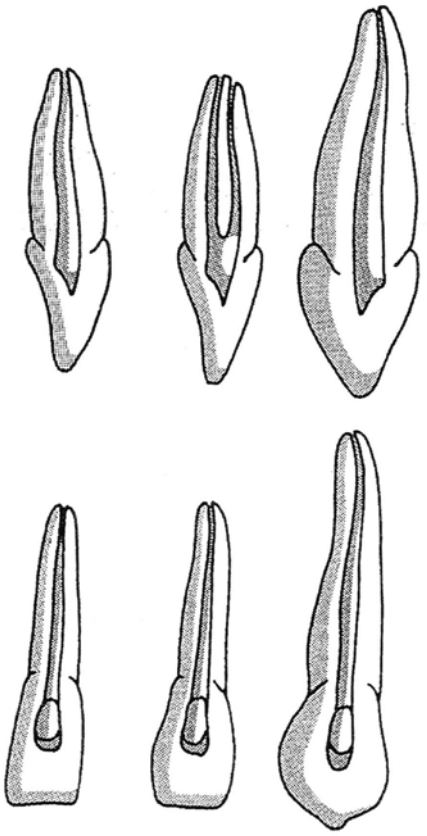
Appendix: H

Burs Used in School Oral Health Program



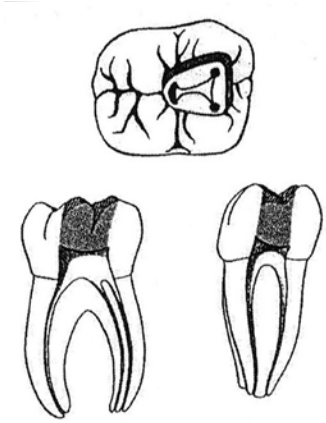
Appendix: I

Access Openings of Permanent Teeth

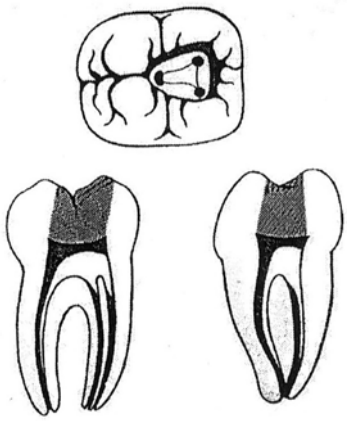


A B C

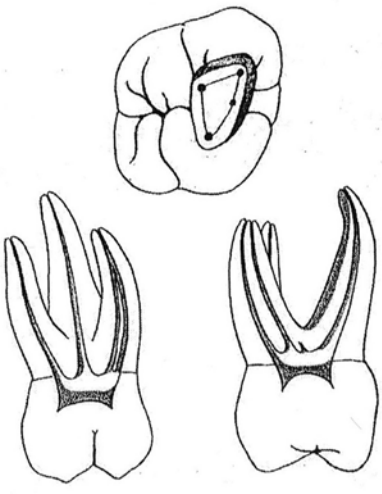
Maxillary anterior teeth, proximal and lingual views.
A, Central incisor. B, Lateral incisor, C, Canine



