

ORAL HEALTH IN COMPREHENSIVE CLEFT CARE

Educational resources for non-oral health professionals



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This educational resource was produced as part of a partnership between FDI World Dental Federation and Smile Train, with support from GlaxoSmithKline Consumer Healthcare (GSK CH). No editorial control, apart from ensuring compliance with legal and regulatory considerations/requirements, has been exercised by GSK CH. Funding for the development of this educational resource was provided by GSK CH.



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Oral Health in Comprehensive Cleft Care

Introduction

Clefts of the lip and palate (clefts) are the most common birth defects of the face and mouth. Clefts occur when parts of the lip or palate, or both, or the nose do not fuse together during embryonic development. The condition can be associated with missing or extra teeth and with malformed teeth and facial structures. Children who undergo cleft surgery are often at increased risk of caries, periodontal disease and other oral health and wellbeing issues as they grow and develop. These children require regular dental care to ensure adequate monitoring, education, support and treatment to prevent oral diseases and achieve the highest possible quality of life.

Purpose and goal

The purpose of this three-day course is to improve the oral health and long-term wellbeing of children who undergo cleft surgery. It is designed to ensure all members of the cleft care team are aware of the importance of oral health and can take an active role in preventing oral diseases.

The course material is designed around specific learning outcomes and is presented in a variety of ways: PowerPoint presentations, practical demonstrations, group discussions and scenario-based activities.

The goal is that on completion, the whole team will be confident, competent clinicians who are able to apply their knowledge to prevent and diagnose oral diseases and know when to refer patients onwards.

Another key goal of the workshop is that participating oral health professionals (OHP) acquire the skills to disseminate their learning to colleagues in their hospital or clinic. At the start of the course, the importance of passing on newly acquired learning and skills is highlighted.

As a trainer, you are critical to this workshop. Your role in raising awareness of the team's capacity to improve oral healthcare is a key element of the training. A combination of poor standards of training, low professional status and poor working conditions mean that, in the past, members of the team lacked essential skills and under-estimated their ability to improve patient outcomes.

You have the opportunity to educate, inspire and empower.

Approach to learning

The training is organized into a specific sequence to facilitate optimal learning, allowing trainees to develop confidence in their skills through interactive learning. Tables throughout this manual indicate the timeframe for each session, with specific learning objectives, activities, strategies and recommended materials.

Through the practical application of learning, participants will improve their skills and understanding so that the whole team can deliver a higher standard of care. Respect for individual trainees is central to the course and sharing of experiences is encouraged throughout.

The strong focus on practical learning is mediated through the interaction between trainer and trainees. Unlike traditional lectures, the workshop will employ a variety of training methods; in addition to PowerPoint presentations, there will be practical demonstrations, group discussions, opportunities for participants to practice hands-on skills and scenario-based activities.

During the training, it is important to review and recap learning to help trainees recognize and retain

the information. This can be done in several ways:

- Ask participants to share a new insight.
- Give them a brief verbal quiz of concepts that have been covered.
- Provide opportunities for delegates to participate in discussions with peers, trainers and experts in the field, to facilitate understanding and implementation.
- Provide opportunities for the trainees to use new skills/learning in practical scenario sessions, e.g. asking: “How would you do this at your own hospital?”

Learning outcomes

At the end of this course, participants will:

- Be aware of the importance of oral health.
- Know how to prevent and identify oral diseases.
- Know when to refer onwards.
- Be prepared to disseminate what they have learned in their workplace.

Participant numbers

A maximum of 25 participants per training is recommended. This number allows for hands-on, practical experience and the involvement of all delegates.

Due to the nature of the course, it is beneficial for a representative of each member of the team to be present, e.g. general practitioner, paediatrician, nurse, social worker, otolaryngologist, speech and language therapist and audiologist.

Selection of a training venue

The venue needs to cater for 25 participants. It should have desks or tables and chairs for participants to learn in a classroom environment. A projector is required every day and consistent power is essential. Ideally, the training venue should include accommodation and dining facilities to ensure maximum attendance and prompt start times.

Trainer key qualities

They should be: organized, prepared, punctual, professional, approachable, patient, interactive, humble, good communicators, engaging, sensitive, enthusiastic, kind, caring and good listeners.

Ideally, the trainer should have experience in oral healthcare for patients with cleft.

This course has been successfully delivered with translators supporting the training; ideally, however, trainers should be able to teach participants directly in their first language.

To be a successful Oral Health in Comprehensive Cleft Care workshop trainer, you should be:

- Knowledgeable: please review all the materials prior to the course, so you have a grasp of the individual sections and the flow of the entire 3-day course.
- Committed: please ensure that the schedule and the materials, which have been tested to ensure they are fully effective, are followed as closely as possible.
- Patient: use listening skills to make sure your trainees are retaining information.
- Accepting: everyone will have different backgrounds and different levels of experience, but please remember that they all are committed oral health professionals caring for children with cleft.
- A trainer of trainers: as a role model, do your best to help trainees understand what it takes to be a good trainer.

Course preparation

The trainer should be well prepared ahead of the start of the workshop and be very familiar with the slides in all the presentations. If any of the information is unclear, they should consult with an FDI World Dental Federation or Smile Train representative. We recommend they print out the presentations in a handout format - six slides per page. This can be used by the trainers to familiarise themselves with the content ahead of the workshop. Print-outs can also be used by the trainers during the presentation to identify which slide will come next.

As the workshop progresses, the trainers must continue to plan ahead to ensure the smooth running of the programme.

Even when trainers have prepared thoroughly, it is still possible that participants will ask questions which they cannot answer. If this situation occurs, trainers are expected to thank the participant for the question, acknowledge the limitations of their understanding and promise to try to find out the answer either during or after the training. FDI and Smile Train expect both participants and trainers to be life-long learners.

It is important to engage and socialise with participants outside of the sessions. By getting to know the delegates, trainers can help them feel relaxed and valued, which will help their learning and sense of empowerment.

Effective time management is essential. Trainers should aim to keep to schedule. If a session overruns, however, be flexible and speed up another session or shorten a lunch break in order to finish the day on time. Sometimes sessions over-run due to a high volume of questions. Whilst questions are encouraged, trainers also have to manage the programme.

Preparation for sessions

Before the training begins it is the responsibility of the trainers to prepare the training room venue. Make sure that all materials and resources which are needed for are available. Check that the projector is working, an extension cable is available and the laptop which will be used for presentations is compatible with the projector. Check that presentations will be visible on the screen for all participants and rearrange seating if necessary. Check if a presentation clicker is available.

Give a timetable to the venue/catering manager and ensure that they are aware of break and lunch times and the need for punctuality.

If possible, all these preparations should be done the day before the training. On the day of the training trainers should arrive by 7.30 am to make final checks, set up the laptop, open all presentations for Day 1 and be ready to welcome participants.

Welcome, introductions and expectations

Trainers should welcome the participants and introduce themselves. It is also recommended that each participant introduce themselves to the group and state where they work. Participants and trainers should write their names on labels which they will wear throughout the workshop.

During this session trainers should provide participants with their expectations for the training including: timeliness, mobile phones should be shut off, need for trainee participation, freedom to ask questions, respect and support for one another, listening to others, and sharing new skills/information with other oral health professionals upon returning to their partner hospitals.

Trainers should also explain that participants will be asked to perform practical activities in front of the group and emphasise that this is a safe environment in which to practice and learn from mistakes.

Trainers should provide each participant with an evaluation form, explain the importance of completing these forms and that they will be collected at the end of the final day of training.

The goal of this session is to set standards and expectations but also to create a relaxed learning environment for participants.

Pre-course test

A multiple choice, pre-course test should be provided to each participant to assess their knowledge at the start of the workshop. It is important to introduce the test, explain that there are 10 questions each with 5 answers (a-e). Participants must answer True or False for each a-e statement.

Trainers must emphasise that the purpose of the test is not to highlight areas of weakness or compare them to other participants, but to enable participants to see their progress during the training. The tests should be completed independently by each participant without consulting anyone else or any outside materials.

Pre- and post-course tests are included in the course materials packet provided to the trainer. The pre-course test should be marked by the trainer and returned to the participant around lunchtime on Day 1 of training.



DAY 1

TIMETABLE

Time
08.00
08.15 - 08.45
08.45 - 09.15
09.15 - 09.30
09.30 - 10.00
10.00 - 10.30
10.30 - 11.30
11.30 - 12.00
12.30 - 13.00
13.00 - 14.00
14.00 - 14.30
14.30 - 14.45
14.45 - 15.45
15.45 - 16.15

Session	Required Materials	Learner Activities
Registration	<ul style="list-style-type: none"> • Sign-in sheet • Name labels/badges 	
Welcome and introductions		
Pre-course test	<ul style="list-style-type: none"> • Multiple choice questionnaire 	<ul style="list-style-type: none"> • Complete questionnaire
Course outline and purpose		
Interprofessional collaboration and cleft care	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Brainstorming session • Small group discussion
Break		
Understanding Oral Anatomy	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint • Small Mirror 	<ul style="list-style-type: none"> • Identify normal anatomy • Small group discussion
Definition and causes of cleft	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Small group discussion
Prevention of cleft	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Brainstorming session • Small group discussion
Lunch		
Oral conditions associated with Cleft lip and palate	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Group discussion
Break		
Knowledge of dental decay (caries)	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Brainstorming session • Small group discussion
Closing day 1	<ul style="list-style-type: none"> • Recap quiz 	<ul style="list-style-type: none"> • Remind the participants to review the materials from today

DAY 1 - INTERPROFESSIONAL COLLABORATION AND CLEFT CARE

Topic	Interprofessional collaboration and cleft care		
Learning objectives	Understand the importance of interprofessional collaboration in the care of people with cleft		
Learning activity	Description	Time	Materials needed
	Brainstorming session <ul style="list-style-type: none"> Ask the participants how many different professions are involved in caring for people with cleft? Ask the participants why they think interprofessional collaboration is important in the oral health and cleft care community? Small group discussion <ul style="list-style-type: none"> Discuss how you could improve interprofessional collaboration at your clinic/hospital Discuss how you can assist families to overcome barriers to accessing care Review and recap 	30mins	Sticky notes Markers Flip chart PowerPoint

What is interprofessional collaboration?

Interprofessional collaboration is defined as two or more healthcare professions working together with patient involvement to ensure informed and empowered choices. Shared decision-making improves patient and professional relationships and also improves health outcomes.

The professions and healthcare providers involved in the care of people with cleft.

- Craniofacial surgeon: a plastic surgeon with specialized training in the diagnosis and treatment of conditions of the skull, facial bones and soft tissues who will work closely with other specialists to co-ordinate a surgical plan;
- Paediatrician; a physician specializing in the care of children who follows the child as he/she grows and helps co-ordinate the multiple specialists involved;
- Orthodontist: a dental specialist concerned with the development of the face, jaws and teeth and who evaluates the position and alignment of children's teeth and co-ordinates a treatment plan with the surgeon and other specialists;
- Paediatric dentist; a dental specialist who evaluates and cares for children's teeth;
- Dental hygienist: an oral health professional who is skilled in cleaning teeth and assists with the prevention of oral diseases;
- Speech and language specialist: a professional who performs a comprehensive speech evaluation to assess communicative abilities and closely supports and monitors children with cleft;
- Otolaryngologist: an ear, nose and throat specialist who treats the ear infections or hearing loss that may be side effects of a child's cleft condition;

- Audiologist: a hearing professional who will assist in the evaluation and management of hearing difficulties;
- Genetic counsellor: a professional who assists in the diagnosis of genetic conditions and counsels families around the prognosis regarding future pregnancies;
- Nurse team co-ordinator: a registered nurse who has experience in paediatric nursing and acts as liaison between the family and the cleft team.
- Social worker: a professional who provides guidance and counselling for a child and their family as well as assistance with community resources and referrals, i.e. support groups.

The importance of interprofessional collaboration between oral healthcare providers and the wider cleft care team

Babies born with cleft have significant needs from a wide range of healthcare specialties, and the care they receive depends on many factors, including distance from the clinic, cost of treatment and parental knowledge and beliefs. There may be an adverse effect on children's quality of life if they are not able to access the full gamut of services, especially speech therapy and oral healthcare.

It is essential, therefore, that all healthcare providers communicate effectively with the family, the child and caregivers and refer to other services to ensure the child is receiving adequate treatment and support.

Because oral healthcare is often unavailable to children with cleft, it is important that the whole cleft care team understand oral diseases and how to prevent them. The ability and confidence of all members of the cleft team to 'lift the lip' and check the health of the oral cavity is an important factor in maintaining the health and well-being of cleft patients.

Learning outcomes: Participants will understand the importance of interprofessional collaboration when treating patients with cleft conditions.



