

PARTNERING GENERAL PRACTITIONERS TO ADVANCE COMMUNITY ORAL HEALTH

SFP2011; 37(1) Supplement : 4

Oral health has long been overlooked in the medical community. We are not well versed in anything more than the rudimentary aspects of oral health. The medical school curriculum is also lacking in coverage of this area of medicine. This is despite the fact that oral health and hygiene is often one of the first indicators of the general health of the individual, and of disease.

Many of us in Family Practice see the very young in our daily work. Neonates, infants and toddlers make up, for some of us, a large part of our clinical responsibilities. We are often faced with questions from anxious parents such as teething issues, new tooth eruption, tongue tie and the list goes on.

The College is very pleased to have the collaboration with and sponsorship of the Health Promotion Board to conduct a Family Practice Skills Course on oral health in primary care for our Family Physicians.

In Unit 1 – “The General Practitioner – An Ally in Oral Health Promotion” – Dr Hilary Thean and Dr Wong Mun Loke point out the fact that more people visit their general medical practitioners each year than any other health professional. This first point of contact for patients can facilitate preventive dental care through timely referrals to our dental colleagues.

In Unit 2 – “Quick Oral Health Facts about the Young” – Dr Ng Jing Jing and Dr Wong Mun Loke have provided an excellent set of useful facts. The section on remedies for easing teething problems will be particularly useful for the busy general practitioner.

TAN TZE LEE, Honorary Editor, College of Family Physicians Singapore

In Unit 3 – “Recognising Common Adult Oral Conditions” – Dr Rahul Nair, Dr Adeline Wong, Dr Joanna Ngo and Dr Wong Mun Loke highlight the common oral problems in the adult population which are dental caries, and periodontal disease. The prevention of oral diseases has now taken on the strategy of targeting a small set of risk factors that are important for a large number of diseases. This Common Risk Factor Approach aims to reduce risk factors in diet, stress, hygiene, smoking, alcohol, lack of exercise and injuries to prevent the onset of a range of diseases including dental caries and periodontal disease.

In Unit 4 – “Ageing and its Influence on the Oral Environment” – Dr Hilary Thean and Dr Wong Mun Loke cover issues which are specific to the ageing process and highlight some of the oral problems the elderly may encounter. These include changes to the oral mucosa, diminished taste and muscular function resulting in compromised chewing, digestion, and swallowing.

In Unit 5 – “Helping the Silver Generation Smile – Part 1” – Dr Adeline Wong, Dr Joanna Ngo and Dr Hilary Thean elaborate on the common dental conditions and issues among the elderly namely, periodontal disease, root caries, tooth loss and replacement with dental prostheses.

In Unit 6 – “Helping the Silver Generation Smile – Part 2” – Dr Adeline Wong and Dr Joanna Ngo elaborate on the common medical conditions associated with dental problems namely, diabetes, cardiovascular disease, medications resulting in xerostomia, effects of radiation therapy, oral cancer, antibiotic prophylaxis guidelines and osteonecrosis of the jaws as an effect of bisphosphonates.

This Family Practice Skills Course on Oral Health in Primary Care will be an excellent aid to our busy Family Physicians. Thanks are due to the Health Promotion Board for sponsoring this course, and to Dr Wong Mun Loke, Dr Hilary Thean, Dr Adeline Wong, Dr Joanna Ngo, Dr Ng Jing Jing, Dr Rahul Nair, Ms Samantha Bennett and their colleagues for writing the material for this course.

OVERVIEW OF “ORAL HEALTH IN PRIMARY CARE” FAMILY PRACTICE SKILLS COURSE

A/Prof Goh Lee Gan

SFP2011; 37(1) Supplement : 6-7

INTRODUCTION

Oral health is important in the total care of the patient throughout his or her lifespan. Oral health problems can arise from pathology in the mouth. They can also be secondary to systemic disorders. The role of the family physician in oral health of the patient is now recognized. The College is grateful to the Health Promotion Board for the sponsorship of this family practice skills course for our family physicians. We are also grateful to the authors of the six study units in this skills course.

We would recommend this family practice skills course to you in your efforts to provide even more comprehensive care to your patients by working in partnership with the dental surgeons.

COURSE OUTLINE AND CME POINTS

This Family Practice Skills Course is made up of the following components. You can choose to participate in one or more parts of it. The CME points that will be awarded are also indicated below.

Components and CME Points

- Distance Learning Course – 6 units (6 CME points upon completing the Distance Learning Online Assessment)
- 2 Seminars (2 CME points per seminar cum workshop)
- 2 Workshops
- 10 Readings – read 5 out of 10 recommended journals (max. of 5 CME points for the whole CME year)

Distance Learning Course

Unit 1 : The General Medical Practitioner – An Ally in Oral Health Promotion

Dr Hilary Thean; Dr Wong Mun Loke

Unit 2 : Quick Oral Health Facts about the Young

Dr Ng Jing Jing, Dr Wong Mun Loke

Unit 3 : Common Dental Conditions in Adults

*Dr Rahul Nair, Dr Adeline Wong, Dr Joanna Ngo,
Dr Wong Mun Loke*

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Senior Consultant, Institute of Family Medicine, College of Family Physicians Singapore

Unit 4 : Ageing and its Influence on the Oral Environment
Dr Hilary Thean, Dr Wong Mun Loke

Unit 5 : Helping the Silver Generation Smile – Part 1 – Common Dental Conditions Affecting the Elderly
Dr Hilary Thean, Dr Wong Mun Loke

Unit 6 : Helping the Silver Generation Smile – Part 2 – Common Medical Conditions with Associated Dental Problems
Dr Adeline Wong, Dr Joanna Ngo

COURSE TOPIC DETAILS

Unit 1: The General Medical Practitioner – An Ally in Oral Health Promotion

- Introduction.
- Overview of the Oral Health in Primary Care skills course.

Unit 2: Quick Oral Health Facts about the Young

- Introduction.
- Baby teeth and adult teeth.
- Teething problems.
- Importance of primary dentition.
- Remedies for easing teething problems.
- Common developmental anomalies.

Unit 3: Common Dental Conditions in Adults

- Introduction.
- Dental caries.
- Periodontal disease.
- Common risk factor approach to disease prevention.

Unit 4: Ageing and its Influence on the Oral Environment

- Introduction.
- Physiological Changes in the oral environment associated with ageing.
- Overview of common dental issues associated with the elderly.

Unit 5: Helping the Silver Generation Smile – Part 1 – Common Dental Conditions Affecting the Elderly

- Introduction.
- Common dental conditions affecting the elderly.
- Tooth loss and replacements.

Unit 6: Helping the Silver Generation Smile – Part 2 – Common Medical Conditions with Associated Dental Problems

- Introduction.
- Common medical conditions with associated dental problems.

FACE-TO-FACE SESSIONS

Seminar 1: 19 February 2011

2.00pm – 4.00pm

Unit 1: The General Medical Practitioner – An Ally in Oral Health Promotion

Unit 2: Quick Oral Health Facts about the Young

Unit 3: Common Dental Conditions in Adults

Workshop 1: 19 February 2011

4.00pm – 5.30pm

Workshop A: Case studies/simulations on children/youth

Seminar 2: 20 February 2011

2.00pm – 4.00pm

Unit 4: Ageing and its Influence on the Oral Environment

Unit 5: Helping the Silver Generation Smile – Part 1 – Common Dental Conditions Affecting the Elderly

Unit 6: Helping the Silver Generation Smile – Part 2 – Common Medical Conditions with Associated Dental Problems

Workshop 2: 20 February 2011

4.00pm – 5.30pm

Workshop B: Case studies/simulations on ageing and general population

ABSTRACT

More people visit their general medical practitioners each year than any other health professional. As oral health is part and parcel of an individual's general health and well-being, the general medical practitioner is well positioned to identify early signs of oral conditions and alert their patients to seek further follow-up with their dental practitioners.

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INTRODUCTION

General medical practitioners provide comprehensive and holistic preventive, curative and rehabilitative health care for patients in the community. More people visit their general medical practitioners each year than any other health care professional. They are therefore well positioned to promote health, anticipate health needs and offer opportunistic prevention by proactively targeting high-risk individuals who may not be fully aware of the need for follow-up care and management.

Oral health is part and parcel of an individual's general health and wellbeing. An alliance should therefore be forged with the general medical practitioner to empower them to identify early signs of oral conditions and alert their patients to seek further follow-up with their dental practitioners. For example, when a doctor performs a routine tonsil examination, a quick glance at the rest of the mouth for signs of oral disease can help the patient a long way. Early referral to a dental surgeon or an oral health therapist (e.g. dental hygienist; dental therapist) can enhance the patient's overall quality of life.

It must be emphasised that the role of the general medical practitioner is to recognise and identify the less than optimal states of oral health and refer the patient to a dental surgeon or oral health therapist for further management. The general medical practitioner should not be expected to dispense oral hygiene instructions but if he/she does so, that will be a real bonus for the patient!

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MUN LOKE WONG, Deputy Director, Youth Health Programme Development 1, Youth Health Division, Health Promotion Board

The general medical practitioner's role in oral health promotion is increasingly being well accepted in other countries such as Australia (RACGP, 2006)¹ and in the United States (Douglass, 2008)². Locally, the medical and dental fraternities can also work closely and synergistically to advance the state of oral health of the population.

OVERVIEW OF THE ORAL HEALTH IN PRIMARY CARE SKILLS COURSE

This Family Practice Skills Course aims to provide general medical practitioners with an overview of common oral health conditions which may be experienced across the lifespan of an individual. Such an overview will empower medical practitioners to opportunistically recognise and identify similar conditions in their patients during the medical consultation. In turn, this can facilitate a timely dental referral for the patient. A summary of the content of the course is as follows:

- **Unit 1 – The General Medical Practitioner – An Ally in Oral Health Promotion**
This unit highlights the fact that as more people visit their general medical practitioners each year than any other health professional, this first point of contact for patients can facilitate preventive dental care through timely referrals to our dental colleagues.
- **Unit 2 – Quick Oral Health Facts about the Young**
This unit highlights the key developmental dental milestones of children, the importance of the primary dentition and common oral conditions which may be experienced in the early years of life.
- **Unit 3 – Common Dental Conditions in Adults**
This unit highlights the two common oral problems in the adult population namely, dental caries and periodontal disease. The Common Risk Factor Approach in preventing these conditions is also described.
- **Unit 4 – Ageing and its Influence on the Oral Environment**
This unit examines the physiological influences of ageing on the oral cavity as predisposing factors to dental problems in the elderly.

- **Unit 5 and 6 – Helping the Silver Generation Smile**

These two units raise awareness of common dental conditions associated with the elderly and highlights medical conditions which may have an impact on their oral health. Unit 5 focuses on the common dental conditions among the elderly namely, periodontal (gum) disease, xerostomia, caries, teeth loss and prosthesis. Unit 6 elaborates on the common medical conditions associated dental problems namely, diabetes, cardiovascular diseases, medications resulting in xerostomia, effects of radiation therapy, oral cancer, and antibiotic prophylaxis guidelines, and osteonecrosis of the jaws as an effect of bisphosphonates.

REFERENCES

1. RACGP. The Royal Australian College of General Practitioners' position on the importance of preventive health care and health promotion, and the general practitioner's role in prevention, health care and health promotion. RACGP National Standing Committee – Quality Care. 2006. URL: www.racgp.org.au/policy/Role_of_gp_in_prevention_and_health_promotion.pdf
2. Douglass AB, Maier R. Promoting oral health: the family physician's role. Am Fam Physician. 2008 Oct 1;78(7):814-5.