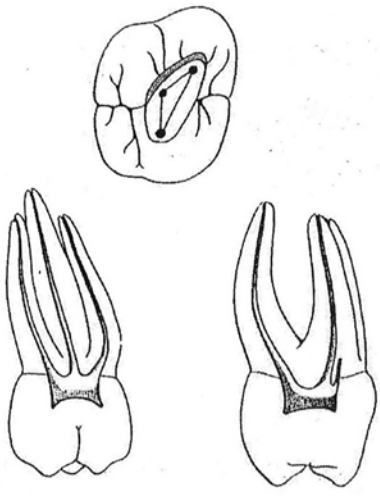
Mandibular first molar



Mandibular second molar

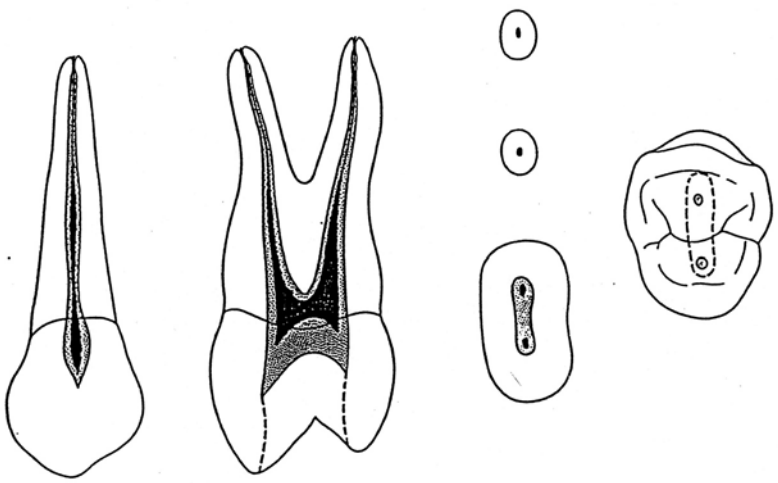


Maxillary first molar

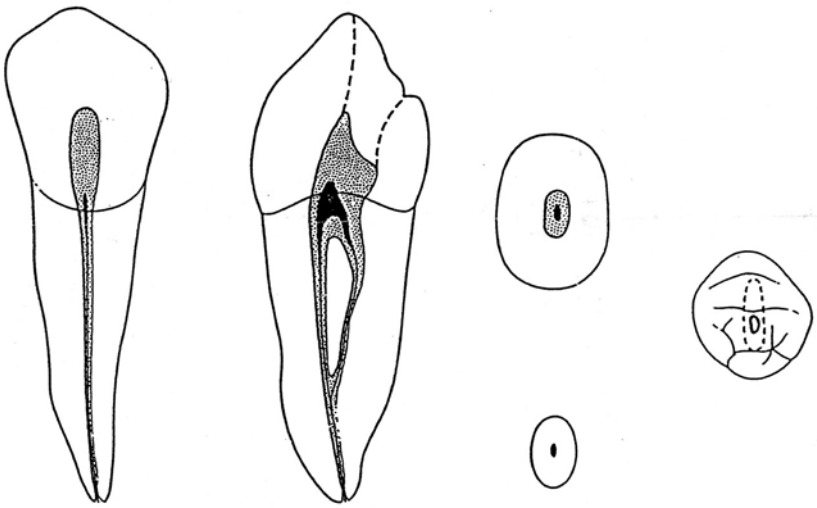


Maxillary second molar

Endodontic morphology and access cavities

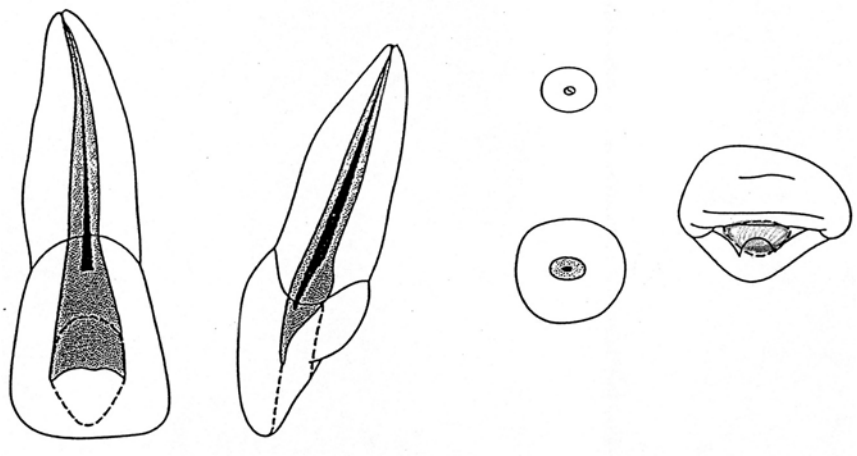


Maxillary first premolar with two roots

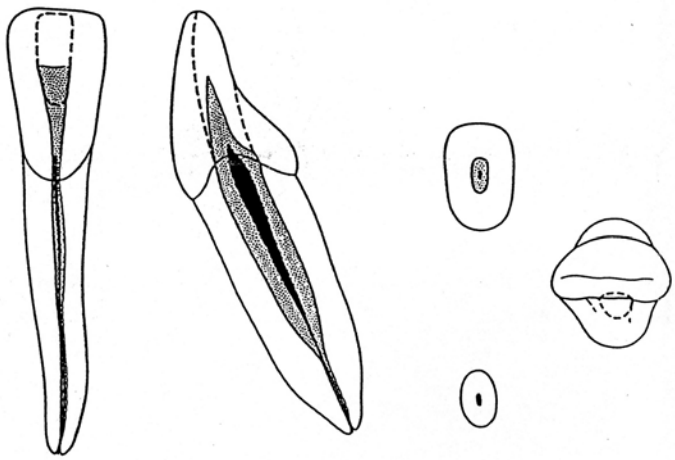


Mandibular first premolar

Endodontic morphology and access cavities



Maxillary central incisor with a Type I configuration



Mandibular central incisor with a Type I canal configuration

Appendix: J

Normal Ranges for Hematological Measurements in Males and Females*

Parameter	Normal Range(Males)	Normal Range(Females)
Red Cell Count	4.5-6.5x10^{12}/L	3.9-5.6x10^{12}/L
White Cell Count	4.0-11.0x10^{9}/L	4.0-11.0x10^{9}/L
Platelets	150.0-400.0x10^{9}/L	150.0-400.0x10^{9}/L
Reticulocytes	25-100x109/L	25-100x109/L
Erythrocyte Sedimentation Rate	Upper limit=age in years ÷ 2	Upper limit=(age in years+10) ÷2
Hematocrit	0.4-0.54	0.37-0.47
Hemoglobin	13.5-18.0g/dL	11.5-16.0g/dL