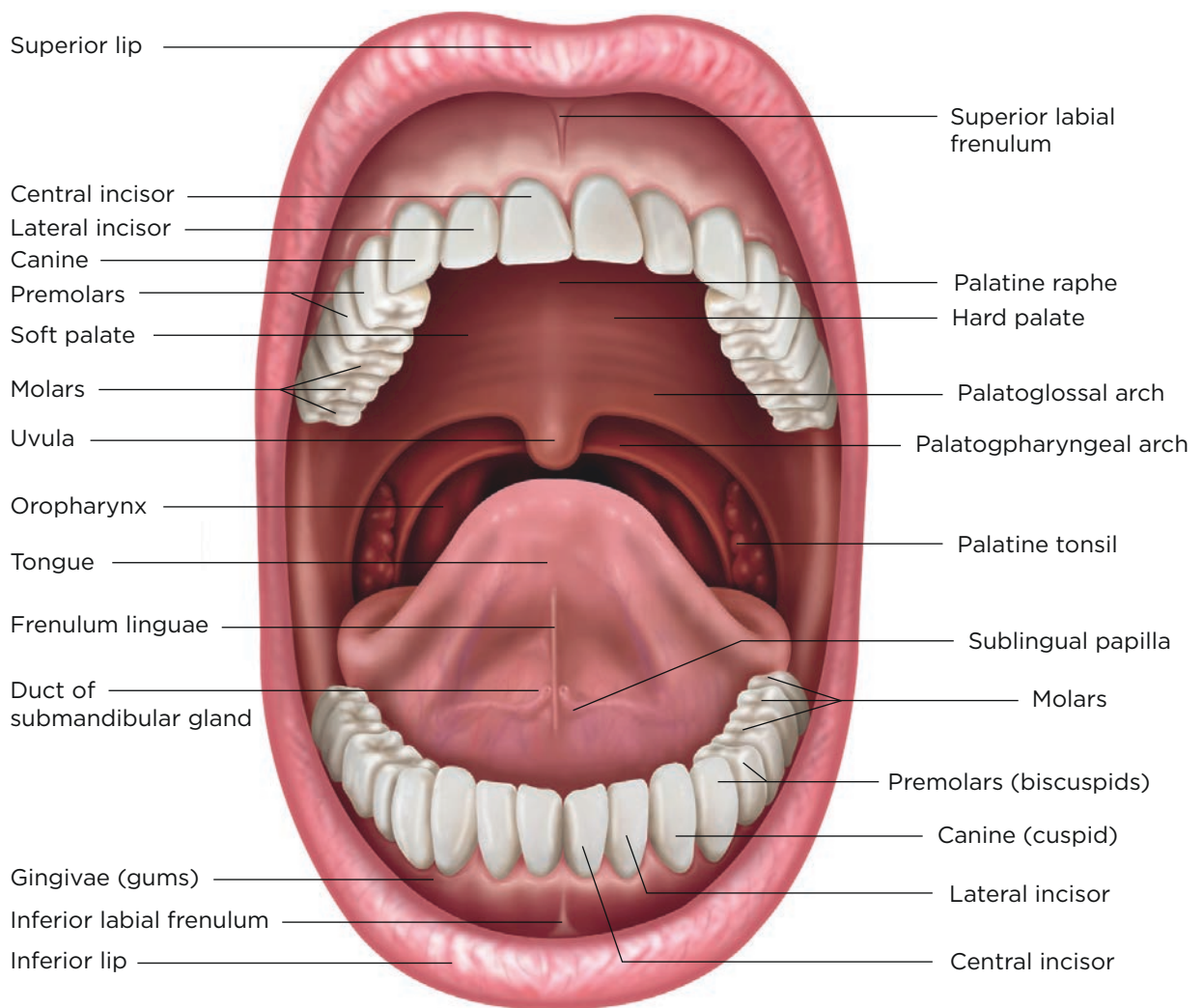
DAY 1 - UNDERSTANDING ORAL ANATOMY

Topic	Understanding oral anatomy		
Learning objectives	Understand and identify oral anatomy, gingival anatomy, the types of teeth, eruption dates and tooth anatomy		
Learning activity	Description	Time	Materials needed
	Brainstorming session <ul style="list-style-type: none"> Ask the participants to look in their mouths using a mirror and identify normal anatomy Ask the participants to label diagrams of the mouth and parts of the tooth Synthesize and summarize 	60mins	Sticky notes Markers Flip chart PowerPoint Small mirror

Oral tissues and structures

It is important to be able to recognize the major oral anatomy when carrying out a 'Lift the Lip' intraoral examination of the patient. The most commonly seen structures are:

- Lips: two flexible muscular folds that extend from the corners of the mouth, the upper to the base of the nasal columella and the lower to the mentolabial sulcus (fold above the chin).
- Frenum: raised folds of tissue that extend from the alveolar and the buccal and labial mucosa.
- Gingiva (gums): mucosal tissue surrounding portions of the maxillary and mandibular teeth and bone.
- Hard palate: anterior portion of the palate which is formed by the processes of the maxilla.
- Incisive papilla: tissue projection that covers the incisive foramen on the anterior of the hard palate, just behind the maxillary central incisors, which the greater palatine artery and vein and the nasopalatine nerve cross through.
- Mucosa: mucous membrane lines the oral cavity; the mucosa can be highly keratinized, as in the hard palate, or lightly keratinized, as in the floor of the mouth and the alveolar processes, or thinly keratinized, such as around the cheeks and inner surfaces of the lips.
- Palatine rugae: firm ridges of tissues on the hard palate.
- Parotid papilla: slight fold of tissue that covers the opening to the parotid gland on the buccal mucosa, adjacent to the maxillary first molars.
- Pillars of fauces: two arches of muscle tissue that define the fauces, seen bilaterally at the back of the mouth.
- Soft palate: posterior portion of the palate; this is non-bony and is comprised of muscle and mucosa.
- Sublingual folds: small folds of tissue in the floor of the mouth, that cover the openings to the smaller ducts of the sublingual salivary gland.
- Tonsils: lymphoid tissue located in the oral pharynx.
- Uvula: a non-bony, muscular projection that hangs from the midline at the posterior of the soft palate.



Most tissue in the mouth should be pink and smooth, apart from the tongue that naturally has tiny tastebuds all over it. Any lumps, bumps or ulcers, or unusual red or white patches that do not heal should be referred to the oral healthcare team for further investigation.

Anatomy of the tongue

Features of the tongue include:

- Circumvallate papillae: two V-shaped rows of larger, flat, cup-shaped papillae on the posterior dorsum of the tongue, each containing taste buds;
- Dorsal surface: the top surface of the tongue;
- Filiform papillae: fine, small, cone-shaped papillae covering most of the dorsum of the tongue, responsible for giving the tongue its texture and responsible for the sensation of touch;
- Foliate papillae: these papillae are large, red and leaf-like, located on the posterior, lateral surfaces of the tongue; they contain some taste buds;
- Fungiform papillae: deep red and distributed over the dorsum of the tongue. Each one of these mushroom-shaped papillae contains a taste bud;
- Ventral surface: the underside of the tongue;
- Wharton's duct: salivary duct opening on either side of the lingual frenum, on the ventral surface of the tongue.

Types of teeth, structure, location and functions

The oral cavity is essential for chewing, digestion, nutrition and speech and thus strongly linked to quality of life.

Teeth are arranged in two arches and further divided into quadrants, each with eight teeth in the permanent dentition, totaling 32 teeth. The top arch is called the maxillary arch and it is fixed to the bottom of the skull. The bottom arch, or lower jaw, is called the mandible and it is connected to the temporal bone by the temporomandibular joint(TMJ).

Tooth anatomy

Structurally, teeth are the same and comprise the crown, the part you can see above the gum, and roots, beneath the gum. Fibres known as periodontal ligaments connect the tooth to the alveolar bone.

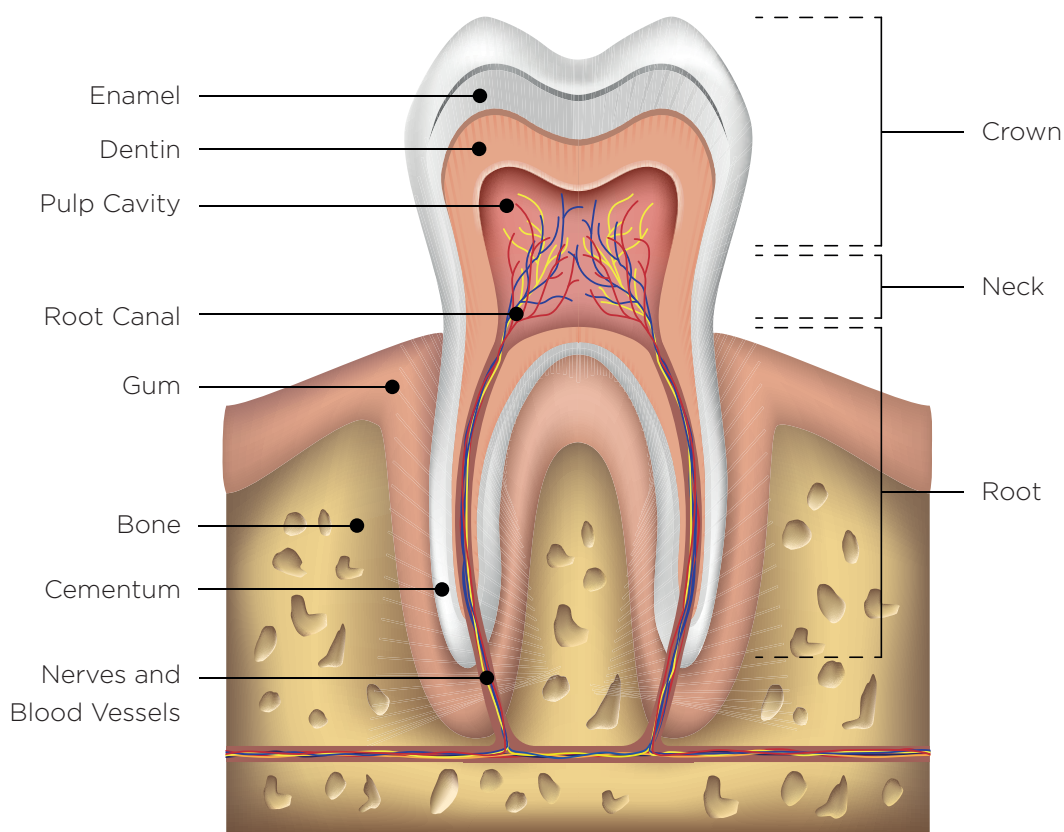
Each tooth has the same four parts: enamel, dentin, cementum and pulp.

Enamel covers the crown of the tooth and is the hardest substance in the body. Despite its strength, it is susceptible to acids produced by bacteria in the mouth and acid-containing food and drink.

The layer beneath the enamel is dentin. It is softer than enamel and is comprised of microscopic tubes known as dentinal tubules. If stimulated, they transmit pain. Because dentin is softer than enamel, when decay passes through the enamel, (the process of demineralization), and penetrates the dentin, it can spread very rapidly, leading to toothache.

The cementum is the substance that covers the root of the tooth, it is a similar hardness to the bone and formed in a thin layer. Periodontal ligaments are connect the cementum with the bone, holding the tooth in place. If this layer is exposed, it can become very sensitive.

The pulp is found in the centre of the tooth, and it is where all the nerves and blood vessels that supply the tooth are housed. If the pulp area becomes exposed to decay it can become painful, a bacterial infection can occur and may require root canal therapy or an extraction.



Types of teeth and their functions

There are 4 types of teeth in the oral cavity:

- Incisors: these are the front teeth and for cutting and biting food. There are eight incisors, two central and two lateral incisors in both the mandible and the maxilla.
- Canines or cuspids: the role of the four canines, one in each quadrant, is to tear food.
- Premolars: located behind the canines, there are eight premolars, two in each quadrant of the mouth and they are designed for chewing.
- Molars: there are usually 12 molars in the permanent dentition with three in each quadrant of the mouth. Third molars are often called wisdom teeth, and not everyone has them.

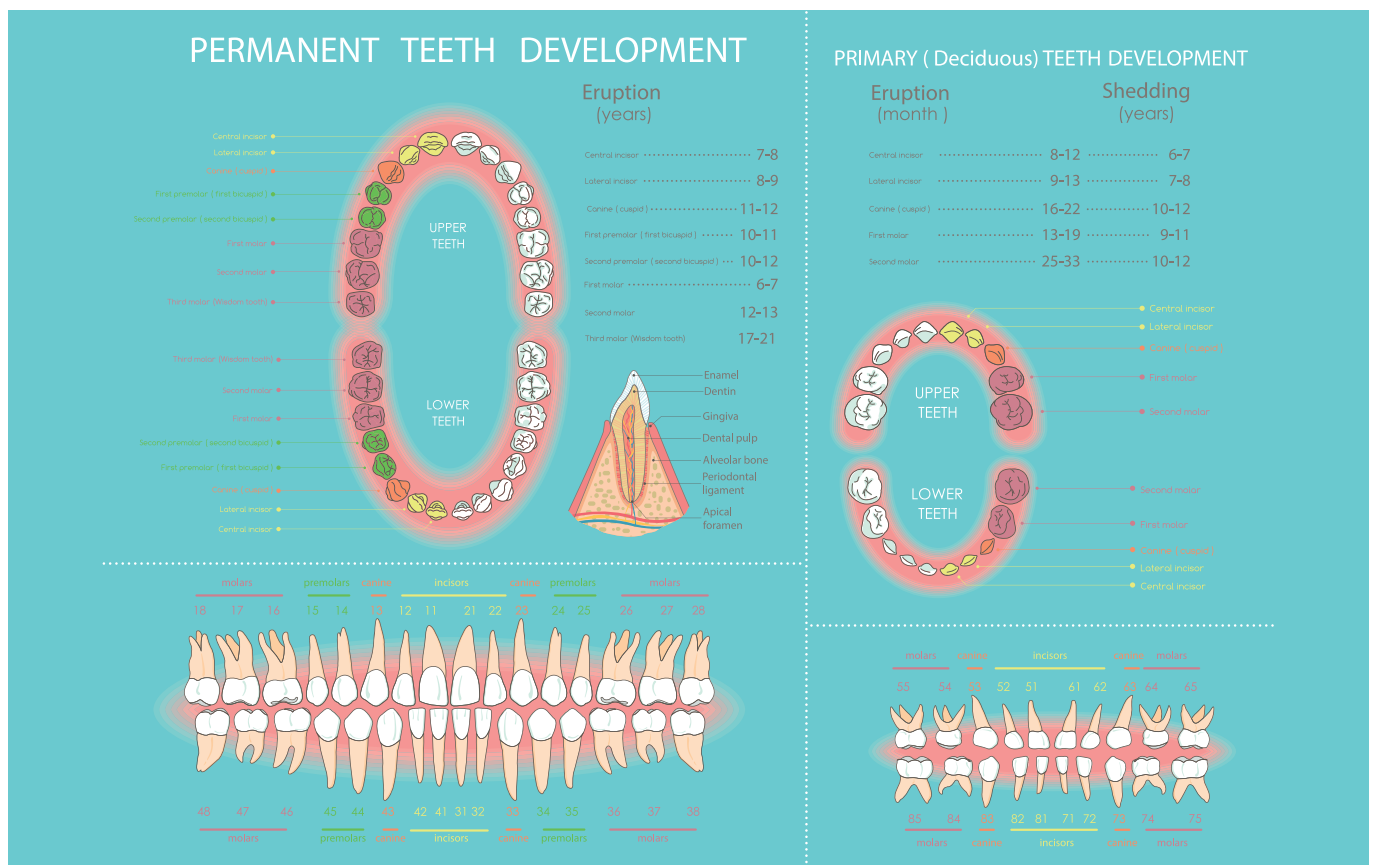
Primary Dentition

These are the first teeth to erupt into the oral cavity. Although temporary, primary teeth are important and need to be cared for as soon as they erupt through the gum tissue. Decay or early loss can lead to infection and affect the development of the permanent teeth. The primary dentition consists of 20 teeth. There are no premolars in the primary dentition.

Permanent Dentition

As the primary teeth are exfoliated, permanent teeth replace them. In each arch of the mouth, there are two central incisors, two lateral incisors, two canines, four premolars and six molars. These teeth need to be well cared for to last a lifetime.