LEARNING POINTS

- **Oral health is part and parcel of an individual's general health and well-being.**
 - **The role of the general medical practitioner is to recognise and identify the less than optimal dental condition and refer the patient to a dental surgeon or dental hygienist for further management.**
 - **Early referral to a dental surgeon or dental hygienist can add many more years of oral health to the patient.**
 - **The general medical practitioner's role in oral health promotion is increasingly being more well established.**
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UNIT NO. 2

QUICK ORAL HEALTH FACTS ABOUT THE YOUNG

Dr Ng Jing Jing, Dr Wong Mun Loke

ABSTRACT

This article sheds light on the sequence of teeth eruption in the young and teething problems; highlights the importance and functions of the primary dentition and provides a quick overview of common developmental dental anomalies and other dental conditions in children.

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INTRODUCTION

The early years are always full of exciting moments as we observe our children grow and develop. One of the most noticeable aspects of their growth and development is the eruption of teeth. The first sign of a tooth in the mouth never fails to attract the attention of the parent and child. For the parent, it marks an important developmental milestone of the child but for the child, it can be a source of irritation brought on by the whole process of teething. This Unit offers insights into the developing dentition in children; the importance of the primary dentition and a quick overview of some of the common dental conditions in children.

BABY TEETH AND ADULT TEETH

There are 20 and 32 teeth in the primary (baby teeth) and adult (adult teeth) dentitions respectively.

The primary dentition generally starts to erupt from about six months of age and by 33 months (approximately 3 years old), the full set of primary dentition should have erupted. The adult teeth start to replace the primary teeth from about the age of six and by 12 years old, all the primary teeth should have exfoliated.

The sequence of eruption for the primary and adult dentitions is as shown in Tables 1 and 2.

JING JING NG, Registrar, School Dental Service, Youth Health Division, Health Promotion Board

MUN LOKE WONG, Deputy Director, Youth Health Programme Development 1, Youth Health Division, Health Promotion Board

Table 1. Eruption sequence of Primary Dentition

Primary Upper Teeth	Primary Lower Teeth
Central Incisors: 8-13 months	Central Incisors: 6-10 months
Lateral Incisors: 8-13 months	Lateral Incisors: 10-16 months
Canines: 16-23 months	Canines: 16-23 months
First Molars: 16-23 months	First Molars: 13-19 months
Second Molars: 25-33 months	Second Molars: 23-31 months

Table 2. Eruption sequence of Adult Dentition

Adult Upper Teeth	Adult Lower Teeth
Central Incisors: 7-8 years	Central Incisors: 6-7 years
Lateral Incisors: 8-9 years	Lateral Incisors: 7-8 years
Canines: 11-12 years	Canines: 9-10 years
First Premolars: 10-11 years	First Premolars: 10-11 years
Second Premolars: 11-12 years	Second Premolars: 11-12 years
First Molars: 6-7 years	First Molars: 6-7 years
Second Molars: 12-13 years	Second Molars: 11-13 years
Third Molars: 18-25 years	Third Molars: 18-25 years

The eruption sequence and timing may be influenced by various factors including gender, ethnicity and developmental defects. Therefore, the actual eruption of teeth may differ between individuals. While the above tables provide an estimated timeline for the eruption of the different teeth, it is reasonable to expect a difference of ± 6 months for the primary dentition and ± 2 years for the adult dentition.

TEETHING PROBLEMS

The common signs of teething are drooling; wakefulness; crankiness; crying; biting; chewing and tender gums. Some children may even refuse their milk and develop rashes around the mouth as a result of the increased drooling. Occasionally, the baby may also have mild fever and loose bowel movements. The gums may also appear swollen and red and even bleed gently. However, teething should not result in severe diarrhoea or high fever. If this is the case, it is important to ensure that the child is not suffering from some form of infection.

To ease such teething problems,

- advise cold food, chilled teething rings or frozen popsicles
- massage the gums with clean fingers or cold towels
- apply topical anaesthetics
- consider oral painkillers if teething affects sleep.

IMPORTANCE OF PRIMARY DENTITION

The primary dentition is often regarded as being temporary and hence easily dismissed as being unimportant. This is a misconception because the primary dentition is extremely important for children as it helps them in

- chewing their food to prevent indigestion and facilitate better absorption of nutrients;
- developing accurate pronunciation especially when they are developing their speech;
- maintaining space for the adult dentition to erupt. This will prevent malocclusion in the adult dentition. Premature loss of the primary dentition can result in the adjacent primary teeth drifting into the space thus obstructing the eruption of the permanent teeth (Figure 1);
- maintaining aesthetics which is important for the self-esteem of a child.



Figure 1. Early loss of the primary dentition may cause the adjacent teeth to tilt into the space. This makes it difficult for the permanent tooth to erupt.

Also, the adult teeth are developing in close proximity to the roots of the primary teeth. Infection from the primary teeth can therefore affect the forming adult teeth resulting in mal-formation of the permanent dentition (also known as Turner’s tooth).



Figure 2. Hypoplasia of the upper central incisors due to untreated infection in the primary incisors



Figure 3. Ectopic eruption of the first permanent premolar due to chronic infection from the retained primary molar

Dental caries (tooth decay) is a common dental problem which afflicts the young (details on the aetiology of dental caries will be covered in Unit 3). If left unchecked, dental caries can progress into the dental pulp (where the nerves and blood vessels are) of the tooth and this can result in great pain and discomfort (toothache) for the child. The decayed tooth also becomes a source of infection in the mouth and dental abscesses may be seen on the gums.



Figure 4. Patient with rampant caries, abscess (circled) related to the roots of the upper front teeth

It is therefore important to take good care of the primary dentition despite its transient passage in the mouth. This can be done by

- regular toothbrushing – at least twice a day once in the morning and once at night before sleeping;
- limiting the consumption of sweetened food and beverages to main meals;
- regular dental visits to detect first signs of dental problems. Early detection and management of dental problems is also much less traumatic for the child.

COMMON DEVELOPMENTAL ANOMALIES

The following highlights developmental anomalies commonly seen in the young.

Partial Ankyloglossia (Tongue-Tie)

The child usually presents with a short and thick lingual frenum or attachment to the tip of the tongue. It is more common among males and rarely causes speech or swallowing problems. Sometimes, this condition may self correct and if it does not, a frenectomy may be indicated.



Figure 5. Patient with tongue-tie

Torus Palatinus/Mandibularis

This is a bony hard mass that varies in size and shape. It is usually asymptomatic unless traumatised. The Torus Palatinus is more commonly noted among females while the Torus Mandibularis is more often seen in males. These bony aberrations usually do not require treatment and may persist into adulthood. One consequence of these Tori is difficulty in fabricating upper full dentures, if required later on in life.



Figure 6. Patient with torus palatinus

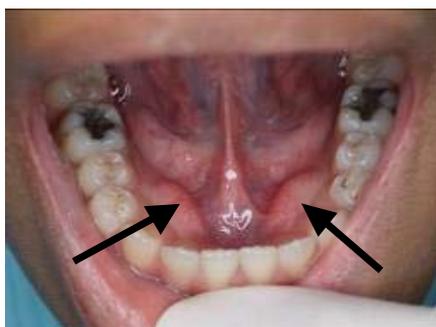


Figure 7. Patient with torus mandibularis (arrowed)

Erythema Migrans (Benign Migratory Glossitis)

Multiple oval or circular red patches with white scalloped border are noted on the dorsum and lateral border of the tongue. There is also a loss of filiform papillae and the pattern of patches may change. Females are more likely to have this condition which may cause a burning sensation in the mouth. Generally, no treatment is required, however, hot and spicy food should be avoided. In symptomatic cases, topical steroid may be indicated.



Figure 8. Patient presenting with erythema migrans

Hypodontia

This refers to a congenital absence of teeth resulting in less than the usual number of teeth in the mouth. This condition seems to stem from familial traits and the most commonly missing teeth are the third molars, second premolars and maxillary incisors. Hypodontia is also often associated with microdontia where the tooth size is smaller than normal. In general, treatment is mainly to enhance aesthetics or enhance function in severe cases of hypodontia.



Figure 9. Patient with one missing lower incisor and microdontia of the upper central incisors



Figure 10. Patients with ectodermal dysplasia presenting with severe hypodontia and microdontia



Figure 11. Patient with retained primary central incisors due to missing adult incisors

Hyperdontia (Supernumerary Teeth)

With this condition, there are extra teeth in the mouth. More commonly noted in males, hyperdontia is most commonly found in the maxilla and adult dentition. The management of the extra teeth usually involves extraction, especially if they are causing discomfort or affecting the normal eruption of teeth.



Figure 12. Patient presenting with a supernumerary palatal to the upper right central incisor

Fusion

This condition refers to the dentinal union of two embryologically developing teeth and often no treatment is needed.



Figure 13. Patient with fused lower central and lateral incisors



Figure 14. Patient presented with fused upper left primary central and lateral incisors (left) and fused lower left primary lateral incisors and canine microdont lower right primary lateral incisor (right)

Dens Evaginatus (Leong’s Premolars)

Dens evaginatus is a developmental anomaly that presents with a tubercle protruding from the biting (occlusal) surface of posterior teeth and lingual surface of anterior teeth. It occurs most commonly on the premolars. The prevalence of dens evaginatus is between 1 to 4% and occurs most commonly in Mongoloids. Early identification and management of such teeth is important because fractured or worn down tubercles can lead to pulpal necrosis and dental infections.



Figure 15. Intact tubercle on lower left second premolar

Acknowledgments

The authors acknowledge the contributions of fellow co-workers in the field for the use of the various photographs and diagrams which have helped to enhance the content of this publication.

LEARNING POINTS

- **There are 20 and 32 teeth in the primary (baby teeth) and adult (adult teeth) dentitions respectively. The eruption sequence and timing may be influenced by various factors including gender, ethnicity and developmental defects. Therefore, the actual eruption of teeth may differ between individuals.**
- **Teething is often associated with drooling, wakefulness, crankiness, crying, biting, chewing and tender gums. Teething should not result in severe diarrhoea and high fever. If so, the baby may be suffering from some form of infection.**
- **The primary dentition is important as it serves many important functions including chewing, speech, appearance and foundations to guide the eruption of the adult dentition.**
- **It is important to take care of the primary dentition by**
 - ◆ **regular toothbrushing – at least twice a day once in the morning and once at night before sleeping;**
 - ◆ **limiting the consumption of sweetened food and beverages to main meals;**
 - ◆ **regular dental visits to detect first signs of dental problems early.**

COMMON DENTAL CONDITIONS IN ADULTS

Dr Rahul Nair, Dr Adeline Wong, Dr Joanna Ngo, Dr Wong Mun Loke

ABSTRACT

Dental caries and periodontal disease are the two most common dental conditions which afflict the general adult population. Dental caries presents with several common signs and symptoms which include sensitivity or pain to hot and/or cold foods, pain while chewing, exudate, swelling, and/or other signs of inflammation. Common signs and symptoms of periodontal diseases include redness and swelling of gingiva, malodour, exudate, bleeding while brushing, tooth looking longer than normal, increased mobility of teeth, and pain. The Common Risk Factor Approach prevents dental caries and periodontal disease. One of the most significant risk factors for periodontal disease is cigarette smoking. Diabetes Mellitus, AIDS and pregnancy, are also associated with periodontitis.