Mean Cell Volume	76-96 fl	76-96 fl
Mean Cell Hemoglobin	27-32 pg	27-32 pg
Mean Cell Hemoglobin Concentration	30-36g/dL	30-36g/dL
Red Cell Folate	0.36-1.44 μmol/L	0.36-1.44 μmol/L
Vitamin B_{12}	0.13-0.68 nmol/L	0.13-0.68 nmol/L
Prothrombin Time	10-14 seconds	10-14 seconds
Activated Partial Throboplastin Time	35-45 seconds	35-45 seconds

**Meechan JG, Greenwood M. General medicine and surgery for dental practitioners, part 9: Hematology and patients with bleeding problems. BDJ, 2003; 195(6), September. 305-310.*

Appendix: K

Risk Categories for Patients with Diabetes Mellitus*

Patients at low risk: Metabolic control. No history of ketoacidosis or hyperglycemia. Fasting glucose level less than 200mg/dl (11.1mmol/L). HbA1c less than 7%.
Patients at moderate risk: Reasonable metabolic control. No recent history of ketoacidosis or hyperglycemia. Fasting glucose level less than 250mg/dl (13.8mmol/L). HbA1c 7-9 %.
Patients at high risk: Poor metabolic control Frequent ketoacidosis and hyperglycemia. Fasting glucose level greater than 250mg/ dl Hb A1c greater than 9 %.