Learning outcomes: Participants will be able to understand dental terminology and recognise common features of the oral cavity



DAY 1 - THE DEFINITION AND CAUSES OF OROFACIAL CLEFTS

Topic	Cleft overview		
Learning objectives	Understand the definition and causes of cleft.		
Learning activity	Description	Time	Materials needed
	Small group discussion <ul style="list-style-type: none">• Ask the participants if they understand how cleft conditions develop during embryonic development.• Ask the participants to name causes of cleft.• Review and recap.	30mins	Sticky notes Markers Flip chart PowerPoint

Definition of cleft

Clefts are the most common birth difference affecting the structure of the face and oral cavity. Cleft conditions occur when parts of the lip and/or palate and nose do not fuse together during embryonic development.

They can be divided into three general categories:

- (1) cleft palate alone;
- (2) unilateral or bilateral cleft lip, with or without cleft alveolus;
- (3) unilateral or bilateral cleft lip and cleft palate.

They are all referred to as orofacial clefts.

How do clefts develop?

By the time of the first ultrasound, in which the facial structures of the foetus can already be identified, clefting of the lip or palate will already have occurred. Development of the facial structures and form occurs early in a baby's gestation, between the fourth and eighth weeks.

During the fourth week of development, a series of six paired, right and left, swellings form near the cranial, or head, end of the foetus. These are called branchial arches. The branchial arches develop into important structures in the head and neck, as well as the major arteries in the chest. The first branchial arch develops structures called the maxillary and mandibular prominences, which ultimately form the skeleton, skin, muscles, and other structures of the upper and lower jaws, respectively the maxilla and the mandible. In the centre of the upper face, a structure called the frontonasal prominence, which is separate from the branchial arches, forms, among other things, the nostrils and the philtrum.

The medial maxillary prominences fuse with the frontonasal prominence during this time. Failure of this process results in a cleft lip.

The palate is also formed by the fusion of the frontonasal prominence and the maxillary prominences. Although the palate appears to be one complete structure, it consists of a primary palate, behind the front teeth, and a secondary palate, which includes the majority of the hard and soft palate. These are separated by a hole in the palatal bone called the incisive foramen. The two sides of the secondary palate begin to fuse during the eighth week of development. Failure of fusion results in a cleft palate.

Genetics of cleft lip and palate

Between 30%-50% of clefts are related to genetic factors. Cleft conditions can be categorized as syndromic or non-syndromic.

The cause of a syndromic cleft may be associated with gene mutation, chromosomal aberrations, teratogens or environmental factors. The majority of cleft conditions are non-syndromic, which means the cleft occurs alone with no other associated conditions. These clefts usually occur when there is a genetic susceptibility or environmental factors.

Non-syndromic cleft is more common in males, with a male-to-female ratio of about 2:1.

The genetic characteristics of non-syndromic cleft palate also conform to the multi-factorial threshold (MFT) model, but the incidence is lower, and the risk of recurrence is different. There are more than 600 syndromes with a cleft of the lip or palate as an associated feature, but not all of them are hereditary.

Epidemiology of cleft lip and palate

At a global level, cleft conditions affect approximately 1 in 700 live births.

The incidence varies widely depending on geographic origin, racial and ethnic group, environmental exposures, and socioeconomic status. Asian and Native American populations have reported prevalence rates as high as one in 500. European and US populations on average have a prevalence of approximately one in 1000, whereas African populations have a reported prevalence close to one in 2500.

Learning outcomes: Participants will be able understand the genetics and epidemiology of cleft.

DAY 1 - PREVENTION OF CLEFT

Topic	Cleft overview		
Learning objectives	Understand the prevention of cleft.		
Learning activity	Description	Time	Materials needed
	Brainstorming session <ul style="list-style-type: none">Ask the participants for their ideas on how to prevent cleft. Small group discussion <ul style="list-style-type: none">Ask the participants how they might speak to patients who are planning a family about the prevention of cleft.Review and recap.	30mins	Sticky notes Markers Flip chart PowerPoint

Prenatal examination and genetic counselling

For families with a history of orofacial cleft, prenatal examination and genetic counselling should be conducted. The diagnosis of cleft in prenatal routine ultrasound examination might help to prepare the family.

Maternal nutrition and cleft lip and palate

It is sound public health advice to recommend that prior to conception and in early pregnancy women should have a healthy and varied diet and vitamin supplements if required. Many studies have indicated an association between maternal use of multivitamin supplements in early pregnancy and decreased risk of orofacial clefts.

Folic acid supplement

Folic acid is a B vitamin that may have a protective effect against certain cleft conditions when taken prior to conception. It is already widely recommended for its role in protecting against neural birth defects such as spina bifida and anencephaly. A daily supplement taken by all women planning pregnancy is the recommendation of the US Public Health Service, endorsed by The American Academy of Pediatrics (AAP). A supplement of 400 micrograms of folic acid daily reduces the incidence of neural tube defects by up to 70%.

- There is uncertainty surrounding the role of other vitamins in prevention of cleft.

Medication during pregnancy

Certain medications have been shown to have an effect on foetal development; these can include:

- anti-cancer and anti-convulsant drugs;
- non-steroidal anti-inflammatory drugs and analgesics;
- antibiotics such as oxytetracycline, tetracycline and amoxicillin;
- steroids such as glucocorticoids or cortisone.

The risk of a child being born with a cleft can be almost three times higher if the mother takes medication during the first trimester. Great care should be taken if medication is necessary in the early stages of pregnancy and a doctor should be consulted.

Alcohol and tobacco

Smoking and drinking in early pregnancy increase the risk of cleft.

Passive smoking carries a similar risk, so partners and other close contacts of pregnant women should avoid or reduce smoking. Environmental contamination and pollution also contribute to risk.

Prevention of gestational diabetes mellitus and maternal obesity

Gestational diabetes mellitus may augment the risk of cleft lip and palate. Mothers should seek medical advice on their dietary habits.

- For patients with diabetes mellitus before pregnancy, glycaemia should be controlled and closely monitored by the medical team throughout the pregnancy.
- For pregnant women with gestational diabetes mellitus, blood pressure, blood glucose, liver and kidney functions and fetal health should be closely monitored.
- A number of studies have also implicated maternal obesity as a factor that elevates the risk of having a child with a cleft.

Stress control

- Physical and/or emotional stress may be implicated in the occurrence of oral clefts.
- Anxiety, depression and other negative psychological states during pregnancy might affect the occurrence of cleft lip and palate, by hormonal dysregulation.
- A positive attitude during pregnancy is important.

Learning outcomes: Participants will be able to make recommendations on the prevention of cleft.

DAY 1 - ORAL HEALTH CONDITIONS COMMONLY ASSOCIATED WITH CLEFT

Topic	Diseases associated with cleft		
Learning objectives	Understand diseases and conditions commonly associated with cleft, such as caries and malocclusion.		
Learning activity	Description	Time	Materials needed
	Brainstorming session <ul style="list-style-type: none">• Ask the participants what the common oral conditions associated with cleft are.• Write the participants' answers on a flip chart.• Expand on the answers.• Review and recap.	30mins	Sticky notes Markers Flip chart PowerPoint

Public health and orofacial cleft

Orofacial clefts are a major public health challenge. Children with clefts rarely escape dental complications. The surgical correction of their clefts, in addition to the medical concerns common among children with cleft, are the major focus of their care. As a result, they tend to have more decayed and missing teeth and poorer oral health compared to their peers.

These differences can be attributed to:

- dry mouth caused by mouth-breathing habits;
- less natural cleaning of the teeth due to the morphology;
- variable diet or feeding habits;
- dental anomalies;
- increased consumption of sweetened medications;
- delayed oral clearance time for foods.

All the above contribute to more carious bacteria being present in the oral cavity of cleft children. Parents and caregivers are often so concerned with other aspects of their child's health care, such

as surgery, nutrition, mental health, and speech development, that they pay little attention to basic preventive dental care. All these factors put the child at a greater risk of developing ECC.

As they develop, the higher prevalence of poor oral hygiene in children with cleft may be associated with:

- (a) the presence of residual scar tissue as a result of the multiple surgical procedures carried out at the cleft region, which in turn impairs tooth cleaning;
- (b) the lack of interest in oral hygiene due to many other health problems such as otitis media, difficulty in speech;
- (c) the anxiety that children often have when they brush their teeth in the cleft area.

Other barriers to oral health care in these children will include low literacy level of parents, behaviour induced by fear and anxiety, socio-economic status, competing priorities, poor knowledge of available medical and dental services, patient-dentist relationships and socio-cultural beliefs and myths.

All these factors highlight the importance of individualized preventive oral health programmes in cleft patients.

The importance of healthy primary teeth

Primary teeth are important to children because they:

- Allow children to chew and eat properly.
- Help your child to speak more clearly.
- Maintain space for the eruption of adult teeth.
- Guide adult teeth into place.
- Help to shape the infant's face.
- Prevent early childhood caries.
- Keep future dental costs to a minimum.
- Offset the need for orthodontic treatment later.
- Reduce the risk of caries in permanent teeth.

Dental checks are important because infants with cleft conditions become accustomed to trusted caregivers touching the inside of their mouth.

Early childhood caries

Early childhood caries (ECC) is defined as the presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth. Severe ECC is characterized by a distinctive pattern of tooth decay in infants and young children, often beginning on the maxillary anterior teeth and rapidly progressing to the other primary teeth as they erupt. ECC can begin to develop as soon as teeth erupt into the mouth at 6-10 months of age, which is why an early oral health assessment and fluoride varnish treatments are so important.

The role of the oral health professional is essential to managing ECC and all oral diseases throughout the patient's life. Prevention, early detection and management are key.



EARLY CHILDHOOD CARIES

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Malocclusion

A malocclusion describes how teeth meet together and literally means poor bite. In an ideal occlusion, teeth meet comfortably together, with the upper front teeth forward from the lower teeth. Malocclusions fall into three categories covering a range of different orthodontic problems.

Malocclusion and oral hygiene

Patients with cleft find it challenging to maintain good oral hygiene due to malocclusion. Awareness of infant oral care measures, in particular, is lacking among the population, e.g. how to clean baby teeth, when to start cleaning baby teeth, what oral hygiene aids to use and choice of toothpaste and toothbrush.

Malocclusion in the primary dentition and mixed dentition phase

Due to the impact of cleft lip and palate repair surgery, the maxillary bone development of patients is often insufficient. Under normal circumstances, the malocclusion of patients in the deciduous period is

not serious. With the growth and development of the teeth, they gradually show obvious malocclusion. All patients with complete cleft lip and palate have malocclusion of the permanent dentition. Research shows that after cleft lip and palate repair, the prevalence of malocclusion is 97%.

Among the malocclusions associated with cleft lip, the most common are cross-bite and crowding of the upper teeth. In patients with both cleft lip and palate, the teeth near the fissure often appear deformed and missing, and further away from the fissure there may be missing or supernumerary teeth. Maxillary midline deviation is common in patients with unilateral cleft lip and palate.

Common malocclusions include:

- anterior cross-bite;
- posterior cross-bite;
- maxillary anterior hypodontia or supernumerary teeth;
- upper front teeth misaligned or rotated;
- abnormal molar relationship.

Abnormality of tooth eruption and tooth number

Abnormal tooth size and position are often present in patients with cleft. Patients with unilateral complete cleft lip and palate have dysplasia and torsion of the upper central incisors adjacent to the cleft. In patients with bilateral complete cleft lip and palate, the two upper central incisors often have dysplasia and torsion. Other features can include:

- a delay to the eruption time of permanent teeth and an abnormal eruption sequence;
- hypodontia: the most common form of missing teeth is the congenital absence of the affected side incisor with the maxillary palate cleft;
- supernumerary teeth: additional teeth often appear near the fissures;
- abnormality of tooth structure: hypocalcification and dysplasia of the second premolar often appear.

The shape and symmetry of the dental arch

Gestational diabetes mellitus may augment the risk of cleft lip and palate. Mothers should seek medical advice on their dietary habits.

- For patients with diabetes mellitus before pregnancy, glycaemia should be controlled and closely monitored by the medical team throughout the pregnancy.
- For pregnant women with gestational diabetes mellitus, blood pressure, blood glucose, liver and kidney functions and fetal health should be closely monitored.
- A number of studies have also implicated maternal obesity as a factor that elevates the risk of having a child with a cleft.



Learning outcomes: Participants will be able to recognise the possible oral conditions associated with cleft.

DAY 1 - KNOWLEDGE OF DENTAL CARIES

Topic	Knowledge of dental decay (caries)		
Learning objectives	Understand dental plaque, its role in tooth decay and the role of diet in dental plaque formation. Identify caries and its appearance in its early stages.		
Learning activity	Description	Time	Materials needed
	<p>Brainstorming session</p> <ul style="list-style-type: none"> Ask participants if they have seen patients with tooth decay <p>Small Group Discussion</p> <ul style="list-style-type: none"> Ask the participants: What is dental plaque? Show pictures of white spots/brown spots and caries The trainer to explain that the variations above are different forms and stages of caries Review and recap 	60mins	Sticky notes Markers Flip chart PowerPoint Small mirror

Dental caries

- Dental caries is a multifactorial disease, mediated by host characteristics, sugar intake, oral hygiene, microorganisms' action, as well as socio-economic factors, among others. It is the result of a complex interaction between acid-producing bacteria and fermentable carbohydrates found in the dental plaque or biofilm (explained later in this chapter). This interaction initiates the process of demineralization of the tooth surface, due to the action of acids resulting from the metabolism of carbohydrates by oral bacteria. Later, the action of saliva and the minerals presents in it, along with a proper oral hygiene, will give place to remineralization of the surface, stopping demineralization. When this cycle is interrupted and demineralization continues, the process will result in a cavity.
- Cavities can occur at different levels of the dental structure and can have varying levels of severity. Cavities can be on the surface of the enamel or be deeper, exposing the dentine. When dentine is exposed, pain and sensitivity may be present because of more direct contact with the dental nerve endings with the oral cavity. The most severe stage of tooth decay happens when dental pulp is affected, causing intense pain.
- When caries is present in one or more primary teeth, or the teeth have been lost due to caries between the time when the first tooth appears and 6 years of age, it is early childhood caries, described in the preceding lesson. This is an oral health issue which children with cleft are at higher risk of suffering.



DENTAL CARIES/TOOTH DECAY

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What is dental plaque?

Dental plaque, also known as biofilm, is a soft, sticky layer that adheres to the tooth surface. Biofilm is predominantly composed of oral microorganisms along with proteins present in saliva.