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INTRODUCTION

Oral health confers many benefits including mastication, speech, appearance and even self-esteem to individuals. Increasingly, oral health is recognised as being an integral part of an individual's overall health and wellbeing. It is therefore important to maintain good oral health as one progresses through life and especially during adulthood. This article highlights the aetiology, signs and symptoms as well as management of the two most common dental conditions which afflict the general adult population – dental caries and periodontal disease. These two diseases are preventable and the Common Risk Factor Approach can be employed to prevent their onset.

DENTAL CARIES

While the prevalence of dental caries (tooth decay) in childhood may vary among communities, it is usually higher among the younger age groups (Gao, Hsu et al. 2009; Nair 2010)^{6,10}. However, dental caries also continues to plague individuals in adulthood.

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Dental caries can mean a number of things. Firstly, it can be on the enamel on the commonly exposed parts (crown) of the teeth, or on the dentine, or on the roots, after the thin layer of cementum is worn off (Figure 1).

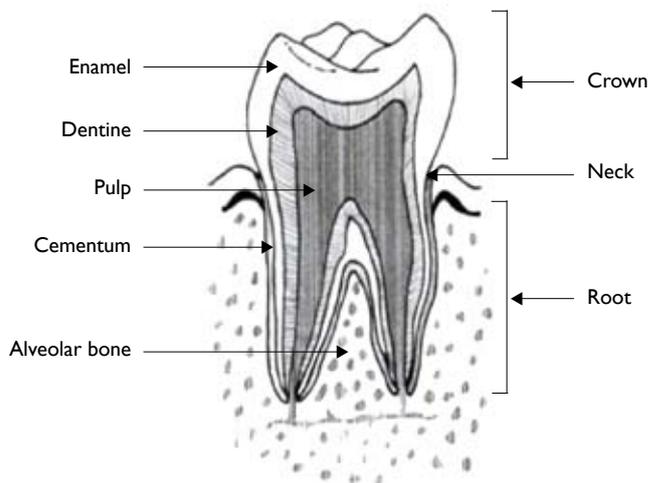


Figure 1. Parts of a Tooth

Dental plaque is a soft material which forms around the teeth and is made up of saliva, partially digested food, bacteria and bacterial by-products. Bacteria in dental plaque convert sugars in the mouth to acids which dissolve the mineral of enamel. In its initial stages, dental caries may resemble a white patch (pre-cavitation) commonly found along the gumline or on the grooves of teeth where food and bacterial biofilm are commonly visible (Fejerskov and Kidd 2008)⁵. Then it progresses to loss of tooth material and presents with varying degrees of cavitation eventually resulting in loss of tooth structure. While in the enamel, the lesion is usually more extensive towards the inside than the outside. The visible opening of the cavitation thus lends a deceptive impression of the extent of the cavitation inside. It is important to detect dental caries early in its pre-cavitation stage as that part of the tooth can be remineralised if given a chance.

On the roots, the lesion may begin as a lighter or darker region and usually progresses to become a dark area with varying depths, depending on the extent of the lesion. Dental caries on the root surface usually presents with a scooped out appearance.

Dental caries presents with several common signs and symptoms. These include sensitivity or pain to hot and/or cold foods. For more extensive lesions, there can be pain while chewing; exudates; swelling and/or other signs of inflammation. It may also be difficult for the patient to localise the sensitivity or pain to a single tooth.

Management

Management of dental caries involves removal of the carious portions of the tooth and replacement of the lost tooth structure with a restoration (filling). Sometimes, if the caries is extensive with significant loss of tooth structure, the tooth may need to be extracted and replaced with a prosthesis. More information on the management of tooth loss will be addressed in Units 5 and 6.

Prevention

Fluoride

Fluoride is a very important caries-protective agent. Its wide and effective use is one of the great success stories in preventive medicine. Singapore's water supply is fluoridated to 0.4ppm (parts per million) to 0.6ppm and it is the most important dietary vehicle for fluorides. From a global public health perspective, the addition of fluoride to toothpastes is the single most effective method of topical caries prevention. The fluoride concentration in most adult toothpaste is about 1,200ppm but specially formulated toothpastes with fluoride concentrations of 1,500ppm – 2,000ppm are recommended for caries-prone and xerostomic patients. Other ways of applying fluoride therapeutically include mouth rinses, gels, and varnishes. The choice of fluoride concentration and mode of delivery in fluoride therapy will depend on the pattern of caries development and patient compliance issues.

Sugar substitutes

Sugars play a predominant role in the aetiology of dental caries. The use non-sugar sweeteners in place of the more cariogenic types has been researched extensively. Non-sugar substitutes broadly categorised into bulk and intense sweeteners are now widely used in confectionery, chewing gum, liquid medicines, soft drinks and toothpastes. The dental benefits of non-sugar sweeteners such as xylitol are well-established and studies have shown that an adequate dosage of xylitol can shift the bacterial flora in the mouth and reduce caries incidence and usage (Ly, Riedy et al. 2008; Milgrom, Ly et al. 2009)^{8,9}.

Chewing sugarless gum helps prevent dental caries by encouraging remineralisation of very early carious lesions through increased salivary flow. Studies have shown a dose-response relationship where chewing gum 5 times per day is more effective than 3 times daily.

Milk and dairy products

Various components in milk have been considered to be protective against dental caries, mainly the minerals, casein, and other lipid and protein components. Not only is lactose the least cariogenic of the common dietary sugars, the high concentrations of calcium and phosphorus in milk also helps to prevent dissolution of enamel. Studies have shown that supplementation of a cariogenic diet with cow's milk

substantially reduced dental caries and this was not due to a reduced consumption of the cariogenic diet. As such, milk may be a non-cariogenic alternative suitable for use as artificial saliva in caries-prone and xerostomic patients who are not lactose intolerant.

PERIODONTAL DISEASE

The periodontium consists of structures that support teeth in their position in the mouth. These include the alveolar bone, periodontal ligament, gingiva (gums), and cementum (Armitage 2003)² (Figure 1). In a healthy mouth, the gingiva surrounds the teeth like a pair of well fitting socks. There is a small gap (crevice) between the tooth and gingiva and that little gingival crevice should be barely detectable and definitely less than 3mm in depth. In disease, this crevice can become as deep as 10mm and the tooth often feels loose or 'weak' (Figure 2).

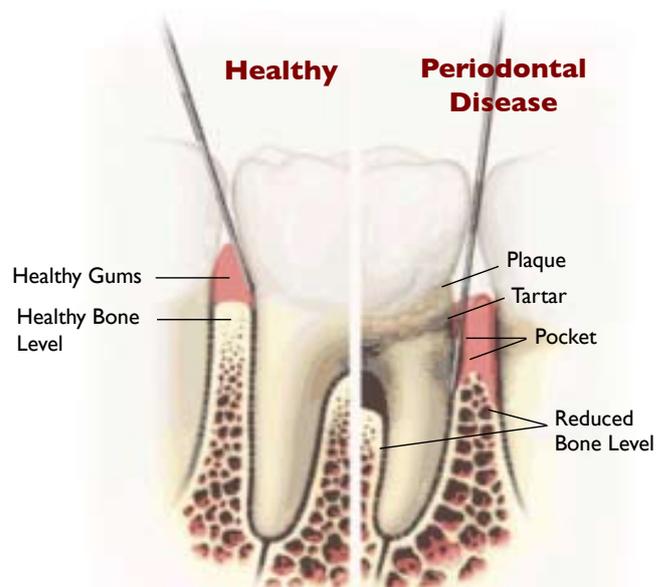


Figure 2. Healthy gingiva and Periodontal Disease

Prolonged accumulation of dental plaque in this crevice initiates a host-mediated destruction of soft tissue caused by hyperactive leukocytes, cytokines, eicosanoids and bacterial by-products which irritate the gingiva. This in turn causes irreversible resorption of the surrounding bone supporting the teeth resulting in drifting, mobility and eventually loss of the teeth. This process often happens over a long period of time and may take 10 – 20 years before a tooth becomes loose or starts to drift out of its position in the jaw.

The two major diseases that affect the periodontium are gingivitis and periodontitis. Gingivitis is the inflammation of the gingival tissue, and is usually associated with bacterial biofilm (plaque) or systemic conditions. Periodontitis involves loss of support to the tooth from the periodontium.

Gingivitis is almost always present in most age groups and in most countries (Burt 2005)³. Adolescents usually present with bleeding on probing and calculus. Due to its slowly advancing nature it is seldom detected until it is too late. Loss of periodontal support as evidenced by periodontal pocket depths of 4-5 mm is seen in a majority in this group. Among adults, complete absence of periodontal disease is uncommon. When examining the reasons for extraction of teeth, it was seen that periodontal disease was one of the common reasons, and the instances increased with age (Ong, Yeo et al. 1996)¹².

Common signs and symptoms of periodontal disease include redness and swelling of the gingiva; malodour; exudates; bleeding while brushing; teeth looking longer than normal; increased mobility of teeth and pain.

Management

Management of periodontal disease involves removing the tartar beneath the gingival and rigorous oral hygiene maintenance on the patient's part.

Prevention

Good oral hygiene through regular toothbrushing and dental flossing at home is key in removing dental plaque to prevent irritation to the gingival tissues. Regular dental check-ups will also allow for assessing the need for professional cleaning.

COMMON RISK FACTOR APPROACH TO DISEASE PREVENTION

Traditionally, the prevention of diseases has centred around specific risk factors for specific diseases, but we may not need to put a great deal of additional effort to make significant difference in the prevention of oral diseases (Sheiham and Watt 2000)¹⁴. Instead, we can target a number of risk factors that are common for several diseases of interest (Figure 3).

So, by targeting a small set of risk factors that are important for a large number of diseases, there is greater effectiveness and lower cost and burden. Under this common risk factor approach, a general medical practitioner can play an important and effective role in the prevention of common oral diseases for most age groups.

One of the most significant risk factors for periodontal disease is cigarette smoking (AAP 1999). Besides periodontitis, it is related to a variety of medical problems such as cancer, pulmonary and cardiovascular diseases. Smoking is related to the development and progression of periodontal diseases. Smoking alters the immune response to infections and may also alter the bacteria that are present in the periodontal pockets. In previous studies, there was a relationship between smoking and destructive periodontal disease. While measuring the amount of loss of support provided by the alveolar bone, significant differences were noted between those who have never smoked and current smokers. This difference between the two groups