**Sonic ST, Fazio RC, Fang L. Principles and practice of oral medicine, 2nd edition, 1995. W.B.Saunders. Page 134*

Operational Guide for School Oral Health Program

Forms Used in The Program

مراقبة صحة الفم والأسنان

National Oral Health Program

Dentists Monthly Productivity

وزارة الصحة
إدارة طب الأسنان

Dentist:---------- **Month:**---------- **Clinic:**--------

NO	Procedure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1	Charting & Oral Examination																																
2	Oral Prophylaxis																																
3	Fluoride Application																																
4	Scaling																																
5	Fissure Sealant																																
6	P.R.R																																
7	Liner																																
8	Composite/Glass Ionomer Filling																																
9	Pulpotomy Permanent																																
10	Pulpectomy Permanent																																
11	Apexogenisis																																
12	Pulpotomy / Pulpectomy Primary																																
13	Direct Pulp Capping																																
14	Indirect Pulp Capping																																
15	Stainless Steel Crown Pimary																																
16	Stainless Steel Crown Permanent																																
17	Temporary Filling																																
18	Extraction Permanent																																
19	Extraction Primary																																
20	Treatment Completed (TC)																																
21	Prevention Completed (PC)																																
22	Emergency Treatment																																
23	Medication																																
24	Reseal																																
25	Refill																																
26	Recall Examination																																
27	Permanent (TC)																																
28	No Treatment Required																																
29	Patient Visit (KW)																																
30	Patient Visit (NK)																																
31	Patient Visit (Total)																																

مراقبة صحة الفم والأسنان

National Oral Health Program

Dentists Monthly Productivity for Root Canal Clinic

وزارة الصحة
إدارة طب الأسنان

Dentist:..... **Month:**..... **Clinic:**.....

NO	Procedure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1	Examination																																
2	Emergency Treatment																																
3	Periapical X-Ray No (2)																																
4	Medication																																
5	Pulpotomy /Permanent																																
6	Pulpectomy/ Permanent																																
7	Irrigation																																
8	Cleaning & Shaping																																
9	Apexogenisis																																
10	Apexification																																
11	Root Canal Filling																																
12	Case Completed																																
13	Retreatment Filling																																
14	Temporary Filling																																
15	MTA																																
16	Broken Appointment																																
17	Followup Visit																																
18	Patient Visit (KW)																																
19	Patient Visit (NK)																																
20	Patient Visit (Total)																																

National Oral Health Program
National Oral Health Program

Dentists Monthly Productivity for Space Maintainer Clinic

Dentist:---------- Month:---------- Clinic:----------

NO	Procedure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1	Examination																																
2	Impression																																
3	Ortho Band Application																																
4	Biteplate or Biteplane																																
5	Elastic Separator																																
6	Appliance Activation																																
7	Sp. M. Band&Loop																																
8	Sp. M. Crown&Loop																																
9	Sp.M. Lingual Arch																																
10	Sp.M. Partial Denture																																
11	Nance Appliance																																
12	Space Regainer																																
13	Trainer																																
14	Upper Expander																																
15	Upper Expander 3D																																
16	Sagittal Appliance																																
17	Retainer																																
18	Night or Mouth Guard																																
19	Lower Expander																																
20	Headgear																																
21	Habit Breaker																																
22	Cross Bite Appliance																																
23	Emergency Treatment																																
24	Medication																																
25	Referral																																
26	Removal of Sp.M.																																
27	Re-Cementation of Sp.M.																																
28	X-Ray																																
29	Patient Visit (KW)																																
30	Patient Visit (NK)																																
31	Patient Visit (Total)																																

National Oral Health Program

Hygienists's Monthly Productivity

Hygienist:..... Month:---------- Clinic:----------

NO	Procedure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1	Group Brushing																																
2	Individual Brushing																																
3	Scaling																																
4	Oral Prophylaxis																																
5	Flouride Application																																
6	Fissure Sealant																																
7	Reseal																																
8	Prevention Completed (PC)																																
9	Broken Appointment																																
10	OHI & Tooth Brushing																																
11	No. of Lectures																																
12	No. of Students																																
13	Patient Visit (KW)																																
14	Patient Visit (NK)																																
15	Patient Visit (Total)																																