When the child consumes free sugars, the bacteria metabolise the carbohydrates into acidic waste products, causing the pH of the mouth to drop. Essential minerals are leached out of the tooth structure, leading to demineralisation.

In a healthy oral environment, saliva production removes this acidic environment over a time period of approximately 30-40 minutes, and remineralisation occurs. This is demonstrated in Stephan's Curve. However, if the child has suboptimal oral hygiene and is frequently consuming free sugars or fermentable carbohydrates, the mouth remains in an acidic pH, leading to dental caries.

Mechanical removal of plaque, by toothbrushing and flossing, is essential to prevent the build-up of plaque, which can harden to form calculus. Children with a cleft condition find it difficult to maintain oral hygiene and this increases the risk of oral diseases such as dental caries and periodontal disease.

Extensive caries and premature tooth loss affect the child's ability to eat and chew as well as jaw development.



Role of dental plaque in tooth decay

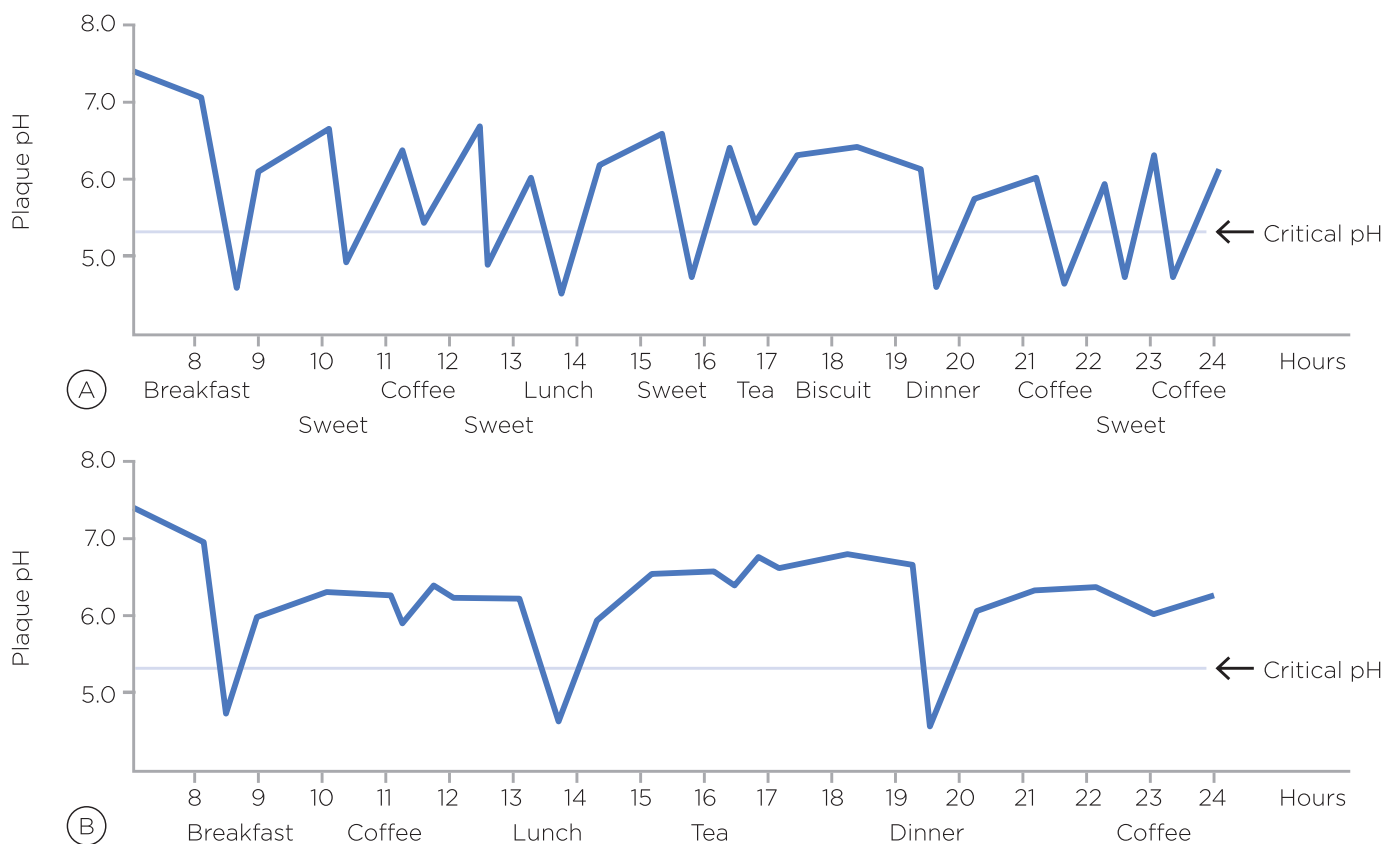
Some bacteria within dental plaque can produce acids by metabolizing the carbohydrates found in the mouth. The action of these acids leads to the dissolution of the minerals which make up the dental structure, and are responsible for the initiation of dental caries. This process is called demineralization.

Saliva is also a key player in this process, as it acts like a buffer, neutralizing the acids and increasing the pH in the oral cavity. After eating, it takes approximately 30-40 minutes for the saliva to neutralize the mouth. The fluctuating pH of the mouth is known as Stephan's Curve, as shown in the diagram.

Oral hygiene using fluoridated products will help with **remineralization**, a process in which fluoride, with other minerals present in the saliva, will adhere to the previously demineralized surface, stopping the process of tooth decay.

How to remove dental plaque?

- ✓ Effectively brushing teeth and interdental cleaning is the main method to remove dental plaque.
- ✓ Professional oral healthcare treatment such as oral prophylaxis
- ✓ Oral health education is essential for adequate oral hygiene and understanding of periodontal diseases.



STEPHAN CURVE

Role of diet

The food we consume contains variable amounts of carbohydrates. Higher, sugar-rich food has always been associated with caries. Food with a high potential of producing tooth decay because of an elevated amount of fermentable carbohydrates and sugar are described as cariogenic.

Some examples of cariogenic food are sweet pastries, cookies, crackers, white bread and cereals, cakes, sweetened muesli bars, dried fruits, ice cream, flavoured milk, sweet yoghurt, and sugary and carbonated beverages.

Sugar can increase the viscosity of the biofilm, making it easier to adhere to teeth surface for a longer time and more susceptible to being colonized by bacteria.

When consumed frequently, sugar is more available as a substrate for bacteria, reducing the pH of the oral cavity. Key advice for parents and caregivers is to avoid sugary drinks and sugar-added foods in-between meals.

Non-cariogenic foods are available. These may have a protective role because they do not contribute to acid production. Some examples are cheese, milk and natural yoghurt, as well as xylitol-containing products.

It is crucial to mention, that by switching to a healthier diet with less sugar content, the risk of dental caries is reduced

Learning outcomes: Participants will be able to recognise the possible oral conditions associated with cleft.





DAY 2

TIMETABLE

Time
08.00 - 08.30
08.30 - 09.30
09.30 - 10.30
10.30 - 11.00
11.00 - 11.30
11.30 - 12.30
12.30 - 13.30
13.30 - 14.00
14.00 - 14.15
14.15 - 14.45
14.45 - 15.45
15.45 - 16.15

Session	Required Materials	Learner Activities
Quick quiz	<ul style="list-style-type: none"> Quick quiz suggestions 	<ul style="list-style-type: none"> Team quiz
Identification of white spots, brown spots and caries	<ul style="list-style-type: none"> Powerpoint 	<ul style="list-style-type: none"> Small group discussion
Periodontal conditions, gingivitis and periodontal disease	<ul style="list-style-type: none"> Sticky notes Markers Flip chart PowerPoint 	<ul style="list-style-type: none"> Brainstorming session Small group discussion
Break		
Common and less common oral diseases	<ul style="list-style-type: none"> Sticky notes Markers Flip chart PowerPoint 	<ul style="list-style-type: none"> Small group discussion
Oral health interventions	<ul style="list-style-type: none"> Sticky notes Markers / Flip chart PowerPoint FDI/Smile Train Oral Health in Comprehensive Cleft Care Guidelines Mouth model Toothbrush 	<ul style="list-style-type: none"> Small group discussion
Lunch		
How to carry out a brief oral health intervention	<ul style="list-style-type: none"> Sticky notes Markers Flip chart PowerPoint FDI/Smile Train Oral Health in Comprehensive Cleft Care Guidelines 	<ul style="list-style-type: none"> Small group discussion
Break		
Knowledgebase for “Lift the lip”	<ul style="list-style-type: none"> Sticky notes Markers / Flip chart PowerPoint Facial mask for examiners Examination gloves Tongue blades/dental mirror Small flashlight/cell phone 2x2 dry gauze Paper towel for placing underneath the tools Hand sanitizer if no sink is available 	<ul style="list-style-type: none"> Brainstorming session Small group discussion Group discussion Practice Lift the Lip in pairs
Guideline for Lift the Lip	<ul style="list-style-type: none"> Sticky notes Markers Flip chart PowerPoint 	<ul style="list-style-type: none"> Small group discussion
Closing day 2	<ul style="list-style-type: none"> Recap quiz 	<ul style="list-style-type: none"> Remind the participants to review the materials from day 1 and day 2

DAY 2 - IDENTIFICATION OF WHITE SPOTS, BROWN SPOTS AND CARIES

Topic	White spots/ brown spots/ caries		
Learning objectives	The participants will understand how to identify early carious lesions.		
Learning activity	Description	Time	Materials needed
	Small group discussion <ul style="list-style-type: none"> • pictures of white spots/ hypoplastic surfaces; • pictures of brown spots/ arrested caries; • pictures of caries on different surfaces of each tooth type; • presenter explains - all the variations above are different forms and stages of tooth decay. • Review and recap. 	60mins	PowerPoint

White spots/hypomineralization

White spots are demineralised areas on the tooth surface, where a significant amount of minerals, such as calcium, have been lost, usually due to plaque bacteria and suboptimal oral hygiene.

White spots can also be caused by:

- dental fluorosis: the result of excessive consumption of fluoride as the teeth develop, for example, toothpaste eating as a child, or high levels of naturally occurring fluoride in water supplies;
- dental trauma to the tooth bud, causing irregularities in the hydroxyapatite structure;
- molar incisor hypomineralisation: lack of enamel development during its maturation stage, which affects the molar and incisor teeth;
- decalcification of enamel following braces: inadequate oral hygiene around orthodontic brackets.

Brown spots

Discoloration on the tooth surface can be extrinsic – on the outer tooth structure – or intrinsic – within the tooth structure.

Extrinsic discoloration can be caused by chromogenic bacteria, dietary factors, such as tea, coffee, berries, smoking or even iron supplements. Certain mouthwashes can cause discoloration, especially those used following oral surgery.

Brown spots on the surface can also be carious, it is important to assess and correctly diagnose these.



WHITE SPOT LESIONS

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BROWN SPOT LESIONS

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Intrinsic discoloration can be caused by::

- dental fluorosis;
- tetracycline staining;
- dental caries;
- arrested caries - this occurs if dental caries is initiated but halted due to improved dietary habits or improved oral hygiene measures;
- pulp necrosis;
- developmental disorders, such as amelogenesis imperfecta and dentinogenesis imperfecta.



DENTAL FLUOROSIS



TETRACYCLINE STAINING



PULP NECROSIS



DENTAL CARIES

Learning outcomes: Participants will understand the causes of and recognise different white spots, brown spots and hypomineralisation.

DAY 2 - PERIODONTAL CONDITIONS, GINGIVITIS AND PERIODONTAL DISEASE

Topic	Periodontal conditions, gingivitis and periodontal disease		
Learning objectives	Understand the causes, signs and symptoms of periodontal conditions and how to prevent them.		
Learning activity	Description	Time	Materials needed
	Brainstorming session <ul style="list-style-type: none">• Ask the participants if they know what gum disease is• Ask the participants if they can recall what dental plaque is Small group discussion <ul style="list-style-type: none">• Ask the participants the best way to prevent periodontal disease• Review and recap	60mins	Sticky notes Markers Flip chart PowerPoint Small mirror

Periodontal diseases

Parents and carers of patients with cleft conditions may find it challenging to help maintain good oral hygiene. If oral hygiene is not maintained, however, gum disease as well as dental caries, can develop. There are two types of periodontal disease: gingivitis and periodontitis.

The early stage of periodontal diseases is gingivitis:

- Gingivitis occurs when the gums around the teeth become red, swollen and bleed when brushed; it is reversible when treated quickly.
- The first sign can be blood on the toothbrush or after spitting out.
- In many cases, people will suffer from halitosis (bad breath).

The advanced stage of periodontal disease is periodontitis:

- Periodontitis is mostly seen in adults. As periodontal disease advances, the plaque biofilm moves below the gingival margin and destroys the periodontal fibres and bone supporting the teeth, making the teeth loose.
- Prevention of gum disease is essential since periodontitis is irreversible and can cause tooth loss. With proper treatment, it can be halted.

Periodontally involved teeth can cause numerous problems, including acting as a source for local or systemic infection, affect eating, speaking and overall quality of life. Teeth can fall out of their sockets and be inhaled or ingested, leading to a possible medical emergency, as well as affecting self-esteem. It is crucial to prevent and treat periodontal diseases at the earliest age.



What are other causes of periodontal diseases?

In addition to oral biofilm, other local and systemic risk factors accelerate the occurrence of periodontal diseases.

- Local factors are those that directly influence the periodontal health status, including poor oral hygiene, dental calculus, anatomic factors, dental crowding and malocclusion, traumatic occlusion, a diet rich in carbohydrates, tobacco use and food impaction.
- Systemic factors reduce the body's resistance or increase the body's sensitivity to dental plaque, such as the patient's immune reaction, diabetes mellitus, hormonal factors, malnutrition, haematological diseases, stress, and genetic factors.

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- Systemic factors reduce the body's resistance or increase the body's sensitivity to dental plaque, such as the patient's immune reaction, diabetes mellitus, hormonal factors, malnutrition, haematological diseases, stress, and genetic factors.

How can periodontal diseases be prevented?

As with dental plaque, periodontal diseases can be prevented. Optimum prevention can be achieved through good oral hygiene, mainly mechanical biofilm removal, such as tooth brushing and interdental cleaning. The following are also recommended:

- Regular dental check-up and professional cleaning and scaling.
- Empowering people to take care of their general health and oral health at the earliest possible age
- Promoting the behavioural changes needed to prevent these conditions.

Learning outcomes: Participants will recognize the causes, signs and symptoms and understand the prevention of periodontal conditions.