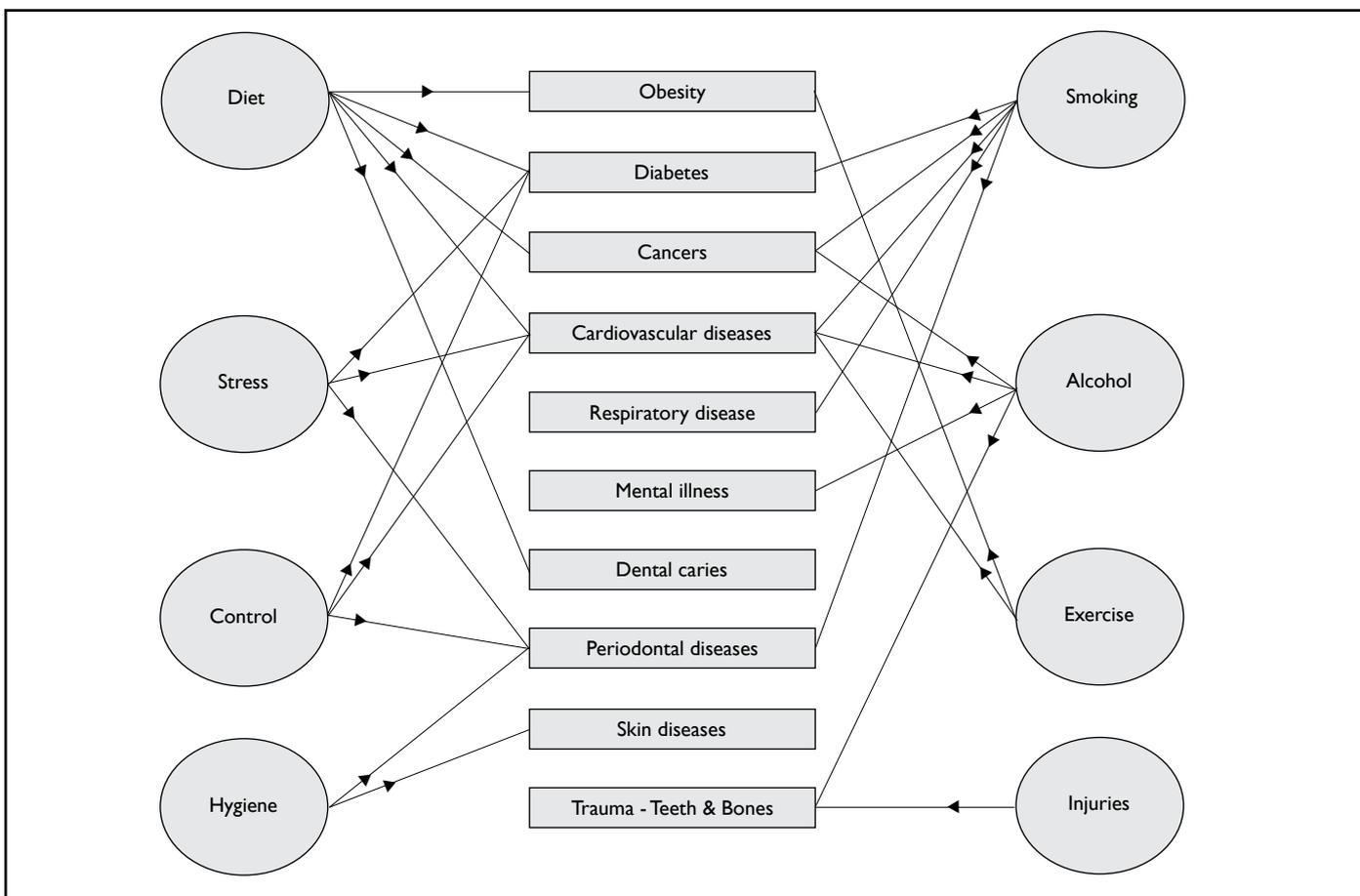


Figure 3. The Common Risk Factor Approach (Sheiham and Watt 2000)¹⁴

increased with age. Smokers may also present with decreased signs of clinical inflammation in their periodontium.

Diabetes mellitus, AIDS and pregnancy are also associated with increased periodontal destruction (Lim, Leo et al. 2001; Burt 2005)^{7,3}. These instances require greater attention for periodontal health.

Besides control of smoking, and increased care for sections of populations that are at an increased risk, hygiene of the oral cavity is very important. For a majority of the population, good oral hygiene may help reduce the occurrence and burden of periodontal disease. The improved oral hygiene can also help reduce the risk of dental caries. Basic components of oral hygiene include brushing teeth adequately twice a day (once in the morning and once before sleeping at night) with fluoridated toothpaste, and flossing at least once a day.

Diet is another factor that is important for many of the diseases that are of importance to health care (Sheiham and Watt 2000)¹⁴. Among the oral diseases, dental caries has the strongest link to dietary habits. The total amount of sugars consumed by an individual has been found to be the most important dietary factor for the risk for dental caries. Helping patients choose a balanced diet devoid of excess sugars can make a difference in reducing the risk of dental caries, and other systemic diseases.

CONCLUSION

The general medical practitioner plays a pivotal role in the healthcare system and can effectively facilitate the prevention of several common oral diseases. They are in the best position to identify and target some of the major risk factors such as smoking, diet, hygiene, and other systemic conditions that pose a risk for many oral and systemic diseases.

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LEARNING POINTS

- **Dental caries presents with several common signs and symptoms which include sensitivity or pain to hot and/or cold foods, pain while chewing, exudate, swelling, and/or other signs of inflammation.**
 - **Common signs and symptoms of periodontal diseases include redness and swelling of gingiva, malodour, exudate, bleeding while brushing, tooth looking longer than normal, increased mobility of teeth, and pain.**
 - **The Common Risk Factor Approach prevents dental caries and periodontal disease.**
 - **One of the most significant risk factors for periodontal disease is cigarette smoking.**
 - **Diabetes Mellitus, AIDS and pregnancy, are also associated with periodontitis.**
-

UNIT NO. 4

AGEING AND ITS INFLUENCE ON THE ORAL ENVIRONMENT

Dr Hilary Thean; Dr Wong Mun Loke

ABSTRACT

Failing oral health is not a natural function of age and it is possible for one to have a healthy set of teeth and gums to last a lifetime. Ageing exerts physiological changes in the oral environment predisposing the elderly to dental problems. Root caries is common in the elderly population especially since more of them are retaining their natural teeth for a longer time. Tooth loss is a common problem among older adults. Halitosis is usually a sign of poor oral hygiene but can also be a symptom or early sign of sinus or gastric problems. Untreated dental disease is very common among those over 65 years old, ranging from inflamed gums under old, dirty or ill fitting dentures, to decayed root stumps, periodontitis, and ulcers.

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INTRODUCTION

Growing old or ageing is a natural passage of life. This is usually accompanied by physiological changes within the body including the oral environment. Older does not necessarily mean sicker as far as health is concerned. Therefore, one does not need to grow old and become sick before one dies. Such a notion also holds true for dental disease and oral health. Failing oral health is not a natural function of age and it is possible for one to have a healthy set of teeth and gums to last a lifetime!

Improved medical care and disease preventive efforts over the last four decades have led to significant increases in life expectancy in Singapore. Today, women have a life expectancy of 82 years and men 80. There have also been major shifts in the leading causes of death for all age groups, including older adults, from infectious diseases and acute illnesses to chronic diseases and degenerative illnesses. Cancer and heart disease are now the leading causes of death in Singapore as compared to infectious diseases such as Tuberculosis in the past.

This change in demographics has a significant impact on oral health and oral healthcare. In the past, teeth were not required or expected to stay in the mouth for 80 years because people often passed on before that. Previously, extractions were the only option for treating toothaches. This was followed by

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prosthodontic replacement with plastic or porcelain teeth in the form of dentures. With increased dental awareness and the advent of sophisticated dental technology people are retaining their teeth longer and their remaining teeth have probably had some prior dental treatment.

PHYSIOLOGICAL CHANGES IN THE ORAL ENVIRONMENT ASSOCIATED WITH AGEING

Some of the key physiological changes which take place in the oral environment as one ages include:

- Hardening and increased brittleness of teeth and consequently increased susceptibility to fracture.
- Decreased height and density of alveolar (jaw) bone.
- Increased tooth wear (e.g. posterior teeth look flattened; teeth become more sensitive).
- Loss of elasticity of oral mucosa due to diminished blood supply and atrophy of epithelial cells.
- Diminished taste and neuromuscular function resulting in compromised chewing, digestion and swallowing.

Indirectly related to the oral health are other physiological changes that affect one's ability to care for oneself. For example, a decrease in manual dexterity, visual acuity, muscle strength and fine motor movements all contribute to deterioration in oral hygiene and a consequent increase in the incidence of dental caries and periodontal disease.

OVERVIEW OF COMMON DENTAL ISSUES ASSOCIATED WITH THE ELDERLY

Saliva Flow and Composition. Adequate saliva is an indication of good health. It shows that the body is adequately hydrated and there are no medications or other predisposing factors that are affecting that function. Salivary flow and composition is also sensitive to mood and body changes. In a healthy person, abundance of saliva, with the correct composition of enzymes, immunoglobulins and buffers, keeps the integrity of the oral mucosa and teeth and prevents harmful bacteria from entering the body.

Medications such as anti-hypertensives, anti-depressants, anti-histamines, anti-coagulants, anti-cholinergics and anti-psychotics can cause xerostomia. Many elderly individuals are on one or more of these medications for the treatment of chronic disease such as hypertension.

The lack of saliva can affect speech, health of the oral mucosa and increase the risk of dental caries.

Dental Caries. This is usually brought under control by adulthood and this continues to be so as one ages unless there is an onset of risk factors such as xerostomic medications or a reduction in manual dexterity; mobility or vision.

Root caries are also common in the elderly population. This is because the gingival tissue (gums) tend to recede with age thus exposing part of the root surface. This root surface is usually protected from the oral environment by the gingiva but with gingival recession, it is now exposed. Root surfaces are softer than the tooth because it is not covered by a tough shell of enamel. This makes the root more susceptible to dental caries, erosion or abrasion.

Periodontal Disease. This is the most common dental disease of adulthood in Singapore. Generally, the disease slowly progresses and its often painless onset is an understatement of the devastation it can cause. Even in well persons, it is common to find some mild manifestation of periodontal disease in the form of inflammation or slight bleeding of the gingival tissues in one or two areas during toothbrushing.

Tooth Loss. This is a common problem among older adults. Not every missing tooth needs to be replaced but if a person has missing teeth it will be good to refer him/her to a dentist to check if the missing teeth are significant for function and requires replacement. Such a visit to the dentist can also help to ascertain if the teeth has been broken with the root still buried under the gingiva. This is important because such a buried root may be a focus for infection.

Halitosis. This is usually a sign of inadequate oral hygiene but can also be a symptom or early sign of sinus or gastric problems. It can also be caused by the diet consumed. Patients presenting with halitosis should be encouraged to locate the cause of it.

Untreated dental disease. This is very common among those over 65 years old. This can range from something apparently harmless such as inflammation under old, dirty or ill fitting dentures to more debilitating conditions such as decayed root stumps, periodontitis, ulcers and malignant tumours.

LEARNING POINTS

- **Failing oral health is not a natural function of age and it is possible for one to have a healthy set of teeth and gums to last a lifetime.**
 - **Ageing exerts physiological changes in the oral environment.**
 - **Root caries is common in the elderly population especially since more of them are retaining their natural teeth for a longer time.**
 - **Tooth loss is a common problem among older adults.**
 - **Halitosis is usually a sign of poor oral hygiene but can also be a symptom or early sign of sinus or gastric problems.**
 - **Untreated dental disease is very common among those over 65 years old.**
-

ABSTRACT

Oral health is an integral component of general health and wellbeing. It is essential even in old age. This article highlights common dental conditions affecting the elderly that the general medical practitioner can identify and motivate their patients to seek follow-up oral health care. These are periodontal disease, dental caries, and tooth loss that may require prostheses. Denture hygiene is important for the health of the oral mucosa. Patients must therefore clean and maintain their dentures well with daily cleaning and maintenance. Denture patients also need their annual dental checkups and cases of uncomfortable dentures and inflammation of the oral mucosa should be referred to a dentist for further investigation and management.

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INTRODUCTION

Ageing brings about physiological changes to the oral tissues. These changes affect the teeth; oral mucosa; alveolar bone; saliva quality and quantity; taste acuity and chewing. However, it is important to recognise that no broad, generalised detrimental changes in oral health occur simply with age. Healthy older people can therefore expect to keep their teeth throughout their lifetime. Unfortunately, many older adults do not place a priority on oral health. This article describes common dental conditions affecting the elderly that the general medical practitioner can easily identify during their routine examination and motivate them to seek follow-up oral health care.