مراقبة صحة الفم والأسنان

البرنامج الوطني لصحة الفم والأسنان

البرنامج المدرسية لصحة الفم والأسنان

Ministry of Health - Dental Administration - School Oral Health Program

وزارة الصحة
ادارة طب الأسنان

Pt. Name: _____ Civil ID No: | | | | | | | | | | | | |

School: _____ Code: _____

Grade: _____ Division _____ Sex: Male: ☐ Female: ☐

Medical Alert: (By Red Pencil)

Date	BH	Tooth	Treatment Plan	Name of Dentist

Date	BH	Tooth	Procedure	Name of Dentist

Date: _____

d	m	f	t	D	M	F	T	d	m	f	s	D	M	F	S

TC ☐ Date: _____

PC ☐ Date: _____

Examination

Extra Oral Examination: _____ Intra Oral Exam: _____

Oral Hygiene: Good ☐ Fair ☐ Poor ☐

Need for Orthodontic Consultation: Yes ☐ No ☐

BEHAVIOUR: (Very Cooperative) F4 ☐ F3 ☐ F2 ☐ F1 ☐ (Very Un Cooperative)

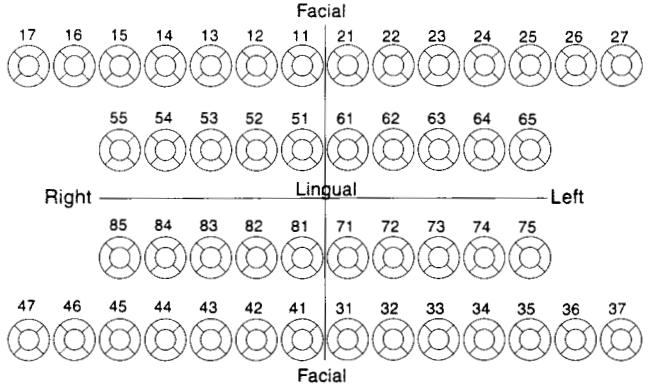
Dental Chart

RED PENCIL: Decayed
(T = Temporary fill)
BLUE PENCIL: Restored
A= amalgam C = resin
G = glass Ionomer
S = Stainless steel crown
BLACK PENCIL : Sealant
●: Present and sound
X: Extracted
–: Missing - exfoliated/ not erupted

#: Trauma

Ab: abscess

• **Early lesion (green Pencil)**



Date: / / Demtist's Name: Code: Stamp:

BH - Behaviour **TC - Treatment Completed** **PC - Prevention Completed**

Preventive Consent Form

مراقبة صحة الفم والأسنان
البرنامج الوطني لصحة الفم والأسنان
MINISTRY OF HEALTH - DENTAL ADMINISTRATION - SCHOOL ORAL HEALTH PROGRAM

اسم الطالب / الطالبة : ..... المدرسة : .....

الصـــف : ..... الفصل : .....

الرقم المدني للطـالب :

السيد ولي أمر الطالب / الطالبة المحترم

تحية طيبة وبعد ،،،

تقوم مراقبة صحة الفم والأسنان بإدارة طب الأسنان بتقديم خدمات وقائية لأسنان طلاب/طالبات المدارس الحكومية، طوال فترة تواجدهم في مراحل (رياض الأطفال ومن الأول وحتى الصف التاسع)، والخدمات المقدمة هي كالتالي.

- فحص الأسنان / تنظيف الأسنان / الحشوات الوقائية للأسنان الدائمة : وهي طبقة رقيقة جداً تضاف على السطح الطاحن للضرس تساعد في منع حدوث التسوس

كذلك

- تطبيق مادة الفلورايد المقاومة لتسوس الأسنان مرتين خلال العام الدراسي وهي :
  - طلاء الفلورايد علماً بأنه سيلاحظ تلون مؤقت للأسنان خلال اليوم الأول للتطبيق فقط

في حالة الموافقة على جميع الخدمات السابقة ودون استثناء أي مما ذكر ... يرجى وضع علامة على الخانة المناسبة .