DAY 2 - COMMON AND LESS COMMON ORAL DISEASES

Topic	Common and less common oral diseases disease		
Learning objectives	Understand other oral conditions in the patients with cleft, such as: oral candidiasis, aphthous ulcers, eruption cysts, abscesses, oral cancer, trauma, HIV manifestations and noma.		
Learning activity	Description	Time	Materials needed
	Small group discussion <ul style="list-style-type: none"> Show images of oral conditions and ask the participants which they think should be referred to the dental team Review and recap 	30mins	Sticky notes Markers Flip chart PowerPoint Small mirror

Common oral conditions

Oral candidiasis: Oral candidiasis, also known as thrush, is a fungal infection of the oral mucosa, caused by an over accumulation of the fungus *Candida albicans*. It is usually present in the different mucosal tissues of the human body as a normal part of the human microbiome.

The risk of oral candidiasis is increased by one or more factors of compromised host resistance. Among the factors are decreased local resistance, compromised immune function, uncontrolled systemic disease, such as poorly controlled diabetes mellitus, poor oral hygiene, xerostomia (dry mouth), wearing dentures or oral appliances, AIDS, corticosteroid therapy and severe anaemia.

Oral candidiasis lesions can have different appearances. Some examples are:

- One of the most common presentations of oral candidiasis, the pseudomembranous, curd-like plaques of thrush, that wipe off with cotton gauze leaving a sore, erythematous (red) mucosal surface a thin, 'beefy' appearance.
- The formation of fissures that are usually at the corners of the mouth and are referred to as angular cheilitis
- White thickening of the surface epithelium that does not rub off

Periodontally involved teeth can cause numerous problems, including acting as a source for local or systemic infection, affect eating, speaking and overall quality of life. Teeth can fall out of their sockets and be inhaled or ingested, leading to a possible medical emergency, as well as affecting self-esteem.

It is crucial to prevent and treat periodontal diseases at the earliest age.



Aphthous ulcers: The specific aetiology of aphthous ulcers is unknown, but possible precipitating factors include trauma, stress, sunlight, endocrine disturbances, haematological disorders, immunological factors and allergies.

Aphthous ulcers can occur where appliances or dental braces rub and cause trauma to the mouth. They are extremely painful and have a pseudomembrane and an erythematous halo. They can vary in size, number, and distribution. Lesions heal in one to two weeks without scarring.

Treatment is usually:

- a topical anaesthetic/antiseptic preparation
- diet counselling: avoid acids, such as anything citric and some condiments, to mitigate discomfort when eating
- warm salt water mouthwash to aid healing



Dental abscesses, or gum boils: An oral lesion, it can present as a localized infection due to a carious tooth or periodontal issue linked to periodontitis.

More seriously, if caries extends to the pulp, infection and pulpal necrosis ensues, setting the stage for the formation of a periapical abscess, which is a collection of pus associated with the apex of a tooth root. It may be present as swelling in the area and sometimes could appear as a round and white eruption on the gums (fistula). Patients may complain of toothache or headaches as the abscess enlarges and pressure builds up.

Left untreated, a periapical abscess of a primary tooth may damage the underlying developing tooth bud, as well as causing other severe infections that could spread to deep tissues of the face and neck.

Dental abscesses require urgent professional dental treatment.



Oral trauma: Oral trauma occurs most commonly in early childhood. Physical examination is first directed at determining the adequacy and stability of airway, breathing, and circulation followed by evaluation for associated head and neck injury.

In evaluating patients with orofacial and dental trauma, key elements of the history include when, where, and how the injury occurred; the child's subsequent behaviour; any prior treatment; and general health and tetanus immunization status.



Oral cancer: As you can see, oral cancer can look like some of the more common conditions listed above. It is extremely important to refer any lumps, bumps and ulcers to the dental team at the earliest opportunity.

Some 14% of all head and neck cancers are to be found in the oral cavity.

The lip is the most common site of head and neck cancer, excluding cutaneous malignancies.

Lip cancers are most often related to sun exposure, and they occur more frequently on the lower lip.

The tongue is the most common intraoral site, and most often cancers present along the lateral border of the middle third of the tongue.

Oral cancer generally requires surgical management and it is challenging because it may affect critical physiologic functions including speech, mastication and swallowing.

Oral cancer and precancerous lesions can be very diverse. However, some common signs might include: painful ulcers that do not heal within several weeks, lesions that grow very fast or unexplained lumps in the mouth or around the neck.



ULCERATIVE FORM



ULCERO BUDDING



SQUAMOUS CELL CARCINOMA

Less common oral conditions

Eruption cysts: An eruption cyst is a fluid-filled swelling, non-painful in the majority of cases, that sits over the crown of an erupting tooth. When the follicle is dilated with blood, the lesion takes on a bluish colour and is termed an eruption haematoma. The lesion will resolve without treatment when the tooth erupts. If there is pain, the patient should be referred to a dentist.

Human immunodeficiency virus (HIV) manifestations: Oral lesions can be one of the early signs of HIV infection and occur commonly in infected patients (30%–80%) for whom there is a risk of progression to AIDS. Common oral manifestations include:

- Periodontal disease
- Candidiasis (erythematous or pseudomembranous) of the oral mucosa
- Human papilloma virus
- Primary simplex herpes
- Kaposi sarcoma, which may vary in appearance from minimal asymptomatic, flat, purple or red macules to large nodules
- Hairy leukoplakia of the lateral borders of the tongue
- Linear gingival erythema

Patients with HIV can receive the dental care they need after the possibility of significant immunosuppression, neutropenia, or thrombocytopenia has been ruled out.

Noma: The first sign of noma is sore, bleeding gums. An initial gum lesion then develops into an ulcerative, necrotizing gingivitis that progresses rapidly, destroying the soft tissues and bones of the mouth and further progressing to perforate the hard tissues and skin of the face. It mostly affects young children in Sub-Saharan Africa, between the ages of two and six years, suffering from malnutrition, living in extreme poverty and with weakened immune systems.

Due to the high mortality rate (90%) rapid identification and treatment is needed.

Learning outcomes: Participants will recognize other oral conditions in patients with clefts as well as the importance of oral health.

DAY 2 - ORAL HEALTH INTERVENTIONS

Topic	Oral health interventions		
Learning objectives	Understand oral health intervention for patients with cleft.		
Learning activity	Description	Time	Materials needed
	<p>Small group discussion Using the Oral Health in Comprehensive Cleft Care Guidelines for oral health professionals and the wider cleft care team:</p> <ul style="list-style-type: none"> • Ask participants what kinds of oral health interventions should be provided for patients with cleft. • Ask participants what kind of oral health intervention methods they would provide for patients with cleft. • Using a mouth/teeth model, demonstrate the method of tooth-brushing. • Review and recap 	60mins	<p>Oral Health in Comprehensive Cleft Care Guidelines for oral health professionals and the wider cleft care team</p> <p>Sticky notes Markers Flip chart PowerPoint Mouth model Toothbrush</p>

Prevention and oral health interventions

Awareness of infant oral care measures is lacking, i.e. how to clean baby teeth, when to start cleaning then and what oral hygiene aids to be used. All children should start learning how to brush their teeth from an early age.

Toothbrush: The correct toothbrush for a child should have the following characteristics:

- ✓ A small brush head
- ✓ Soft bristles
- ✓ An easy to grip handle

-
- ✓ The right size
 - ✓ Suitable for children at each stage of growth

How to brush teeth:

- ✓ Before dental eruption, babies should have their gums wiped after every feed, morning and night, switching to a small soft toothbrush as their teeth erupt.
- ✓ Children should be assisted until the age of eight and carefully supervised thereafter
- ✓ The toothbrush should be placed at a 45-degree angle to the tooth and gum and small circles made to clean the tooth and gum margins. The chewing surfaces of the teeth are brushed with the bristle ends.
- ✓ Toothbrushing should take two minutes; it may be useful to have a timer, an app or a song on the radio for this.
- ✓ Floss or interdental brushes should be used to clean in between the teeth and special attention should be paid to the cleft area.

The role of fluoride in preventing caries

Minerals are an important part of the dental structure, especially the enamel. As described above in the section on dental decay, demineralization occurs when the oral pH decreases below pH 5.5. Fluoride can help to reduce and prevent tooth decay, mainly in the following ways:

It slows down demineralization in a joint action with other minerals present in teeth and saliva, such as calcium and phosphate

Along with the saliva, it participates in the remineralization of the tooth tissues that were dissolved by the acids in the early stages of the tooth decay process.

When applied topically in high concentrations, fluoride is deposited in dental enamel as calcium fluoride, which is later covered by a layer of protein and phosphate, allowing fluoride to be released slowly to the saliva.

Fluoridated toothpaste:

- Toothbrushing with a smear of fluoridated toothpaste should be introduced into the baby's oral hygiene from the eruption of the first tooth, making sure the baby does not swallow the toothpaste.
- Children aged between two and six years should use a pea-sized amount of fluoridated toothpaste on the toothbrush. (500 – 1100 ppm of fluoride depending on the local health policies). Children should be taught to spit but not rinse
- For children aged six and twelve years, the amount of fluoride toothpaste is about the size of a "pea" (0.5 g) each time, and it should be used under the supervision of a caregiver. (1400ppm of fluoride depending on the local health policies). Children should be taught to spit but not rinse
- Aged 12-18 and 18+ a bean-size amount of fluoridated toothpaste should be used; patients should be encouraged to spit but not rinse. (1400ppm of fluoride depending on the local health policies)

Excess fluoride

The excessive intake of fluoride during the period of tooth development can cause fluorosis.

This is characterized by the appearance of white or brown areas or even pitting in the enamel, which is detrimental to aesthetics and in the most severe cases, might weaken the dental structure.

Mitigation of risk of enamel fluorosis: research the community fluoridation schemes and fluoride levels in water; monitor fluoride levels in the environment, especially in areas where there is exposure to elevated fluoride levels due to human activities, and determine the overall exposure to fluoride.

Where practicable, monitor the prevalence of enamel fluorosis using scoring guidance systems such

as those developed by WHO. In the event of high prevalence, the aim is to provide drinking-water with fluoride levels that do not produce adverse health effects, by seeking alternative water sources in areas with fluoride-rich groundwater, particularly where water consumption is high due to elevated temperatures; encourage mothers to breastfeed, even in areas with high fluoride intake, as breast milk is optimal for infant health and usually low in fluoride.

Where an alternative source is not an option, defluoridating water for drinking and cooking, using methods such as bone charcoal adsorption, contact precipitation, coagulation-flocculation/sedimentation using aluminium sulfate (Nalgonda process), activated alumina adsorption and clay. Sub-optimal fluoride: promoting optimal oral hygiene, based on the use of effective fluoridated toothpaste; guidance on the amount of fluoridated toothpaste to be used and the concentration of fluoride present in the toothpaste should take into consideration the age of the user (especially for children) and the exposure to other sources of fluoride in the community.

Healthy diet

According to WHO, adequate nutrition is key for healthy growth and cognitive development.

A healthy balanced diet is recommended with no more than five teaspoons of sugar per day for children and for adults no more than 10 teaspoons.

Sugary snacks and drinks should be avoided in between meals. If necessary, choose whole fruit or non-cariogenic food and drinks, such as cheese, yoghurt, water or milk, to reduce the risk of developing dental caries.

Medications

Healthcare providers should try to prescribe sugar-free medications where possible

Behavioural habits

Do not allow infants and children to go to sleep with a bottle with milk or sugary drink.

Thumb sucking and pacifier use should be discouraged, allowing these habits to continue will lead to malocclusions such as prominent upper teeth, anterior open bite or posterior crossbite due to a narrow maxilla which are challenging to correct.

Care instructions for the obturator/appliance

Children in the 0-2 and 2-6 age groups will probably use a palatal maxillary orthopedic appliance, or obturator, to cover the palatine cleft and be able to eat and speak properly. These appliances must be cleaned twice a day, every day. In the first 48 hours after the appliance is installed, it must be removed and cleaned after each feed. Important points to remember are:

- After removing the maxillary oral appliance, clean it with a brush and cooled boiled water to remove any pellicle or detritus that has been formed to avoid microorganisms to grow in it. The area under the flattened nostril must be cleaned with a moist swab.
- Refer to the treating oral health professional if the appliance is producing any ulceration or bleeding. In this case, it needs to be adjusted. Advise the use of soft white paraffin in the lips and soft tissues when needed and at feeding time.
- Obturator appliances must be inserted carefully by the caregiver: slightly sideways for unilateral cleft and straight for bilateral cleft.

Learning outcomes: Participants will learn intervention methods appropriate to the age of the patient with cleft e.g. oral hygiene, dietary counselling, application of fluoride.

DAY 2 - HOW TO CARRY OUT A BRIEF ORAL HEALTH INTERVENTION

Topic	How to carry out a brief oral health intervention		
Learning objectives	Understand how to deliver a brief oral health intervention		
Learning activity	Description	Time	Materials needed
	Small group discussion <ul style="list-style-type: none">Using the Oral Health in Comprehensive Cleft Care Guidelines, practice delivering a brief oral health intervention in pairsReview and recap	30mins	Sticky notes Markers Flip chart PowerPoint Oral Health in Comprehensive Cleft Care Guidelines for oral health professionals and the wider cleft care team

How to carry out a brief intervention to prevent oral disease

Every patient appointment is an opportunity to remind the patient and caregiver how to prevent oral diseases. Members of the wider cleft care team may see their patients on a regular basis and be ideally placed to provide a brief intervention which will lead to improved oral health over time. This should take less than a few minutes and start with a 'lift the lip' check, which we will cover in the next lesson, to quickly review the patient's oral health status.

As we learned in an earlier lesson, dental diseases such as caries (decay) and periodontal disease are caused by poor oral hygiene and excessive sugar in the diet.

1. Remind the patient or caregiver to brush twice daily for two minutes.
2. Remind the patient or caregiver to use a fluoridated toothpaste and to spit, but don't rinse away, the toothpaste residue.
3. Advise the patient or caregiver to avoid snacking between meals; if a snack is needed, swap out anything sweet or sugary for items that will not cause tooth decay, like whole fruits, plain yoghurt or cheese and crackers.
4. Advise the patient or caregiver to avoid sweet or sugary drinks between meals and stick to water or milk.
5. Ask the patient or caregiver if they have visited the oral healthcare team recently and remind them to book a check-up.

Learning outcomes: Participants will be able to recognise the possible oral conditions associated with cleft.