COMMON DENTAL CONDITIONS AFFECTING THE ELDERLY**Periodontal Disease**

Poor oral hygiene is a key risk factor for the onset of periodontal disease. Maintaining good oral hygiene can be a challenge for

the elderly patient with limited manual dexterity and impaired visual acuity. It may also be complicated by the presence of systemic illnesses like diabetes mellitus and renal impairment. As the destructive nature of periodontal disease is determined by individual host response to the presence of pathogens in dental plaque, it has a high recurrence rate as dental plaque forms continuously in the mouth. Please refer to Unit 3 for a more extensive discussion on this subject.

These patients, in particular, will need to visit a dentist more regularly, like every 6 weeks or 3 months instead of the customary 6 months to a year for periodontal maintenance.

Dental Caries

Dental caries may become more prevalent in the elderly as they retain more teeth in old age. In the elderly, when salivary levels are reduced, their teeth are more susceptible to carious attacks especially the root surfaces of the teeth.

Gingival or gum recession is the main cause of exposed root surfaces. Unlike the crown of the tooth, root surfaces are only covered by cementum and not enamel therefore a less acidic environment is needed to initiate demineralisation on the root (pH of 6.7) compared with enamel (pH of 5.4), hence root surfaces are at increased risk of succumbing to dental caries than the crown of the teeth. Such risk is compounded by a cumulative gingival recession exposing more root surfaces; pre-existing restorations and prostheses in the mouth. Root caries is a serious problem among the elderly that can ultimately lead to tooth loss.

TOOTH LOSS AND REPLACEMENTS

The main reasons for tooth loss are dental caries and periodontal disease. Patients who have lost teeth usually need some form of prosthesis to replace them. A dental prosthesis not only replaces teeth but also provides support for the lips and cheeks as well as corrects the collapsed appearance of the face that results from tooth loss. This will not only make the person look younger and feel better, it will also improve their chewing ability, prevent saliva from dribbling out of the corners of the mouth and improve speech.

Prostheses to Replace Missing Teeth

Dentures are removable prostheses which can be removed for cleaning and maintenance. Well designed dentures look good and do not induce other problems like mouth ulcers, gum disease or tooth decay. Partial dentures replace some missing teeth while complete dentures are used by individuals who have lost all their teeth in either one or both jaws.

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Complete dentures primarily rely on suction to keep them retained (feeling tight) and functioning. Patients with reduced saliva flow or no saliva will find it very difficult to keep the dentures firm and 'tight' in the mouth. Dentures need to be professionally cleaned and serviced every year and might require replacement every 3 to 8 years. Many patients think that once they have no teeth they do not ever have to see a dentist again but they forget that false teeth also require maintenance. Studies have shown that worn and broken dentures cause more oral lesions than having no teeth nor dentures!

Many patients do not complain about discomfort under their dentures or think that they may need to make new ones. Patients with uncomfortable dentures and inflamed oral mucosa need to be referred to a dental surgeon for treatment. Prolonged chronic irritation can lead to precancerous lesions.

Denture wearers have to keep their dentures clean to prevent oral disease like denture stomatitis, candidal infection and ulcers. With age, the oral mucosa tends to lose elasticity, diminish in blood supply and exhibit atrophy of epithelial cells. These changes can be exacerbated by conditions common in

elderly patients such as xerostomia, iron or vitamin deficiency, making the oral mucosa more friable and susceptible to inflammation and ulcers. Denture wearers are therefore advised to remove their dentures at night brush off all food debris and soak them overnight in a denture cleanser. The oral mucosa also needs to be exposed to the protective antibodies and enzymes in saliva to minimise denture stomatitis (inflammation of the denture supporting oral mucosa).

Fixed partial dentures, better known as "crowns and bridges", are cemented to the adjacent supporting teeth and cannot be removed for cleaning or maintenance. The prosthesis needs to be replaced if the supporting teeth become mobile, painful or fractured.

Dental implants are effective for replacing missing individual teeth or anchoring loose complete dentures to their respective jaws. In fact, implant treatment has become much more affordable and more patients are opting for them. Not everyone, however, is suitable for dental implants. Contraindications include smokers, patients with diabetes and those on oral bisphosphonates.

LEARNING POINTS

- **Oral health is an integral component of general health and wellbeing. It is essential even in old age.**
 - **Common dental conditions affecting the elderly that the general medical practitioner can identify and motivate their patients to seek follow-up oral health care are periodontal disease, dental caries, and tooth loss that may require prostheses.**
 - **Denture hygiene is important for the health of the oral mucosa. Patients must therefore clean and maintain their dentures well with daily cleaning and maintenance.**
 - **Denture patients also need their annual dental checkups and cases of uncomfortable dentures and inflammation of the oral mucosa should be referred to a dentist for further investigation and management.**
-

ABSTRACT

Oral health is an integral component of general health and wellbeing. It is essential even in old age. This article describes the common medical conditions which can influence the oral health of the elderly. Xerostomia (dry mouth) may be the effect of medications. Reduced salivary flow not only increases the risk of dental caries. It also affects complete denture retention and is associated with increased periodontal disease, burning, or soreness of the oral mucosa. Periodontitis is one of the complications of diabetes mellitus. Furthermore, periodontitis may be a risk factor in the development of cardiovascular disease. The oral manifestations of the complications of radiotherapy to the head and neck region are directly related to the dose intensity. Cancer of the mouth and pharynx is among the top 10 most common cancers for both men and women. The initial signs of oral cancer commonly involves a non-healing ulcer with indurated, irregular edges, commonly on the tongue, lip and floor of mouth. Prior to cardiovascular surgery, it would be helpful to refer patients for dental evaluation and clearance, especially if the patients will be on warfarin or other anti-coagulants post-surgery. Removing all foci of dental infection before starting bisphosphonate therapy especially i/v bisphosphonate therapy will reduce the risk of osteonecrosis of the jaw.

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INTRODUCTION

The elderly may be plagued by various medical conditions and these can exert an influence on their oral health. It is useful for general medical practitioners to appreciate such influences and provide their elderly patients with the necessary advice to maintain good oral and general health.

COMMON MEDICAL CONDITIONS WITH ASSOCIATED DENTAL PROBLEMS

The following are common medical conditions with associated dental problems:

- Xerostomia (Dry Mouth).
- Diabetes Mellitus.

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- Cardiovascular disease.
- Polypharmacy resulting in xerostomia.
- Radiation therapy in the head and neck region.
- Oral Cancer.
- Antibiotic prophylaxis for invasive dental treatments in
 - Cardiovascular conditions
 - Total Joint Replacements.
- Bisphosphonate therapy and Osteonecrosis.

Xerostomia (Dry Mouth)

Xerostomia was once considered an inevitable consequence of ageing, it is now known that saliva levels remain unchanged in healthy elderly individuals. Instead, the hyposalivation observed in many elders is often a side effect of certain diseases such as Sjogrens’ Syndrome, sarcoidosis, primary biliary cirrhosis and cystic fibrosis; multiple medications and radiation treatment. More than 400 drugs with any sympathomimetic or diuretic activity list xerostomia as a minor or major side effect. Many of such drugs including anticoagulants, antihypertensives, antihistamines, antipsychotics, antidepressants and anticholinergics cause xerostomia.

The General Functions of Saliva

Digestive Functions	Protective Functions
Assists the mastication of food	Provides comfort through lubrication
Forms a bolus and assist in swallowing of the bolus	Hydrates oral mucosa, gingiva and lips
Helps in taste perception	Inhibits adhesion and aggregation of bacteria; contains immunoglobulins
Helps in metabolism of starch	Provides buffering capacity
	Helps speech

Reduced salivary flow not only increases the risk of dental caries, it also affects complete denture retention and is associated with increased periodontal disease, burning, or soreness of the oral mucosa and difficulties in speaking, chewing and swallowing, all of which can adversely affect food selection and lower caloric intake.



Figure 1. A xerostomic patient exhibiting rampant root caries

The influence of saliva on taste perception has been demonstrated in xerostomic patients who reported alterations in taste and food perception. These alterations can result in decreased interest in eating and resultant nutritional deficiencies or over-seasoning of food, usually with salt. Xerostomia can also lead to candidiasis with patients presenting with mucosal erythema, atrophy of the filiform papillae on the tongue and angular stomatitis (angular cheilitis) at the corners or commissures of the mouth.

Salivation may be promoted by using a stimulant such as chewing gums, diabetic sweets and cholinergic drugs (sialogogues), such as pilocarpine, bethanecol, cevimeline or anetholetrithione. Saliva substitutes are also recommended for patients with reduced or no salivary flow. The pH of unstimulated saliva is around 7.0 but rises rapidly to pH 8.0 and above when the flow rate increases. This increase in flow rate will help to remove food debris and degradation products. The high pH will help to neutralise acids in dental plaque and the high levels of calcium and phosphate will aid the remineralisation of any demineralised enamel.

Diabetes Mellitus

The American Diabetes Association has recognised periodontitis as one of the classic complications of diabetes mellitus (DM). There is a consensus in the literature that a bi-directional relationship exists between DM and periodontal disease – periodontal disease has an adverse effect on the severity of DM and the severity of DM has an adverse effect the severity of periodontitis. New evidence suggests that advanced periodontal disease may interfere with DM control and doctors should be informed about their patients’ periodontal status. Good periodontal health decreases general systemic inflammatory markers, decreasing tissue resistance to insulin, hence improving glycemic control.

Cardiovascular Disease

Periodontitis may be a risk factor in the development of cardiovascular disease. The role of inflammation in atherosclerotic events has emerged as an integrative cardiovascular disease factor. Periodontitis is a chronic inflammatory disease which increases the incidence of atherosclerotic events. Moderate to severe periodontitis increase the level of systemic inflammation as measured by hsCRP, chemokines, cytokines and other inflammatory biomarkers. Treatment of moderate to severe periodontitis decreases the level of these systemic inflammatory markers. Also, gram negative bacteria common in periodontal pockets have been found in atheroma. Indirectly, periodontitis and cardiovascular diseases share many common risk factors such as smoking, high serum LDL, and diabetes mellitus. Patients with cardiovascular diseases should have a dental evaluation to screen for periodontitis and vice versa. (Friedwald et al, 2009)².

Radiation Therapy

The oral manifestations of the complications of radiotherapy to the head and neck region are directly related to the dose intensity. The acute reaction is usually mucositis which usually heals completely within 3 weeks after the end of treatment. Longer term complications include xerostomia and osteoradionecrosis (ORN), potentially the most serious. Modern techniques and the use of mucosa-sparing blocks have significantly reduced the risk. The mandible is more prone to ORN as it is compact bone with higher density and poorer vascularity compared to the maxilla.

The initiating factor for ORN is often trauma, such as tooth extraction, or oral infection, or ulceration from dental prostheses. Predisposing factors for ORN include high radiation dose, immunodeficiency and malnutrition. The clinical presentation of ORN is exposed bone of bony sequestrum in an irradiated mouth, with or without external sinuses, pain and pathological fracture.

Treatment involves long-term antibiotics, usually tetracycline and local cleansing. Hyperbaric oxygen is also helpful to increase bone perfusion. Salivary changes are quantitative as well as qualitative (lowering of pH; lowering of buffering capacity; changes in the electrolytes).