☐ مـوافـق

☐ غير موافق

توقيع ولي الأمر .....

هل لدى إبنتكم / إبنكم أي نوع من الحساسية؟ ☐ نعم، من ماذا ..... ☐ لا

اسم ولي الأمر ..... صلـة القرابة .....

رقم هاتف المنزل ..... رقم الهاتف النقال .....

توقيع ولي الأمر ..... التـــاريخ .....

يرجى تعبئة النموذج .. والحرص على تسليمه لعيادة الأسنان أو الإدارة المدرسية

- الموافقة سارية المفعول لجميع المراحل الدراسية وعند الرغبة في إيقاف الخدمة يرجى مراجعة أحد مراكز البرامج المدرسية أو إبلاغ العيادة المدرسية كتابياً.

لمعرفة المزيد عن الصحة الفموية تفضل بزيارة الموقع الخاص بالبرامج المدرسية www.smilekw.com

مراكز البرامج المدرسية : مركز حولي : (200) 25722135/4/6 / مركز العاصمة : (200) 22519238 / مركز الجهراء : (120) 24570223/4/5/6

مـركـــــز الأحـمـــــدي : (158) 23916277 / مركز مبارك الكبير : 25428472 / مركز الفروانية : (222) 24808501/2/3

مراقبة صحة الفم والأسنان

Treatment Consent Form/School

مراقبة صحة الفم والأسنان
البرنامج الوطني لصحة الفم والأسنان
MINISTRY OF HEALTH - DENTAL ADMINISTRATION - SCHOOL ORAL HEALTH PROGRAM

اسم الطالب / الطالبة : ..... المدرسة : .....

الصـــف : ..... الفصل : .....

الرقم المدني للطـالب :

السيد ولي أمر الطالب / الطالبة المحترم

تحية طيبة وبعد ،،،

تقوم مراقبة صحة الفم والأسنان بإدارة طب الأسنان بتقديم خدمـات التوعية والوقاية والعلاج لطلبة المدارس الحكومية، إبتداء من الصف الأول وحتى الصف التاسع.

علماً بأن الخدمات المقدمة على النحو التالي :

خدمات التوعية والتثقيف الصحي .

الخدمات الوقائية : تفريش الأسنان - تطبيق الحشوات الوقائية - تطبيق مادة الفلورايد (فارنيش).

الخدمات العلاجية : علاج تسوس الأسنان - الحشوات التجميلية - علاج العصب الجزئي والكامل - التلبيس المعدني - قلع الأسنان عند الضرورة.

في حالة الموافقة على جميع الخدمات السابقة ودون إستثناء أي مما ذكر ... يرجي وضع علامة على الخانة المناسبة ومتابعة البيانات.

☐ موافق ☐ غير موافق (مع ذكر السبب)

إختر الحالات التي يعاني منها الطالب إن وجدت، وفي حالة خلوه من أي مرض إذكر ذلك كتابة وبخط واضح :

القلب - الدم - الكلي - المعدة - الجراحات - السمع - النظر - الحساسية - حالات أخرى

اسم ولي الأمر ..... صلـة القرابة .....

رقم هاتف المنزل ..... رقم الهاتف النقال .....

توقيع ولي الأمر ..... التـــاريخ .....

ملاحظات واقتراحات :

.....

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مـركـــــز الأحـمـــــــدي : 23913617 / مركز مبارك الكبير : 25428472 / مركز الفروانية : 24894237

TC مراقبة صحة الفم والأسنان

Treatment Consent Form/Centre

مراقبة صحة الفم والأسنان
البرنامج الوطني لصحة الفم والأسنان
MINISTRY OF HEALTH - DENTAL ADMINISTRATION - SCHOOL ORAL HEALTH PROGRAM

اسم الطالب / الطالبة : ..... المدرسة : .....