DAY 2 - LIFT THE LIP (LTL)

Topic	Knowledge base for 'lift the lip'		
Learning objectives	Understand what 'lift the lip' means and why it is important		
Learning activity	Description	Time	Materials needed
	<p>Brainstorming session</p> <ul style="list-style-type: none"> Ask participants why prevention is important in oral health and the key role of non-oral health professionals (NOHPs) <p>Small group discussion</p> <ul style="list-style-type: none"> Divide participants into groups of 3-5. Participants should 'lift the lip' and look at their own mouth with the mirror or by taking a picture on their mobile phone and identify what they should be looking out for Instruct groups to write what they notice in their mouth on sticky notes. <p>Group discussion</p> <ul style="list-style-type: none"> Recognition of the normal structures of the mouth. Review and recap 	30mins	<p>Sticky notes Markers Flip chart PowerPoint</p> <p>Facial mask for examiners Examination gloves Tongue blades/ dental mirror Small flashlight/cell phone 2x2 dry gauze Paper towel for placing underneath the tools Hand sanitizer if no sink is available</p>

Importance of oral health and early detection of oral pathology

Patients born with a cleft may have reduced quality of life and well-being as a consequence of their oral health challenges. In addition to the higher risk of early childhood caries, there is a higher risk of other oral issues such as supernumerary or congenitally missing teeth, and other anomalies.

Research has shown that prevention and early detection of oral pathologies can help maintain oral health and avoid complex treatments at a young age, including procedures with general anaesthesia in infants.

Promotion and prevention of oral health is important. For these reasons it is important for non-oral health professionals to implement the 'lift the lip' as well as parents and caregivers who are responsible for children at the age when prevention should begin.

Non-oral health professionals must be prepared to identify risk factors for early childhood caries and other oral health problems, and to make timely and effective interventions and, where necessary, a referral.

Lift the lip (LTL)

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Non-oral health professionals must be prepared to identify risk factors for early childhood caries and other oral health problems, and to make timely and effective interventions and, where necessary, a referral.



Learning outcomes: Participants will be able to recognize the importance of oral health and early detection of oral pathology, as well as the importance of 'lift the lip'.

DAY 2 - GUIDELINE FOR LIFT THE LIP (LTL)

Topic	Guideline for Lift the Lip (LTL)		
Learning objectives	Understand how to use the LTL technique in each age group and when to refer.		
Learning activity	Description	Time	Materials needed
	Small group discussion <ul style="list-style-type: none"> • Divide participants into groups of 3-5. • Instruct groups to analyze and recognize the different levels of oral disease in the images. • Evaluate the need for referral for regular checkups or immediate dental treatment. • Referral pathways; when? how? • Expand on answers. • Review and recap 	60mins	Sticky notes Markers Flip chart PowerPoint FDI/ST dental referral form

Guideline

A non-invasive, straightforward procedure, LTL can be carried out in any setting. It is not a full clinical examination or a diagnostic test, it is intended to take only a couple of minutes to complete.

It is recommended during visits from six months of age, as part of the general health assessment.

Position the baby in a lying down position (the knee-to-knee position is recommended, with the caregiver or parent and the health professional sitting face-to-face, in close proximity, but not touching).

For toddlers, the child may be examined seated on their caregivers' lap on a chair opposite and facing the health professional. For preschool children, the child can either lie flat on an examination table or sit in front of the parent, with both the child and the parent facing the health professional.

Wearing of medical gloves is recommended for health professionals. The examination should be performed in association with a brief oral health intervention within the general health visit. LTL should be one element of an overall assessment of the risk factors for dental decay.

It is important to provide the families with LTL information resources to take home.

Advise caregivers to:

- Lift their child's lip regularly to check for early signs of tooth decay;
- Brush twice daily, for 2 minutes with fluoride toothpaste from the eruption of the first tooth, and to spit out the toothpaste but not rinse away the residue;
- Encourage healthy food and drink choices, without added sugar;
- Choose fluoridated tap water to prepare foods and as the preferred drink;
- Visit their oral health professional regularly.



What can be detected?

- Colour changes to the tooth surface, like white or brown spots
- Cavities
- Broken teeth
- Swollen or bleeding gums
- Abnormal tooth shape, surface or structure
- Dental plaque
- Abnormal movement of the lip (scar)

Referral pathways

A crucial element for the success of LTL is establishing an effective referral pathway. In patients born with cleft we recommend referring if any abnormality is observed.

The pictures below illustrate examples which would require a referral:

1) White lines along the gum line: This early sign of decay may be reversible if treated promptly. An early referral is needed as well as a brief oral hygiene intervention.



WHITE LINES

Pedo Planet - Children Dental Centers, (Chennai, New Delhi), India.

Centre for Early Childhood Caries Research (CECCRe), Sri Ramachandra Institute of Higher Education and Research, Chennai, India

2) Established decay: Brown spots that do not wipe off and obvious cavity: Referral needed and provide a brief intervention on oral hygiene.



ESTABLISHED DECAY

Pedo Planet - Children Dental Centers, (Chennai, New Delhi), India.
Centre for Early Childhood Caries Research (CECCRe), Sri Ramachandra Institute of Higher Education and Research, Chennai, India

3) Advanced decay: Tooth structure can be lost or dental abscess present. Immediate referral to their oral health professional. If general health is compromised, consider medical referral first.



ADVANCED DECAY

Pedo Planet - Children Dental Centers, (Chennai, New Delhi), India.
Centre for Early Childhood Caries Research (CECCRe), Sri Ramachandra Institute of Higher Education and Research, Chennai, India

Learning outcomes: Participants will be able to perform the LTL technique and refer the patient appropriately, based on the status of disease.



DAY 3

TIMETABLE

Time
08.30 - 09.30
09.30 - 10.00
10.00 - 11.00
11.00 - 11.30
11.30 - 12.30
12.30 - 13.00
13.00 - 13.30
13.30 - 14.30
14.15 - 14.45

Session	Required Materials	Learner Activities
How to carry out an oral health risk assessment	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint • FDI/Smile Train Oral Health in Comprehensive Cleft Care Guidelines 	<ul style="list-style-type: none"> • Brainstorming session
Scar management in people with cleft lip and palate	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint 	<ul style="list-style-type: none"> • Small group discussion
Quality of life and clefts	<ul style="list-style-type: none"> • Sticky notes • Markers / Flip chart • PowerPoint • Small mirror 	<ul style="list-style-type: none"> • Small group discussion
Break		
Implementing the FDI/Smile Train Safety and Quality Protocol	<ul style="list-style-type: none"> • Sticky notes • Markers • Flip chart • PowerPoint • FDI/Smile Train Safety and Quality Protocol 	<ul style="list-style-type: none"> • Group discussion
Post course test	<ul style="list-style-type: none"> • Multiple choice questionnaire 	<ul style="list-style-type: none"> • Complete the questionnaire
Post course test marking	<ul style="list-style-type: none"> • Answer sheet 	
Lunch		
Questions, summing up Presentation of certificates	<ul style="list-style-type: none"> • Course evaluation form • Participation certificates 	<ul style="list-style-type: none"> • Complete the course evaluation form

DAY 3 - HOW TO CARRY OUT AN ORAL HEALTH RISK ASSESSMENT

Topic	How to carry out an oral health risk assessment		
Learning objectives	Understand how to use the risk assessment guide to quickly determine if the patient is at risk for oral diseases		
Learning activity	Description	Time	Materials needed
	Brainstorming Session <ul style="list-style-type: none"> Ask participants if they can name any factors that would contribute to oral diseases Review and recap 	60mins	Sticky notes Markers Flip chart PowerPoint Oral Health in Comprehensive Cleft Care Guidelines for oral health professionals and the wider cleft care team

How to carry out a risk assessment

The risk assessment is a tool developed to assess the level of risk of oral disease in patients with cleft. It must be performed by health professionals in the care team at all age stages and it should be filed with the rest of the patient's clinical history.

It covers a series of risk factors that, when present, on their own or in combination with other factors, increase the likelihood of oral disease

It consists of two parts, the first one is an interview to understand the risk factors for disease and second section is a LTL assessment of the oral health status of the child .

The factors to assess in the quick risk assessment are the following:

- **Low socio-economic status:** assess the socio-economic status during the interview with the parents or caregivers.
- **Frequent consumption of dietary sugars:** caregivers also need to be interviewed about the nutritional status of the child. Asking about the meals and snacks the child had the day before is a useful tool to get information about their sugar consumption. This factor is crucial as it is directly related to the development of caries.
- **Familial risk factors:** The educational level of parents can be a predictor of the oral health status of the child and it is expected that children's parents with low educational level are at higher risk of oral disease. If possible, assess the oral health status of siblings who may also be more at risk of developing oral diseases.
- **Sub-optimal fluoride exposure:** ask parents about the oral health practices of the child and assess the use of fluoridated toothpaste, ideally 1000-1450ppm of fluoride. A sub-optimal exposure applies when the child does not use any fluoride product or does not have access to optimally fluoridated tap water.
- **Active or previous caries lesion:** If any white or brown spots are observed in the front teeth by using LTL technique, noting any bleeding or inflamed gums.
- **Poor oral hygiene:** use LTL to evaluate the presence of food debris, biofilm or dental plaque in the front teeth of the child.

- **Reduced salivary flow or salivary pH:** As mentioned in previous chapters, saliva is an important factor for the remineralization of the dental surface. An easy way to evaluate the salivary flow is by visual inspection of the mucosa. Retract the lower lip and dry the zone with a gauze, the area should be wet again within one minute. Children with malnutrition may be dehydrated and have reduced salivary flow.

Learning outcomes: Participants will understand how to carry out the oral health risk assessment from the Oral Health in Comprehensive Cleft Care Guidelines .

DAY 3 - SCAR MANAGEMENT IN PEOPLE WITH CLEFT LIP AND PALATE

Topic	Characteristics of an abnormal scar		
Learning objectives	Participants will understand the impact scarring has on patients with cleft, what factors influence scarring and the daily management of a scar following surgery.		
Learning activity	Description	Time	Materials needed
	<p>Brainstorming Session</p> <ul style="list-style-type: none"> • Introduce the characteristics of abnormal scars: keloids and hypertrophic scars. <p>Small group discussion</p> <ul style="list-style-type: none"> • Divide participants into groups of three to five. • Instruct groups to write risk factors for an abnormal scar on sticky notes. • Importance of massage therapy inside the mouth. • Review and recap. 	60mins	<p>Sticky notes Markers Flip chart PowerPoint</p> <p>Oral Health in Comprehensive Cleft Care Guidelines for oral health professionals and the wider cleft care team</p>

Scars in patients with cleft lip and palate

The healing of cleft lip and palate repair results in fibrotic outcomes for both the lip and the palate. Scarring in this situation can have an array of aesthetic and functional consequences. Hypertrophic scarring can be common following cleft lip repair.

Scarring from cleft lip repair can cause lip asymmetry as the scar contracts leading to a shortened lip and nasal deformity on the affected side. Such scarring may require further surgical revision to restore normal aesthetics and function, which causes psychological stress, risk associated with additional surgeries and anaesthesia exposure, and significantly increased cost of treatment.

Factors influencing scarring

- The depth of injury, degree of tissue destruction, and introduction of pathogens: for scarring to occur, injury must involve the dermis, and pathologic forms of wound healing are more likely to occur if injury involves the bottom one-third of the dermis or is associated with infection.
- The location of the wound affecting variations in mechanical forces across the skin at different anatomical sites, such as: on the face, tension lines arise from interactions between the skin and the underlying muscles of facial expression; wounds running across a tension line experience greater perpendicular force and must respond with greater collagen deposition to hold the skin together, resulting in a larger scar.
- Patient demographics: it has been observed that darker-skinned and younger individuals are at higher risk of pathological healing, with hypertrophic scars and keloids, although the causative mechanisms explaining these risks are not well-understood.

Keloids and hypertrophic scars

In the skin, pathological scars such as hypertrophic scars and keloids can be unsightly, itchy, and painful. By definition, both scar types rise above skin level and are result of wounds with excessive fibrosis. While hypertrophic scars do not extend beyond the initial site of injury, keloids typically project beyond the original wound margins.

Clinical differentiation between hypertrophic scars and keloids can be problematic. A single injury may produce regions of both normal and abnormal scarring that regress or progress over time. Incorrect identification of scar type may result in inappropriate management of pathologic scar formation, and, occasionally, contribute to inappropriate decision-making related to elective or cosmetic surgery. Unfortunately, these surgeries represent a second injury that may heal with repeated pathological scarring in some individuals.

Postoperative care and scar management

The first three months after surgery is the time when remodelling is at its peak during a normal wound healing process. While most properly designed and executed operative incisions will continue to heal without significant protest, those incisions destined for hypertrophic response will begin to reveal themselves during this period. Therefore, a monthly clinic examination of the scar is reasonable. Patients should be encouraged to continue dressing the wound with skin tape (triple-layer, one over the other). Additionally, each patient should be counselled to return to the clinic earlier than the appointed clinic visit if the wound is beginning to look “beefy” or “upset”, e.g if it starts to rise above skin level or itches considerably. During this period, a scar can undergo hypertrophic response, either mild or severe.

Current therapies for scarring

Many different therapeutic approaches have been developed to minimize the appearance and functional impact of scars. Therapies delivered at the time of wounding include dressings, tapes, and silicone sheets designed to reduce tension on the wound and suture lines. Also, if there is an increase of tissue above the normal skin level, compression therapy is recommended. This decreases the vascularity of the scar and helps to control the hypertrophy.

It is of fundamental importance not to forget that in addition to the hypertrophy of the scar, we must take care of the degree of retraction. It is suggested the scar should be regularly massaged from the columella to the vermillion border three to five times per day. The frequency should decrease as the scar gains flexibility.

Learning outcomes: Participants will understand the importance of scar management and how to advise caregivers and patients on scar care.

DAY 3 - QUALITY OF LIFE AND CLEFTS

Topic			
Quality of life and clefts			
Learning objectives	Participants will understand the impact of cleft on quality of life as well as economic factors		
Learning activity	Description	Time	Materials needed
	<p>Brainstorming session</p> <ul style="list-style-type: none">• What does quality of life (QoL) mean?• What is meaning of oral health related quality of Life (OHRQoL)? <p>Group discussion</p> <ul style="list-style-type: none">• Introduce the relationship between cleft and deterioration of oral health.• Ask the participants to list the impact of cleft on QoL of patients.• Ask the participants to list the impact of cleft on the QoL of parents of children with cleft conditions.• Discuss the economic aspects of cleft.	60mins	Sticky notes Markers Flip chart PowerPoint

Definition of quality of life:

The World Health Organization defines quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment.