Management Of Oral Complications Of Radiotherapy

Complication	Management
Mucositis	Prophylaxis:Amifostine 200mg/m ² /day;Bethamathasone mouthwash 4xdaily from the day before radiotherapy, throughout the course
Osteomyelitis	Warm saline or benzydamine or aqueous chorhexidine chlorhexidine mouthwashes
Xerostomia	Saliva substitutes or artificial saliva e.g.,methylcellulose or mucin Frequent ice cubes or sips of water Sialogogues e.g., pilocarpine or cevimeline
Osteoradionecrosis	Perform atraumatic extractions under antibiotic cover, with primary wound closure Plan pre-radiotherapy extractions or extractions within 3 months of radiotherapy
Loss of taste	Consider zinc sulphate
Trismus	Jaw-opening exercises 3x daily
Ulcers	Aqueous chlorhexidine or benzydamine mouthwashes 4x daily
Candidiasis	Nystatin suspension 100,00IU/ml mouthwash 4x daily Fluconazole if immunocompromised
Caries	Daily topical fluoride application
Dentine hypersensitivity	Fluoride applications/mouthwash
Periodontal disease	Oral hygiene Aqueous chlorhexidine mouthwash

Oral Cancer

Cancer of the mouth and pharynx is among the top 10 most common cancers for both men and women worldwide. More than 90% of oral cancer is oral squamous cell carcinoma (OSCC) and is seen predominantly in the elderly and in males. By far the most important dietary influence of oral cancer is alcohol. The evidence is extensive and consistent. It is very likely that there are synergistic interactions between alcohol consumption and tobacco (smoking and smokeless) use. Individuals with high exposure to both alcohol and tobacco have a relative risk of 15.6 compared with those who neither smoke nor drink alcohol. However, individual genetic predisposition and impaired ability to metabolise certain carcinogens (aromatic amines in particular) and/or repair DNA damages by mutagens have also been cited as possible aetiological factors. (Scully, 2004)¹.

In Singapore and South Asia, betel nut chewing together with slaked lime, areca nut, spices and tobacco (by the Indians mainly) have been associated with increased risk of developing OSCC, particularly when it is initiated early in life and is used frequently and for prolonged periods. However, with patient education and better awareness, this is gradually reducing with time.

It is important to recognise some precancerous lesions which can progress to OSCC. These precancerous lesions include erythroplakia (the most likely lesion to progress to severe dysplasia or carcinoma); leukoplakia; lichen planus; submucous fibrosis; discoid lupus erythematosus; chronic candidiasis and human papilloma virus etc.

Initial signs of oral cancer commonly involve a non-healing ulcer with indurated, irregular edges, commonly on the tongue, lip and floor of mouth. A high index of suspicion should be aroused, especially if a solitary lesion is present for more than 3 weeks and if it is ulcerated and unaccompanied with pain or discomfort. Other possible forms of pre-cancer clinical presentations include:

- Granular ulcer with fissuring or raised exophytic margins.
- Red lesion (erythroplakia).
- White lesion (leukoplakia).
- A mixture of red and white lesion.
- Non healing extraction socket.
- Cervical lymph node enlargement or fixation.

An incisional biopsy is invariably required for histological confirmation and staging of the tumour. OSCC is now treated largely by surgery and/or radiotherapy to control the primary tumour and metastases in the draining cervical lymph nodes.

The most common oral cancer is carcinoma of the lower lip and it has a far better prognosis than intraoral cancers. The most common intraoral site is the postero-lateral border/ventrum of the tongue and which may or may not involve the floor of the mouth.



Figure 2. Lateral border of tongue is most common intra-oral site for squamous cell carcinoma

Antibiotic Prophylaxis Guidelines

The at-risk patients who may benefit from prophylactic antibiotic coverage include immunocompromised patients, those with end-stage organ (kidney, liver) disease, those with certain cardiovascular manifestations and those with prosthetic joint replacements.

The American Heart Association 2007 guidelines (AHA,2007)³ state that at-risk patients requiring antibiotic prophylaxis before invasive dental treatment include those with:

- prosthetic cardiac valves;
- history of endocarditis and
- congenital heart disease (unrepaired/within 6 months of repair/with residual side effects).

In the past, this list included surgically constructed systemic-pulmonary shunts; rheumatic and other acquired valvular pathology; hypertrophic cardiomyopathy as well as mitral valve prolapsed with insufficiency.

The American Dental Association and American Academy of Orthopaedic Surgeons in 2003 (ADA and AAOS, 2004)⁴ stated that antibiotic prophylaxis is not indicated for dental patients with pins, plates or screws. It, however, recommended that patients about to have total joint arthroplasty should be in good dental health prior to surgery as the risk of bacteremia increases in a mouth with ongoing inflammation. It will be advisable to refer such patients for dental evaluation for proper oral hygiene counselling prior to surgery.

Patients at potential risk of experiencing hematogenous total joint infection include:

- All patients during first two years following joint replacement.
- Immunocompromised/immunosuppressed patients (e.g. rheumatoid arthritis, systemic lupus erythematosus or drug/radiation induced immunosuppression).
- Patients with co-morbidities (e.g. previous prosthetic joint infections, insulin-dependent diabetes, HIV, malignancy).

The potential benefit of antibiotic prophylaxis must however be weighed against the known risks of antibiotic toxicity, allergy and microbial resistance. Although there seems to be a lack of agreement amongst clinicians on the indications for antibiotic prophylaxis from the practical standpoint, there appears to be a consensus that it should be provided for at-risk patients undergoing oral surgery, periodontal treatment, and implant placement. Prior to cardiovascular surgeries, it may be helpful to refer patients for a dental evaluation and clearance, especially if the patients will be on warfarin or other anti-coagulants post-surgery.

It will be useful for general medical practitioners to inform elderly patients and provide them with a note for their dental surgeon indicate the need for antibiotic prophylaxis prior to invasive dental procedures. This note can then be passed to their dental practitioner for their follow-up.

Bisphosphonates and Osteonecrosis of the Jaws

Bisphosphonates are used commonly to treat osteoporosis, Paget disease of the bone, multiple myeloma and breast cancer. Though not common, a difficult to treat side effect of bisphosphonates is osteonecrosis of the jaw bone after dental surgery or infection. This is especially so for IV bisphosphonates. Preventive strategies include removing of all foci of dental infection before starting bisphosphonate therapy. It would be beneficial for patients about to start on bisphosphonates to be referred to the dental clinic for dental evaluation and clearance prior to commencement of the bisphosphonates therapy. (Woo et al, 2006)⁵.



Figure 3. Osteonecrosis of the jaw can have severe effects on the alveolar bone

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LEARNING POINTS

- **Medical conditions which can influence the oral health of the elderly.**
- **Xerostomia (dry mouth) may be the effect of medications. Reduced salivary flow not only increases the risk of dental caries it also affects complete denture retention and is associated with increased periodontal disease, burning, or soreness of the oral mucosa.**
- **Periodontitis is one of the complications of diabetes mellitus. Furthermore, periodontitis may be a risk factor in the development of cardiovascular disease.**
- **The oral manifestations of the complications of radiotherapy to the head and neck region are directly related to the dose intensity.**
- **Cancer of the mouth and pharynx is among the top 10 most common cancers for both men and women. The initial signs of oral cancer commonly involves a non-healing ulcer with indurated, irregular edges, commonly on the tongue, lip and floor of mouth.**
- **Prior to cardiovascular surgery, it would be helpful to refer patients for dental evaluation and clearance, especially if the patients will be on warfarin or other anti-coagulants post-surgery.**
- **Removing all foci of dental infection before starting bisphosphonate therapy especially i/v bisphosphonate therapy will reduce the risk of osteonecrosis of the jaw.**

ASSESSMENT OF 30 MCQs

FPSC NO : 39 MCQs on Oral Health in Primary Care Submission DEADLINE : 5 April 2011

INSTRUCTIONS

- To submit answers to the following multiple choice questions, you are required to log on to the College Online Portal (www.cfps2online.org)
- Attempt ALL the following multiple choice questions.
- There is only ONE correct answer for each question.
- The answers should be submitted to the College of Family Physicians Singapore via the College Online Portal before the submission deadline stated above.

1. **About the role of the general medical practitioner in patients with oral health problems, which of the following is his LEAST expected task?**
 - (A) Recognise and identify the less than optimal states of oral health.
 - (B) Refer patients to a dental surgeon or oral health therapist for further management.
 - (C) Anticipate needs and remind patients on the need for screening.
 - (D) Proactively target high risk patients for follow up care and further management.
 - (E) Dispense oral hygiene instructions.

2. **One of the two most common dental conditions that afflict the adult population is dental caries. Which of the following is the other condition?**
 - (A) Tooth loss.
 - (B) Halitosis.
 - (C) Ill fitting dentures.
 - (D) Periodontal disease.
 - (E) Oral cancer.

3. **About teeth eruption time and numbers which of the following statement is CORRECT?**
 - (A) It is normal to have \pm 2 years variation in the eruption of primary teeth.
 - (B) It is normal to have \pm 6 months variation in the eruption of adult dentition.
 - (C) Factors affecting eruption time include gender, ethnicity and presence of developmental defects.
 - (D) There are 36 teeth in the primary dentition.
 - (E) There are 20 teeth in the adult dentition.

4. **With regards to dentition, which of the following is CORRECT?**
 - (A) The primary dentition usually starts by 6 months.
 - (B) The adult teeth starts to replace the primary at 6 years.
 - (C) By 33 months all the primary dentition should have erupted.
 - (D) By 12 years old all primary teeth would have exfoliated.
 - (E) All of the above.

5. **With regards to the sequence of teeth eruption, which of the following statements is correct?**
 - (A) The first to erupt are usually the primary lower central incisors at about 8 to 13 months.
 - (B) The last to erupt in the primary teeth are usually the upper second molars at around 16 to 23 months.
 - (C) The first adult teeth to erupt are usually the lower central incisors at around 5 to 6 years.
 - (D) The first adult molars usually erupt at around 6 to 7 years.
 - (E) The last adult teeth to erupt are usually the 3rd molars at around 11 to 13 years.

6. **About symptoms of teething in babies, which of the following is NOT due to teething?**
 - (A) Drooling.
 - (B) Rashes around the mouth.
 - (C) Severe diarrhoea.
 - (D) Refusal of feeds.
 - (E) Fretfulness.