الصـــف : ..... الفصل : .....

الرقم المدني للطـــالب :

السيد ولي أمر الطالب / الطالبة المحترم

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الخدمات العلاجية : علاج تسوس الأسنان - الحشوات التجميلية - علاج العصب الجزئي والكامل - التلبيس المعدني - قلع الأسنان عند الضرورة.

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القلب - الدم - الكلي - المعدة - الجراحات - السمع - النظر - الحساسية - حالات أخرى

اسم ولي الأمر ..... صلـــة القرابة .....

رقم هاتف المنزل ..... رقم الهاتف النقال .....

توقيع ولي الأمر ..... التـــاريخ .....

ملاحظات واقتراحات :

يرجى تعبئة النموذج .. والحرص على تسليمه لعيادة الأسنان أو الإدارة المدرسية

- الموافقة سارية المفعول لجميع المراحل الدراسية وعند الرغبة في إيقاف الخدمة يرجى مراجعة أحد مراكز البرامج المدرسية أو إبلاغ العيادة المدرسية كتابياً.

لمعرفة المزيد عن الصحة الفموية تفضل بزيارة الموقع الخاص بالبرامج المدرسية www.smilekw.com

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مـــركـــــــز الأحـــمـــــــــدي : 23913617 / مركز مبارك الكبير : 25428472 / مـركز الفـروانية : 24894237

TS

مراقبة صحة الفم والأسنان

مراقبة صحة الفم والأسنان

School Oral Health Program, Kuwait-Forsyth (Primary Schools)

Prevention Chart for Mobile Teams

وزارة الصحة
إدارة طب الأسنان

School Name and Code: **Student Name:** **Civil ID:** **Program:**

1st Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:

Operator:
Date:
Comments:.....

2nd Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date:
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:

Operator:
Date:
Comments:.....

3rd Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:

Operator:
Date:
Comments:.....

4th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:

Operator:
Date:
Comments:.....

5th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:

Operator:
Date:
Comments:.....

مراقبة صحة الفم والأسنان

School Oral Health Program, Kuwait-Forsyth (Intermediate Schools)

Prevention Chart for Mobile Teams

وزارة الصحة
إدارة طب الأسنان

School Name and Code: **Student Name:** **Civil ID:** **Program:**

6th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:
Operator:
Date:
Comments:……

7th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date:
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:
Operator:
Date:
Comments:……

8th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:
Operator:
Date:
Comments:……

9th Grade

Fluoride 1st Application(Date):
Fluoride 2nd Application(Date):
(Give reason if not applied)

Pit and Fissure Sealants (Round off Appropriate codes)

Tooth #	Codes
17	X 1 2 3 4 5 6 7 8
16	X 1 2 3 4 5 6 7 8
15	X 1 2 3 4 5 6 7 8
14	X 1 2 3 4 5 6 7 8
24	X 1 2 3 4 5 6 7 8
25	X 1 2 3 4 5 6 7 8
26	X 1 2 3 4 5 6 7 8
27	X 1 2 3 4 5 6 7 8
37	X 1 2 3 4 5 6 7 8
36	X 1 2 3 4 5 6 7 8
35	X 1 2 3 4 5 6 7 8
34	X 1 2 3 4 5 6 7 8
44	X 1 2 3 4 5 6 7 8
45	X 1 2 3 4 5 6 7 8
46	X 1 2 3 4 5 6 7 8
47	X 1 2 3 4 5 6 7 8

Codes and stats:
X-Un-erupted:

1-Partially erupted:

2-Sealed Before and Sound:

3-Sound and sealed now:

4-Early lesion and sealed now:

5-Resealed now:

6-Sound but not sealed(Reason):

7- Decayed and referred:

8- Others:
Operator:
Date:
Comments:……

Operational Guide for School Oral Health Program

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Dental Administration
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