What makes it challenging to measure is that, although the term 'quality of life' is widely understood, individuals and groups can define it differently. Although health is one of the important domains of overall quality of life, there are other domains as well—for instance, jobs, housing, schools, the neighbourhood. Aspects of culture, values, and spirituality are also key domains of overall quality of life that add to the complexity of its measurement.

Definition of health

Health is defined by WHO as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity. Better health is central to human happiness and well-being, while poor health has detrimental effects on both the individual and at societal level.

Since healthy populations live longer, are more productive and save more, good health also makes an important contribution to economic progress. Many factors influence health status and a country's ability to provide a good quality health service for its people.

There are five main aspects of personal health: physical, emotional, social, spiritual, and intellectual.

The Sustainable Development Goals

The Sustainable Development Goals are the United Nations blueprint for a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. One of their goals is to ensure healthy lives and promote well-being for all, at all ages.

The work of UNICEF, the United Nations children's fund, is structured around five overarching areas of well-being for every child, which are grounded in the 2030 Agenda for Sustainable Development. These five areas are that:

- every child survives and thrives;
- every child learns;
- every child is protected from violence and exploitation;
- every child lives in a safe and clean environment;
- every child has a fair chance in life.

This human rights-based approach pursues a vision of realizing the rights of every child, especially the most disadvantaged, and responds to the call to "leave no child behind", so that the rights of every child, everywhere, will be met.

Oral health

FDI World Dental Federation defines oral health as:

Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex.

Oral diseases are the most common chronic disease and are important public health problems due to their prevalence, their impact on individuals and society, and the expense of their treatment.

The Global Burden of Oral Disease Study 2013 estimated that oral diseases affect 3.5 billion people worldwide, with untreated dental caries being among the most prevalent non-communicable disease (NCD). A follow-on study examined the global cost. Most oral diseases and conditions share modifiable risk factors with the four most significant NCDs, including cardiovascular disease, cancer, chronic respiratory disease and diabetes. These risk factors include tobacco use, alcohol consumption and unhealthy diets high in free sugars. All are increasing at a global level.

Costs of the surgical treatment of cleft

A study by Galloway et al. (2017) estimated the comparative cost of cleft treatment incorporating surgical intervention, speech and language therapy (SLT), orthodontics and orthognathic surgery. In high-income countries, where state provision or state health insurance is the most common source of funding, the average total direct cost of cleft treatment is \$10,000-\$13,000 whilst in low-income settings, where patient and charity organisations fund treatment, the cost is \$3,000-5,000. Further research and more complete data are needed to study cost differences so patients and their families have an understanding of the lifelong financial implications of cleft where costs are not covered by the state or insurance.

Risk factors

Differential in oral health status is multifactorial, ranging from social, environmental, biological, behavioural and cultural factors to economic and political factors. Limited access to oral health care services, complicated oral health care systems, a lack of oral-health-information material, and oral health literacy also play a role.

These differences arise as a consequence of factors that are largely out of the control of population groups, such as access to dental services and differential exposure to unhealthy aspects of social environments. A common factor underlying these inequalities is social hierarchy. Socioeconomic position influences exposure and response to virtually all environmental, behavioural and psychosocial risk factors. The steeper the social hierarchy, the greater the magnitude of inequalities in health.

The main priority for oral health interventions should be collaborative, enabling policies underpinned by research that addresses the main determinants of oral diseases and the shared, modifiable risk factors outlined above.

A study among adults aged 18-64 reported that social security and health insurance, low literacy levels, dental self-care, or its absence, and other behavioural aspects, such as high tobacco consumption, were major risk factors for periodontal and other oral diseases among groups of equivalent socioeconomic status.

Challenges associated with the effects of clefts

Aesthetics may be a concern for children with cleft. Almost 50% of parents of pre-adolescent children with orofacial cleft indicated that their children expressed concerns about appearance. A study carried out in India compared the responses of young people in two categories: a pre-adolescent cleft group and an adolescent cleft group. Using a 'Psychosocial Impact of Dental Aesthetics Questionnaire' (PIDAQ), researchers found that the latter scored more negatively in terms of dental self-confidence and social impact. They concluded that perceptions of the aesthetics of anterior teeth are a crucial factor influencing a patient's psychological self-belief, social confidence, and treatment need in cleft and non-cleft patients. These become more relevant as the patient matures towards adolescence and adulthood.

For patients with cleft, the dental aesthetics may be influenced by hypodontia (missing teeth), commonly affecting maxillary lateral incisors, crowded and irregular teeth, malocclusion or early childhood caries (ECC).

Patients with cleft have multi-system and complex anatomical, physiological, pathological and psycho-social problems. These include aesthetics, feeding, speech and language delays, dental anomalies, ear infections, psycho-social issues, such as stigmatization and reduced quality of life.

Learning outcomes: Participants will understand the risk factors which challenge oral health. They will understand oral health promotion, advocacy, policy development, implementation and monitoring.



DAY 3 - IMPLEMENTING THE FDI/SMILE TRAIN SAFETY AND QUALITY PROTOCOL

Topic				Implementing the FDI/ST Safety and Quality protocol			
Learning objectives				Understand: <ul style="list-style-type: none"> • How to use the FDI/ST Dental Procedures Safety and Quality Protocol • The importance of quality assurance • Strategies for implementing quality assurance • How to carry out periodic assessment of quality of care 			
Learning activity				Description	Time	Materials needed	
				Group discussion <ul style="list-style-type: none"> • Discuss the sections in the Dental Procedures Safety and Quality Protocol • Discuss roles and responsibilities • Enumerate the components of quality of care • Identify legal, labour and administrative framework • Prioritizing and developing realistic timelines • Synthesize and summarize. 	60mins	Sticky notes Markers Flip chart PowerPoint FDI/ST Safety and Quality Protocol	

Why is quality important in oral healthcare?

- By maintaining the quality of healthcare provided and adhering to the recommended health screenings, the cleft care team can improve patient health and achieve better health outcomes, e.g. fewer missed school hours due to dental pain.
- By improving the efficiency of managerial and clinical processes, organizations reduce the costs associated with mistakes, wasted materials and redundancy.
- Proactive processes that recognize and solve problems before they occur ensures that healthcare is reliable and predictable.
- A culture of improvement frequently develops in an organization that is committed to quality, because errors are reported and addressed.
- A commitment to quality shines a positive light on an organization, which may result in increased partnership and funding opportunities.

The quality approach

The quality approach is defined by WHO as :

“an approach which should make it possible to guarantee each patient the combination of diagnostic and therapeutic procedures which will ensure the best possible health outcome for them, in accordance with the current state of medical science.”

This means that all healthcare providers should implement recurring, reproducible and even “measurable” processes that guarantee the quality and safety of their interventions: this is quality assurance.

Quality assurance (QA) vs. quality improvement (QI)

Quality assurance (QA) involves the development of a set of standards, and the process of a comparison of current standards with the recommended standards.

If standards are met, services are thought to be of adequate quality. If gaps are identified, plans to correct these are developed to address the problem.

Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups.

How do we define quality in oral healthcare?

One of the most commonly used definitions for quality in healthcare is by the Institute of Medicine (IOM) and consists of six domains: patient safety, timeliness, patient-centredness, equitability, efficiency and effectiveness.

Patient safety	In order to be considered safe, oral healthcare should <ul style="list-style-type: none">• Avoid, mitigate, or minimize adverse events.• Advocate a blame-free culture to facilitate quality improvement.• Learn from safety incidents to improve the quality of care.• Enact minimum safety standards.
Timeliness	In order to be considered timely, oral healthcare should <ul style="list-style-type: none">• Avoid unnecessary delays in access and utilization of care.• Implement care co-ordination between healthcare providers and institutions.• Prioritize prevention; avoid early use of restorative and other treatments.
Patient-centeredness	In order to be considered patient-centered, oral healthcare should <ul style="list-style-type: none">• Be respectful of and responsive to individual patient preferences, needs, values, fears, concerns, and/or cultures.• Follow a shared decision-making model when making clinical decisions. To gain a patient's trust, the oral healthcare professional should communicate with and listen to the patient, then inform, educate and guide the patient to ensure that patient values shape all clinical decisions.
Equitability	In order to be considered equitable, oral healthcare should <ul style="list-style-type: none">• Not vary in quality and availability due gender, ethnicity, cultural background, religion and belief, geographic location, and/or socioeconomic status.• Address inequities in oral health service design, planning, and commissioning.• Incorporate equitability in the design of policy and clinical practice guidelines.
Efficiency	In order to be considered equitable, oral healthcare should <ul style="list-style-type: none">• Encourage prevention• Focus on patients' oral health needs as the central basis for resource and workforce planning.• Form an integral part of medicine and discourage the dental-medical divide.

Effectiveness

In order to be considered safe, oral healthcare should

- Be informed by the most recent available scientific evidence and guidelines.
- Be provided to patients who will benefit from the care
- Aspire to minimize harm

Why do we need a quality approach?

A quality approach in healthcare is imperative and reflected in diverse legislation:

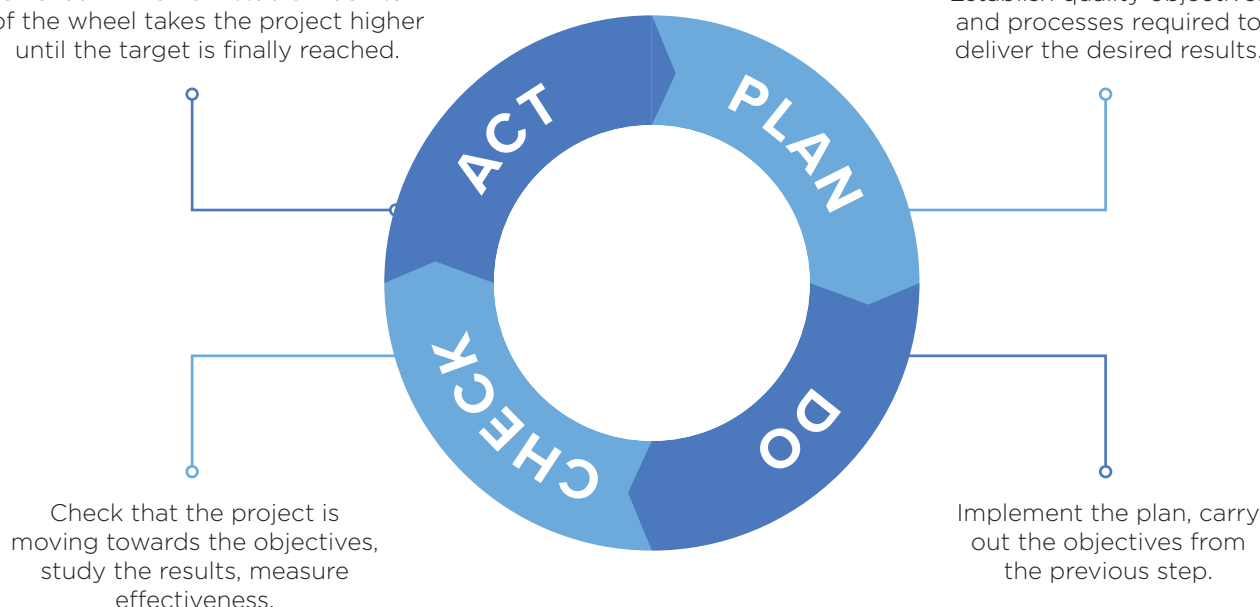
- Legal and regulatory context: quality in healthcare is governed by a set of laws and regulations in force in each country.
- Administrative regulations: all clinicians should be appropriately trained and registered to practice in the chosen country, and stay within the “scope of practice” defined by legislation or regulation. There are many other administrative regulations, i.e. the obligation to take out civil liability insurance or various other types of insurance.
- Health regulations and good practice recommendations: specific measures for patient safety, defined by law and regulations under the control of the country’s health authorities i.e. regulations on ionising radiation.
- Ethical regulations: unlike business, dental offices and health centres have a responsibility for patient well-being. This is underpinned by a code of ethics which specifies what can and cannot be done. An official body, most often the medical or dental council, is responsible for ensuring that these ethical rules of confidentiality and patient safety are respected.
- Labour legislation: the rules of labour legislation set out in national legislation, would apply to staff members, so that practitioners need to be familiar with them.

Implementing quality improvement

Implementing new procedures to comply with quality in healthcare standards, such as the FDI/ST Systems Level Organization, must be tested and validated, usually through a four-phase cycle of planning, doing, studying, and acting—the PDSA cycle:

React and improve. Take the necessary corrective measures to reduce gaps and make sure that what has been achieved will remain stable. Each turn of the wheel takes the project higher until the target is finally reached.

Establish quality objectives and processes required to deliver the desired results.



Steps for implementing quality improvement

Steps	Questions & recommendations
Identify and assess the problem Identify specific objectives	What problem do you want to address? What outcome measure will show the problem was resolved?
Produce a written description of the roles and responsibilities of each member of the dental team to reach the objective	Who is best positioned to be the champion and the leader of the project? Who has the clinical knowledge and leadership skills to serve as a project leader? Which staff members will participate in the core collaborative and work proactively to improve quality?
Education and training of staff to implement the QI measure	Train all staff in the new method adopted to solve the problem or improve the system
Establish a test group who will implement the QI measure	The test group carries out an assessment of the new system with all members of the dental team.
Implementation of QI measure	Implementing changes in small manageable steps to allow for continual appraisal and review. Reducing the risk of failure and negative staff responses
Verification and outcome assessment	Review of the first implementation cycle to review the process and make any necessary adjustments
Repetition of the quality improvement process and identification of new objectives if necessary.	The improvement process must have adequate time to succeed. It is important to review in the longer term to ensure the new habit and process has become a part of the daily routine.

Monitoring and evaluation

Quality improvement is an ongoing process, and it is important to create a culture in your clinic where staff can make suggestions openly to improve patient care, procedures or systems. The team leader should use the FDI/ST Dental Procedures Safety and Quality Protocol as a basis for ensuring minimum standards of safety, care and hygiene and continue to develop this resource to continuously improve the standards you provide.

Monitoring and evaluation should be carried out routinely, as new quality improvement measures are introduced. One person should be assigned this responsibility, usually the clinic manager.

Learning outcomes: Participants will be able to design a quality assurance protocol for their facility.

PRE-COURSE TEST

1. Interprofessional collaboration in the care of clefts:

- a. 2 or more healthcare professions that work together with the patient.
- b. The purpose is to get the best options and make informed decisions aiming to best health outcomes.
- c. Patient-professional relationship does not benefit with interprofessional collaboration.
- d. Patients with cleft have significant needs that are fulfilled for the cleft specialist.
- e. The healthcare teams directly instruct the patient and family on their care.