- 7. About remedies for teething pain which of the following is NOT effective?**
- (A) Massage gums with clean fingers or cold towels.
 - (B) Apply topical anaesthetics.
 - (C) Use of oral analgesics.
 - (D) Use of cold food.
 - (E) All are effective.
- 8. About the functions of primary dentition, which of the following statements is CORRECT?**
- (A) It helps swallowing but not digestion or nutrition.
 - (B) It helps in accurate pronunciation when developing speech.
 - (C) It helps to guide adjacent teeth to erupt at the right spots.
 - (D) It helps in maintaining aesthetics but this is of little importance in the child.
 - (E) It lines the gums with teeth which makes the gums less vulnerable to infection.
- 9. About torus palatines, which of the following statements is CORRECT?**
- (A) It is not a common developmental anomaly of childhood.
 - (B) It is more commonly found in males.
 - (C) It is often a asymptomatic bony hard mass of varying shape and size.
 - (D) It often requires treatment immediately.
 - (E) It does not grow into adulthood and will not affect future fabrication of full denture.
- 10. About erythema migrans, which of the following statements is CORRECT?**
- (A) It is also known as benign migratory glossitis.
 - (B) It is more common in females.
 - (C) It consists of multiple oval or circular red patches with white scalloped borders.
 - (D) It requires no treatment except to avoid hot spicy food.
 - (E) All of the above are correct.
- 11. Regarding dental caries in adults, which of the following statements is CORRECT?**
- (A) On the enamel, it might resemble a white patch along the gumline or the grooves on the teeth.
 - (B) It can progress into loss of tooth material and present with varying degrees of cavitation.
 - (C) The visible opening of the cavitation is not an indicator of the extent of inside cavitation.
 - (D) Dental caries on the root surface usually presents with a scooped out appearance.
 - (E) All of the above are correct.
- 12. Which of the following is a common clinical feature of dental caries?**
- (A) Headache.
 - (B) Sensitivity to cold but not hot foods.
 - (C) Ability to localize pain to the affected tooth.
 - (D) Pain while chewing.
 - (E) Bleeding while brushing.
- 13. A patient complains of dental pain, malodour, and bleeding while brushing. Examination shows redness and swelling of the gingiva with increased mobility of teeth. The patient is MOST likely to be suffering from which of the following?**
- (A) Dental caries.
 - (B) Periodontal disease.
 - (C) Torus mandibularis.
 - (D) Malocclusion.
 - (E) Dental abscess.
- 14. For a patient with periodontal disease, which of the following preventive measures would be MOST effective?**
- (A) Advise patient to stop smoking.
 - (B) Advise patient to avoid drinking alcohol.
 - (C) Advise patient to brush teeth at least once a day.
 - (D) Advise patient to avoid sweet foods.
 - (E) Advise patient to see the dentist at least once every 6 months.
- 15. For a patient with dental caries, which of the following preventive measures would be MOST effective?**
- (A) Advise patient to stop smoking.
 - (B) Advise patient to avoid drinking alcohol.
 - (C) Advise patient to brush teeth at least once a day.
 - (D) Advise patient to avoid sweet foods.
 - (E) Advise patient to see the dentist at least once every 6 months.
- 16. Which of the following is a physiological change in the mouth associated with ageing?**
- (A) Increased susceptibility of teeth to fracture after menopause in women.
 - (B) Increased height and density of the alveolar (jaw) bone due to less chewing power.
 - (C) Decreased flattening of posterior teeth because of decreased strength in chewing.
 - (D) Increased blood supply with resultant tendency to have bleeding gums.
 - (E) Heightened taste due to poor salivary function.

- 17. Which of the following contributes to poor oral health in the elderly?**
- (A) Decrease in muscle strength.
 - (B) Decrease in manual dexterity.
 - (C) Difficulty with fine motor movements.
 - (D) Decrease in visual acuity.
 - (E) All of the above.
- 18. Saliva function is a good indicator and important component of oral health in the elderly. Which of the following statements about saliva function is CORRECT?**
- (A) Abundance of saliva keeps the integrity of the oral mucosa and helps to prevent bacterial invasion.
 - (B) Good salivary flow indicates that the patient is not on chronic medication.
 - (C) A patient with good salivary flow is in a good mood.
 - (D) Dental caries can cause reduction in saliva production.
 - (E) None of the above.
- 19. Gingival tissue tends to recede with age exposing the roots of the teeth. This in turn leads to an increase in the incidence of X. What is X?**
- (A) Gingivitis.
 - (B) Root caries.
 - (C) Dental abscess.
 - (D) Tooth loss.
 - (E) Tooth fracture.
- 20. Regarding dental health in the elderly, which of the following statements is CORRECT?**
- (A) Tooth loss is a common problem in the elderly and therefore no action is required.
 - (B) For missing teeth, a dental check can be helpful to determine if function can be improved with replacement.
 - (C) Halitosis is a benign symptom due to poor oral hygiene.
 - (D) Chronic oral ulcers due to ill fitting dentures are harmless and need not be treated.
 - (E) Extraction is the usual option for treatment of toothache.
- 21. Which of the following is NOT the result of xerostomia?**
- (A) Increased periodontal disease.
 - (B) Decreased interest in eating.
 - (C) Candidiasis.
 - (D) Increased sense of taste.
 - (E) Burning or soreness of oral mucosa.
- 22. About caries in the elderly becoming more prevalent, which of the following is NOT a causal factor?**
- (A) Reduced salivary levels.
 - (B) Cumulative gingival recession.
 - (C) Use of milk and dairy products.
 - (D) Pre-existing restorations and prosthesis.
 - (E) Exposed root surfaces.
- 23. About the prevention of dental caries, use of which of the following is LEAST likely to be effective?**
- (A) Xylitol.
 - (B) Casein.
 - (C) Fluoridated mouth rinses.
 - (D) Lactose drink.
 - (E) Chewing sugarless gums once a day.
- 24. Which of the following practices is NOT advisable in denture hygiene?**
- (A) Patients must remove their dentures at night.
 - (B) Patients need to rinse after meals when food is trapped around their prosthesis.
 - (C) Dentures must be brushed and rinsed daily.
 - (D) Dentures must be soaked in a glass of hot water.
 - (E) Dentures must not be kept dry.
- 25. Which of the following statements on periodontitis is CORRECT?**
- (A) Periodontitis is a form of gum disease which is reversible.
 - (B) Periodontitis affects adults and is an age-related disease.
 - (C) Receding gums can only be caused by periodontitis.
 - (D) When immune system of a patient is susceptible to the bacteria in plaque, the patient is less at risk to periodontitis.
 - (E) Periodontitis is characterized by loose teeth, occasional bleeding gums, bad breath, and receding gums.
- 26. Which of the following management of oral complications caused by radiation therapy is CORRECT?**
- (A) For periodontal disease: advise oral hygiene.
 - (B) For ulcers: aqueous chlorhexidine or benzydamine mouthwash 1x daily.
 - (C) For candidiasis: nystatin suspension 100,000IU/ml mouthwash 1x daily
 - (D) For dentine hypersensitivity: daily topical chlorhexidine application.
 - (E) For caries: fluoride mouthwash.

27. About the clinical presentations of an oral cancer, which of the following is NOT a known clinical presentation?

- (A) Erythroplakia (red lesion).
- (B) Leukoplakia (white lesion).
- (C) Cervical lymph node enlargement.
- (D) Granular ulcer with fissuring.
- (E) Supraclavicular lymph node enlargement.

28. Mucositis from radiation therapy usually heals completely within X weeks after the end of treatment. What is X?

- (A) 3.
- (B) 4.
- (C) 5.
- (D) 6.
- (E) 8.

29. About the oral cancer risk, which of the following statement is CORRECT?

- (A) Initial signs commonly involves a non-healing ulcer with indurated, regular edges, commonly on the tongue, lip and gum.
- (B) Carcinoma of the lower lip is a less common oral cancer.
- (C) The most common intraoral site is the floor of the mouth and buccal mucosa.
- (D) The risk is higher in patients consuming alcohol and tobacco.
- (E) The risk is higher in patients consuming spices.

30. Osteonecrosis of the jaw from dental surgery or dental infection is a known complication associated with treatment with which of the following medications?

- (A) Warfarin.
- (B) Angiotensin II receptor blockers (ARB).
- (C) Bisphosphonates.
- (D) Chlorhexidine mouth wash
- (E) None of the above.

A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO ORAL HEALTH IN PRIMARY CARE AVAILABLE AS FREE FULL-TEXT OR PAYMENT REQUIRED

Selection of readings made by A/Prof Goh Lee Gan

READING 1 – Common acute conditions of the oral cavity

Edwards PC, Kanjirath P. Recognition and management of common acute conditions of the oral cavity resulting from tooth decay, periodontal disease, and trauma: an update for the family physician. J Am Board Fam Med. 2010 May-Jun;23(3):285-94.

URL: <http://www.jabfm.org/cgi/reprint/23/3/285> (free full text)

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SUMMARY

This article presents an overview of common and/or significant diseases of the oral cavity that the family physician is likely to encounter, with an emphasis on pathogenesis, recognition, complications, and management. Topics reviewed include the sequelae of dental caries, periodontal disease, and trauma. Prevention and early intervention strategies are emphasized. Recent updates and practical issues for the family physician are highlighted. PMID: 20453174 [PubMed - indexed for MEDLINE]

READING 2 – Common tongue conditions in primary care

Reamy BV, Derby R, Bunt CW. Common tongue conditions in primary care. Am Fam Physician. 2010; Mar 1;81(5):627-34.

URL: <http://www.aafp.org/afp/2010/0301/p627.html> (free full text)

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SUMMARY

Although easily examined, abnormalities of the tongue can present a diagnostic and therapeutic dilemma for physicians. Recognition and diagnosis require a thorough history, including onset and duration, antecedent symptoms, and tobacco and alcohol use. Examination of tongue morphology and a careful assessment for lymphadenopathy are also important. Geographic tongue, fissured tongue, and hairy tongue are the most common tongue problems and do not require treatment. Median rhomboid glossitis is usually associated with a candidal infection and responds to topical antifungals. Atrophic glossitis is often linked to an underlying nutritional deficiency of iron, folic acid, vitamin B12, riboflavin, or niacin and resolves with correction of the underlying condition. Oral hairy leukoplakia, which can be a marker for underlying immunodeficiency, is caused by the Epstein-Barr virus and is treated with oral antivirals. Tongue growths usually require biopsy to differentiate benign lesions (e.g., granular cell tumors, fibromas, lymphoepithelial cysts) from premalignant leukoplakia or squamous cell carcinoma. Burning mouth syndrome often involves the tongue and has responded to treatment with alpha-lipoic acid, clonazepam, and cognitive behavior therapy in controlled trials. Several trials have also confirmed the effectiveness of surgical division of tongue-tie (ankyloglossia), in the context of optimizing the success of breastfeeding compared with education alone. Tongue lesions of unclear etiology may require biopsy or referral to an oral and maxillofacial surgeon, head and neck surgeon, or a dentist experienced in oral pathology. PMID: 20187599 [PubMed - indexed for MEDLINE]

READING 3 – Oral health manifestations of systemic disease

Chi AC, Neville BW, Krayner JW, Gonsalves WC. Oral manifestations of systemic disease. Am Fam Physician. 2010 Dec 1;82(11):1381-8. Review. PubMed PMID: 21121523.

URL: <http://www.aafp.org/afp/2010/1201/p1381.html> (payment is required)

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SUMMARY

Careful examination of the oral cavity may reveal findings indicative of an underlying systemic condition, and allow for early diagnosis and treatment. Examination should include evaluation for mucosal changes, periodontal inflammation and bleeding, and general condition of the teeth. Oral findings of anemia may include mucosal pallor, atrophic glossitis, and candidiasis. Oral ulceration may be found in patients with lupus erythematosus, pemphigus vulgaris, or Crohn disease. Additional oral manifestations of lupus erythematosus may include honeycomb plaques (silvery white, scarred plaques); raised keratotic plaques (verrucous lupus erythematosus); and nonspecific erythema, purpura, petechiae, and cheilitis. Additional oral findings in patients with Crohn disease may include diffuse mucosal swelling, cobblestone mucosa, and localized mucogingivitis. Diffuse melanin pigmentation may be an early manifestation of Addison disease. Severe periodontal inflammation or bleeding should prompt investigation of conditions such as diabetes mellitus, human immunodeficiency virus infection, thrombocytopenia, and leukemia. In patients with gastroesophageal reflux disease, bulimia, or anorexia, exposure of tooth enamel to acidic gastric contents may cause irreversible dental erosion. Severe erosion may require dental restorative treatment. In patients with pemphigus vulgaris, thrombocytopenia, or Crohn disease, oral changes may be the first sign of disease. PMID: 21121523 [PubMed - indexed for MEDLINE]

READING 4 – Oral health manifestations of systemic disease

Dounis G, Ditmyer MM, McClain MA, Cappelli DP, Mobley CC. Preparing the dental workforce for oral disease prevention in an aging population. J Dent Educ. 2010 Oct;74(10):1086-94. PubMed PMID: 20930239.