2. These are types of dentition and teeth present in the mouth:

- a. Primary dentition: Incisors, canines and molars
- b. Primary dentition: Incisors, canines, premolars and molars
- c. Permanent dentition: Incisors, canines and molars
- d. Permanent dentition: Incisors, canines, premolars and molars
- e. Permanent dentition: Incisors, laterals, canines, premolars and molars

3. What is a cleft and how can be categorized?

- a. Cleft occurs when parts of the lip and/or palate and nose do not fuse together during embryonic development.
- b. Clefts can be divided into 3 general categories: (1) cleft palate alone (CP); (2) unilateral or bilateral cleft lip with or without cleft alveolus; and (3) unilateral or bilateral cleft lip and cleft palate
- c. Cleft can be divided into 2 general categories: (1) cleft palate alone (CP) and (2) unilateral or bilateral cleft lip and cleft palate
- d. Cleft can be divided into 2 general categories: (1) cleft palate alone (CP) and (2) unilateral cleft lip
- e. Cleft can be divided into 2 general categories: (1) cleft palate alone (CP) and (2) bilateral cleft lip and cleft palate

4. These are factors that increase the risk for clefts:

- a. Emotional stress during pregnancy
- b. Medication after pregnancy
- c. Alcohol and tobacco consumption
- d. Gestational diabetes mellitus
- e. Family history

5. These are characteristics of Early childhood caries (ECC):

- a. The presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth.
- b. The presence of one or more decayed, missing (due to caries or trauma) or filled tooth surfaces in any primary tooth.
- c. It can start as soon as teeth erupt into the mouth
- d. It can start when all primary teeth have erupted
- e. Adults can have ECC

6. Characteristics of dental caries:

- a. Active process that starts with the demineralization of the dental surface.
- b. Different stages of severity
- c. Once this process starts, it cannot be stopped and eventually a cavity will be formed
- d. Process can be stopped if oral conditions improve
- e. All caries are cavities

7. Characteristics of gum disease:

- a. Gum disease and periodontal disease are not synonyms
- b. Is the affection of the supportive tissue that surrounds teeth
- c. It is induced by poor oral health and dental plaque accumulation
- d. Gingivitis is the first stage of periodontal disease and is reversible
- e. Periodontitis is the loss of supportive tissue around teeth

8. What oral health interventions should be provided to patients with cleft?

- a. Specific comprehensive oral hygiene instructions depending on the age stage of the patient
- b. Toothbrushing technique
- c. Use of fluor
- d. Healthy diet recommendations
- e. Care instructions for oral appliances

9. What is the lift the lip technique?

- a. Is a long procedure performed by oral health professionals
- b. Is an easy procedure that can be performed by non-oral health professionals
- c. Is an easy procedure that can be performed by caregivers
- d. The aim is to evaluate the front teeth to identify signs of tooth decay
- e. The aim is to evaluate the back teeth to identify signs of tooth decay

10. Characteristics of a risk assessment:

- a. Tool developed to assess the level of risk of oral disease
- b. Tool developed to assess the level of disease in patients with cleft
- c. It must be performed by any health professionals of the care team at all age stages
- d. It must be performed only by oral health professionals of the care team at all stages
- e. It must be performed only in children

POST-COURSE TEST

1. What are the barriers patients with cleft face when accessing health and oral health care?

- a. Cost of treatments.
- b. Lack of knowledge and preconceived beliefs of parents.
- c. Access to healthcare.
- d. Support to families.
- e. There are no barriers

2. What are some of the causes for cleft?

- a. Clefts are syndromic
- b. Clefts are non-syndromic
- c. Genetic susceptibility
- d. Environmental factors
- e. Maternal nutrition

3. Why is early oral health important?

- a. Oral health is only important when permanent teeth erupt
- b. Allows children to perform important functions, such as eating and speaking
- c. It keeps primary teeth in a good state, which helps to shape the child's face
- d. Allows permanent teeth to erupt in a correct way
- e. Prevents ECC and keeps future dental costs to a minimum

4. How can periodontal diseases be prevented?

- a. Through good oral hygiene
- b. Toothbrushing and interdental cleaning
- c. Regular check-up and professional scaling
- d. Behavioral change
- e. It cannot be prevented

5. What to do on a brief oral health intervention?

- a. Quick check of the mouth with the lift the lip technique
- b. Refer to an oral health professional if needed
- c. Remind toothbrushing twice a day and use fluoridated toothpaste
- d. Advise toothbrushing once a day
- e. Advise to avoid snacks and sugary drinks

6. What issues can be detected with the lift the lip?

- a. Change of color of the tooth surface
- b. Cavities
- c. Broken teeth

- d. Swollen or bleeding gums
- e. Abnormal tooth shape

7. How to differentiate keloids and hypertrophic scars and why it is important to do so?

- a. Hypertrophic scars rise above skin level and keloids do not
- b. Both scar types rise above skin level
- c. Both scar types are the result of excessive fibrosis
- d. Keloids typically project beyond the original wound margins
- e. Differentiation is important for scar management and decision making

8. Why can quality of life be affected in patients with cleft?

- a. Physical attractiveness and social acceptance might affect their self-esteem
- b. Dissatisfaction with body image
- c. Effective social functioning
- d. Importance of the face in communication
- e. It's only affected by features of the environment

9. Is quality important in oral healthcare and why?

- a. Quality is not important in oral healthcare but in general healthcare
- b. Is important to improve health outcomes
- c. Allows organizations to reduce costs
- d. Allows organizations to improve partnerships
- e. It is not important in health

10. Characteristics of quality healthcare:

- a. Patient safety
- b. Timeliness
- c. Patient-centeredness
- d. Equitability
- e. Efficiency

RECAP ANSWERS

DAY 1

1. Why is interprofessional collaboration important?

Shared decision-making improves patient and professional relationships and also improves health outcomes.

Babies born with cleft have significant needs from a wide range of healthcare specialties, and the care they receive depends on many factors, including distance from the clinic, cost of treatment and parental knowledge and beliefs.

There may be an adverse effect on children's quality of life if they are not able to access the full range of services, especially speech therapy and oral healthcare.

2. What are 4 types of teeth?

Incisors, canines, premolars and molars

3. How do clefts develop?

During the fourth week of development, a series of six paired, right and left, swellings form near the cranial, or head, end of the foetus. These are called branchial arches. The branchial arches develop into important structures in the head and neck, as well as the major arteries in the chest. The first branchial arch develops structures called the maxillary and mandibular prominences. In the centre of the upper face, a structure called the frontonasal prominence, which is separate from the branchial arches, forms, among other things, the nostrils and the philtrum. The medial maxillary prominences fuse with the frontonasal prominence during this time. Failure of this process results in a cleft lip.

4. How can clefts be prevented?

- Prenatal examination and genetic counselling
- Maternal nutrition and cleft lip and palate
- Folic acid supplement
- Medication during pregnancy
- Alcohol and tobacco
- Prevention of gestational diabetes mellitus and maternal obesity
- Stress control

5. Why do children with cleft suffer more oral health problems?

- dry mouth caused by mouth-breathing habits;
- less natural cleaning of the teeth due to the morphology;
- variable diet or feeding habits;
- dental anomalies;
- increased consumption of sweetened medications;
- delayed oral clearance time for foods.

6. Why are primary teeth important?

- Allow children to chew and eat properly.
- Help your child to speak more clearly.
- Maintain space for the eruption of adult teeth.
- Guide adult teeth into place.
- Help to shape the infant's face.
- Prevent early childhood caries.
- Keep future dental costs to a minimum.
- Offset the need for orthodontic treatment later.
- Reduce the risk of caries in permanent teeth.

7. What is Early Childhood Caries?

Early childhood caries (ECC) is defined as the presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth.

8. What 4 things are needed to be present for dental caries to occur?

A tooth, time, sugar substrate and dental plaque

9. How does plaque contribute to dental caries?

- Plaque biofilm is characterised by acidogenic bacteria, such as *Streptococcus Mutans*.
- When the child consumes free sugars, the bacteria metabolise the carbohydrates into acidic waste products, causing the pH of the mouth to drop.

10. How does diet contribute to dental caries?

- When the child consumes free sugars, the bacteria metabolise the carbohydrates into acidic waste products, causing the pH of the mouth to drop.
- Essential minerals are leached out of the tooth structure, leading to demineralisation.
- In a healthy oral environment, saliva production removes this acidic environment over a time period of approximately 30-40 minutes, and remineralisation occurs.
- However, if the child has suboptimal oral hygiene and is frequently consuming free sugars or fermentable carbohydrates, the mouth remains in an acidic pH, leading to dental caries.

RECAP ANSWERS

DAY 2

1. Name two things that can cause white spots on teeth

- Demineralisation
- Fluoride
- Trauma
- Hypomineralisation
- Decalcification

2. Name two things that can cause extrinsic brown spots on teeth

- Chromogenic bacteria,
- Dietary factors, such as tea, coffee, berries, smoking or even iron supplements.
- Certain mouthwashes can cause discoloration

3. Name two causes of intrinsic tooth discolouration

- Dental fluorosis
- Tetracycline staining
- Amelogenesis imperfecta
- Pulp necrosis

4. Name one common oral condition

- Oral candidiasis
- Aphthous ulcers
- Dental abscess
- Oral trauma
- Oral cancer

5. Name one uncommon oral condition

- Eruption cysts
- HIV manifestations
- Noma

6. Until how old should a child be supervised with their toothbrushing?

Around the age of 8

7. What does fluoride do? What does too much fluoride cause?

- It slows down demineralization in a joint action with other minerals present in teeth and saliva, such as calcium and phosphate
- It participates in the remineralization of the tooth tissues that were dissolved by the acids in the early stages of the tooth decay process.
- When applied topically in high concentrations, fluoride is deposited in dental enamel as calcium fluoride, which is later covered by a layer of protein and phosphate, allowing fluoride to be released slowly to the saliva
- Too much fluoride can cause fluorosis

8. Name one good food and one bad food for healthy teeth

Good foods: cheese, milk, plain yoghurt, plain crackers

Bad foods: sugar sweetened beverages, fruit juice, sugar, dried fruits, sweets, alcohol

9. How often should Lift the Lip be carried out?

At every appointment with the child

10. When should a child be referred to the oral health team?

As soon as any white spots, brown spots or decay are seen on the child's teeth. Or any abnormal oral condition.

RECAP ANSWERS

DAY 3

1. What is an oral health risk assessment?

- Used to assess the level of risk of oral disease in patients with cleft.
- It must be performed at all age stages and it should be filed with the rest of the patient's clinical history.
- It covers a series of risk factors that, when present, on their own or in combination with other factors, increase the likelihood of oral disease

2. Name two questions from the oral health risk assessment interview

- Low socio-economic status
- Frequent consumption of dietary sugars
- Familial risk factors
- Sub-optimal fluoride exposure
- Active or previous caries lesion
- Poor oral hygiene
- Reduced salivary flow or salivary pH

3. Why is scar management important for patients with cleft?

Scarring from cleft lip repair can cause lip asymmetry as the scar contracts leading to a shortened lip and nasal deformity on the affected side.

4. How often should a scar be reviewed?

A monthly clinic examination of the scar is reasonable

5. What scar management instructions should be given to the patient and caregiver?

- Patients should continue dressing the wound with skin tape (triple-layer, one over the other).
- Patients should be counselled to return to the clinic earlier than the appointed clinic visit if the wound is beginning to look "beefy" or "upset"
- The scar should be regularly massaged from the columella to the vermillion border three to five times per day. The frequency should decrease as the scar gains flexibility.

6. Name two factors in health

- Physical
- Emotional
- Social
- Spiritual
- Intellectual.

7. Name five risk factors for oral health

- social
- environmental
- biological
- behavioural

- cultural factors
- economic factors
- political factors.
- limited access to oral health care services
- complicated oral health care systems
- lack of oral-health-information material
- oral health literacy

8. How do we define quality in healthcare?

- Patient safety
- Timeliness
- Patient-centeredness
- Equitability
- Efficiency
- Effectiveness

9. Why do we need a quality approach?

- Legal and regulatory context: quality in healthcare is governed by a set of laws and regulations in force in each country.
- Administrative regulations: all clinicians should be appropriately trained and registered to practice in the chosen country
- Health regulations and good practice recommendations: specific measures for patient safety, defined by law and regulations
- Ethical regulations: unlike business, dental offices and health centres have a responsibility for patient well-being.
- Labour legislation: the rules of labour legislation set out in national legislation

10. What are the four-steps in a quality improvement cycle?

- Plan
- Do
- Study
- Act

ANSWERS TO PRE-COURSE TEST

	a	b	c	d	e
1	T	T	F	F	F
2	T	F	F	T	F
3	T	T	F	F	F
4	T	F	T	T	T
5	T	F	T	F	F
6	T	T	F	T	F
7	F	T	T	T	T
8	T	T	T	T	T
9	F	T	T	T	F
10	T	F	T	F	F

ANSWERS TO POST-COURSE TEST

	a	b	c	d	e
1	T	T	T	T	F
2	T	T	T	T	T
3	F	T	T	T	T
4	T	T	T	T	F
5	T	T	T	F	T
6	T	T	T	T	T
7	F	T	T	T	T
8	T	T	F	T	F
9	F	T	T	T	F
10	T	T	T	T	T

COURSE EVALUATION

Thank you for your participation in the Oral Health for Comprehensive Cleft Care training workshop. To assess the impact of the training program and satisfaction of trainees, please complete this form in its entirety.

Please be honest in your assessments and answer the questions as fully as possible. Your feedback will be carefully reviewed and used by the course organizers to inform future trainings and curriculum adjustments, as needed.

	Yes	Somewhat	No
Were the training objectives clearly defined?			
Were the topics covered relevant to you?			
Did the training meet your expectations?			
Was the content well organized & easy to follow?			
Was the content structure clear and logical?			
Did the trainer provide relevant examples during the training?			
Was the trainer able to answer all your questions and concerns?			
Did you have enough time allocated to complete the training?			
Was the training interactive enough?			
Were participation and interaction encouraged?			
Were the materials distributed helpful?			
Did the multimedia used within the training make it easier to comprehend the topic?			

	Good	Neutral	Needs Improvement
What do you think of the trainer's proficiency?			
How would you describe the training pace?			
How would you rate the training overall?			
How well was the training structured?			
	Yes	Maybe	No
Would you recommend this training to a friend or colleague?			

What did you like the most about the training?

What would you change about the training?

How could this training be improved?