URL: <http://www.jdentaled/cgi/reprint/74/10/1086> (Free full text)

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SUMMARY

The growing proportion of older adults in the U.S. population, as well as escalating dental expenditures, is leading to major changes in the demands on oral health care delivery. Researchers over the years have clearly demonstrated the shortcomings of traditional restorative treatment and the cycle of repeat interventional care. Oral health care professionals are constantly seeking advances in technology, protocols, methodologies, and materials to meet the needs of the growing, diverse older population. Early stages of oral diseases such as caries and periodontal disease are vigorous, preventable, and reversible. Assessment of social, systemic, and oral risk factors that emphasize patient counseling to facilitate risk reduction, along with individualized evidence-based disease prevention planning, is more cost-effective than traditional restorative treatment and will improve overall outcome. The purposes of this article are to briefly describe current issues and challenges related to oral health promotion for older adults and to examine strategies for disease prevention and health promotion in health and dental care settings. PMID: 20930239 [PubMed - indexed for MEDLINE]

READING 5 – Oral health in children guidelines

Chandna P, Adlakha VK. Oral health in children guidelines for pediatricians. Indian Pediatr. 2010 Apr;47(4):323-7. Review. PubMed PMID: 20431159.

URL: <http://www.indianpediatrics.net/apr2010/323.pdf>

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Comment in:

Indian Pediatr. 2010 Oct;47(10):897-8; author reply 898.

Indian Pediatr. 2010 Sep;47(9):812; author reply 812.

SUMMARY

Dental caries in the primary dentition can have significant damaging effects on a child's growth due to impairment of oral functions. Since the first encounter of a child to a medical environment is often through pediatricians and medical practitioners, it is important that they be aware of the prevention of oral disease that begins early in life. The aim of this article is to diminish the existing ambiguity among pediatricians and medical practitioners regarding oral disease and its prevention. PMID: 20431159 [PubMed - indexed for MEDLINE]

READING 6 – Oral health of patients with intellectual disabilities

Anders PL, Davis EL. Oral health of patients with intellectual disabilities: a systematic review. Spec Care Dentist. 2010 May-Jun;30(3):110-7.

URL: <http://onlinelibrary.wiley.com/doi/10.1111/j.1754-4505.2010.00136.x/pdf> (free full text)

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Comment in:

Evid Based Dent. 2010;11(3):81.

SUMMARY

A systematic review of original studies was conducted to determine if differences in oral health exist between adults who have intellectual disabilities (ID) and the general population. Electronic searching identified 27 studies that met the inclusion criteria. These studies were assessed for strength of evidence. People with ID have poorer oral hygiene and higher prevalence and greater severity of periodontal disease. Caries rates in people with ID are the same as or lower than the general population. However, the rates of untreated caries are consistently higher in people with ID. Two subgroups at especially high risk for oral health problems are people with Down syndrome and people unable to cooperate for routine dental care. Evidence supports the need to develop strategies to increase patient acceptance for routine care, additional training for dentists to provide this care, and the development of more effective preventive strategies to minimize the need for this care. PMID: 20500706 [PubMed - indexed for MEDLINE]

READING 7 – Barriers to the adoption and implementation of preventive dental services in primary care

Close K, Rozier RG, Zeldin LP, Gilbert AR. Barriers to the adoption and implementation of preventive dental services in primary medical care. *Pediatrics*. 2010 Mar;125(3):509-17. Epub 2010 Feb 1. PubMed PMID: 20123767.

URL: <http://pediatrics.aappublications.org.libproxy1.nus.edu.sg/cgi/reprint/125/3/509>

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SUMMARY

OBJECTIVE: To determine the barriers to adopting preventive oral health procedures in medical primary care. **METHODS:** Medical providers who participated in a Medicaid demonstration in North Carolina completed questionnaires reporting their experiences with providing preventive dental services for children from birth to 3 years of age. Eleven factors were established as possible obstacles to the adoption of an oral health program. After 12 months of participation in the Into the Mouths of Babies training program, providers (N = 231) from 49 pediatric practices and 28 family physician practices reported if any of the 11 factors had been an obstacle to adoption and, if so, whether these obstacles were overcome. Program adoption and implementation, defined as providing all of the services on a regular basis, were predicted by using logistic regression to analyze the responses from providers who reported 1 or more barriers, the number of barriers identified (knowledge, attitudes, and external factors), and the number that were overcome.

RESULTS: Program-adoption rates were high, with 70.3% of the participants providing dental services on a routine basis. Attitude and external factors were positively associated with adoption, particularly with difficulty in applying the varnish, integration of the dental procedures into practice, resistance among staff and colleagues, and dentist referral difficulties. From 40.4% to 61.5% of providers overcame these 4 most common barriers. Those who reported external barriers and were unable to overcome them were less likely to provide the services, compared with those providers who reported no barriers (odds ratio: 0.08 [95% confidence interval: 0.01-0.44]).

CONCLUSIONS: The number of barriers to adopting preventive dental procedures in primary care medical practices is associated with implementation. A large proportion of these barriers can be overcome, leading to high adoption rates in a short amount of time. The barriers to adoption are similar to those identified in the literature on changing patient care, with the unique aspects of fluoride application to teeth. Interventions to promote preventive dental care in medical settings should rely heavily on empirical literature. Training physicians in preventive dentistry should identify and target potential barriers with information and options for introducing office-based systems to improve the chances of adoption.

PMID: 20123767 [PubMed - indexed for MEDLINE]

READING 8 – Methodological issues in epidemiological studies of periodontitis

Leroy R, Eaton KA, Savage A. Methodological issues in epidemiological studies of periodontitis--how can it be improved? BMC Oral Health. 2010 Apr 21;10:8.

URL: <http://www.biomedcentral.com/1472-6831/10/8>

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SUMMARY

BACKGROUND: This position paper was commissioned by the European Association of Dental Public Health, which has established six working groups to investigate the current status of six topics related to oral public health. One of these areas is epidemiology of periodontal diseases.

METHODS: Two theses “A systematic review of definitions of periodontitis and the methods that have been used to identify periodontitis” 1 and “Factors affecting community oral health care needs and provision” 2 formed the starting point for this position paper. Additional relevant and more recent publications were retrieved through a MEDLINE search.

RESULTS: The literature reveals a distinct lack of consensus and uniformity in the definition of periodontitis within epidemiological studies. There are also numerous differences in the methods used. The consequence is that data from studies using differing case definitions and differing survey methods are not easily interpretable or comparable. The limitations of the widely used Community Periodontal Index of Treatment Need (CPITN) and its more recent derivatives are widely recognized. Against this background, this position paper reviews the current evidence base, outlines existing problems and suggests how epidemiology of periodontal diseases may be improved.

CONCLUSIONS: The remit of this working group was to review and discuss the existing evidence base of epidemiology of periodontal diseases and to identify future areas of work to further enhance it.

PMCID: PMC2874507 PMID: 20409298 [PubMed - indexed for MEDLINE]

READING 9 – Oral health status of adults in Southern Vietnam – a cross-sectional epidemiological study

Nguyen TC, Witter DJ, Bronkhorst EM, Truong NB, Creugers NH. Oral health status of adults in Southern Vietnam - a cross-sectional epidemiological study. BMC Oral Health. 2010 Mar 13;10:2. PubMed PMID: 20226082; PubMed Central PMCID: PMC2841650.

URL: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2841650/?tool=pubmed> (Free full text)

Department of Prosthodontics, Dental School, University of Medicine and Pharmacy, Can Tho, Vietnam.

SUMMARY

BACKGROUND: Before strategies or protocols for oral health care can be advised at population level, epidemiological information on tooth decay patterns and its effects on oral function are indispensable. The aim of this study was to investigate influences of socio-demographic variables on the prevalence of decayed, missing, filled (DMF) and sound teeth (St) and to determine the relative risk of teeth in different dental regions for D, M, and F, of adults living in urban and rural areas in Southern Vietnam.

METHODS: Cross-sectional DMF and St data of 2965 dentate subjects aged 20 to 95 living in urban and rural areas in three provinces were collected by means of a self-administered questionnaire and an oral examination. The sample was stratified by age, gender, residence and province.

RESULTS: The percentage of subjects having missing teeth was high for all ages while it was low for subjects with decayed and filled teeth. The mean number of missing teeth increased gradually by age from approximately 1 in each jaw at the age of 20 to 8 at the age of 80. The number of decayed teeth was relative low at all ages, being highest

in molars at young ages. The mean number of filled teeth was extremely low at all ages in all dental regions. Every additional year of age gives a significantly lower chance for decay, a higher chance for missing, and a lower chance for filled teeth. Molars had a significantly higher risk for decay, missing and filled than premolars and anterior teeth. Females had significantly higher risk for decayed and filled teeth, and less chance for missing teeth than males. Urban subjects presented lower risk for decay, but approximately 4 times greater chance for having fillings than rural subjects. Low socio-economic status (SES) significantly increased the chance for missing anterior and molar teeth; subjects with high SES had more often fillings.

CONCLUSIONS: The majority of adults of Southern Vietnam presented a reduced dentition. The combination of low numbers of filled teeth and relative high numbers of decayed and missing teeth indicates that the main treatment for decay is extraction. Molars are more at risk for being decayed or missing than premolars and anterior teeth.

PMCID: PMC2841650 PMID: 20226082 [PubMed - indexed for MEDLINE]

READING 10 – Determinants for high and low dental caries prevalence in Nevada youth – a case-control study

Ditmyer M, Dounis G, Mobley C, Schwarz E. A case-control study of determinants for high and low dental caries prevalence in Nevada youth. BMC Oral Health. 2010 Nov 11;10:24. PubMed PMID: 21067620; PubMed Central PMCID: PMC2989299.

URL: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989299/?tool=pubmed> (Free full text)

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SUMMARY

BACKGROUND: The main purpose of this study was to compare the 30% of Nevada Youth who presented with the highest Decayed Missing and Filled Teeth (DMFT) index to a cohort who were caries free and to national NHANES data. Secondly, to explore the factors associated with higher caries prevalence in those with the highest DMFT scores compared to the caries-free group.

METHODS: Over 4000 adolescents between ages 12 and 19 (Case Group: N = 2124; Control Group: N = 2045) received oral health screenings conducted in public/private middle and high schools in Nevada in 2008/2009 academic year. Caries prevalence was computed (Untreated decay scores [D-Score] and DMFT scores) for the 30% of Nevada Youth who presented with the highest DMFT score (case group) and compared to the control group (caries-free) and to national averages. Bivariate and multivariate logistic regression was used to analyze the relationship between selected variables and caries prevalence.

RESULTS: A majority of the sample was non-Hispanic (62%), non-smokers (80%), and had dental insurance (70%). With the exception of gender, significant differences in mean D-scores were found in seven of the eight variables. All variables produced significant differences between the case and control groups in mean DMFT

Scores. With the exception of smoking status, there were significant differences in seven of the eight variables in the bivariate logistic regression. All of the independent variables remained in the multivariate logistic regression model contributing significantly to over 40% of the variation in the increased DMFT status. The strongest predictors for the high DMFT status were racial background, age, fluoridated community, and applied sealants respectively. Gender, second hand smoke, insurance status, and tobacco use were significant, but to a lesser extent.

CONCLUSIONS: Findings from this study will aid in creating educational programs and other primary and secondary interventions to help promote oral health for Nevada youth, especially focusing on the subgroup that presents with the highest mean DMFT scores.

PMCID: PMC2989299 PMID: 21067620 [PubMed - indexed for MEDLINE]