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Protocol for

Home Preventive Dental Care Visits

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Introduction:

As oral health care is often neglected among geriatrics[1] and people with disabilities[2], and since many of these patients are under home health care, a systematic approach to improve the oral health of this cohort is of utmost important to prevent the need for extensive dental treatment and to enhance the patient's general health[3].

Oral health is considered an important and integral part of general health because poor oral health causes pain, discomfort, affects speech, ability to eat, sleep, self-esteem and confidence, which will negatively affect the quality of life of individuals. [4]

The percentage of older people in Saudi Arabia is increasing with a life expectancy growing at a steady rate (0.21%) reaching 75.37 years in 2021. In the past three years (2018-2021) it is estimated that this age group grew about 10.6%.[5,6] One of the goals of Saudi Vision 2030 is to increase the average life expectancy from 74 years to 80 years.

Due to the increasing frailty in older adults, many become dependent on care from their families, caregivers, and the society[7]. This could represent a burden on the health care system, which in turn indicates a need for continuous improvement, and expansion of health services that are provided in Saudi Arabia.

In recent decades, that oral health of older people has changed noticeably, with more people retaining their teeth which are often heavily restored or are maintained with oral prosthesis. This can complicate the maintenance of daily oral hygiene, which can lead to oral health problems such as dental caries, periodontal disease, and ill-fitting prosthesis.[8]

Many factors can affect the older peoples' oral hygiene maintenance such as attitude, motivation, cognitive ability as well as co-existing physical impairments[7]. Therefore, older people are often in constant need of support in their daily oral care. Unfortunately, oral hygiene can be a hard and unpleasant task for caregivers, and competence in oral health measures has been reported to be inadequate[7,8].

Another group that is significantly disadvantaged are people with intellectual and physical disabilities (people with special needs). A special needs patient is any individual, adult, or child, whose physical, intellectual, social, or emotional skills fall outside of what is considered normal regarding growth and development standards[9]. Maintaining the physical and oral health of intellectually and physically disabled patients can pose a significant challenge for their caretakers[9]. Poor oral healthy can have a great burden on people with special needs, and could have a negative impact on speech, nutrition, and digestion[10].

A major shift in the care provision for people with special needs has taken place in most high-income countries, with a move to more home-based person-centered approach. In Scotland, for instance, a new policy was introduced in 2000 that closed the long-stay hospitals and, with the main care provision becoming supported living in the community[11]. In Japan, a community-based integrated care model was introduced that allowed older people to continue living in their communities while maintaining their health care services[12].

At present, the interest in oral health-related quality of life (OHRQoL) reflects researchers' recognition of the interplay between oral health conditions and social factors, contextual factors, and the rest of the body[12]. Oral health affects the quality of life and plays a primary role in achieving optimal general health and wellbeing. Pathological changes in the oral cavity can lead to functional and aesthetic restrictions that can affect all aspects of social life, including self-esteem, social interactions, school, work performance, and life[13,14].

OHRQoL is an integral part of general health and well-being and is recognized by the World Health Organization as an important segment of the global oral health program. It is now recognized as a valid parameter in patient assessment in nearly every area of physical and mental healthcare including oral health[14].

The subjective evaluation of OHRQoL reflects people's comfort when eating, sleeping, and engaging in social interaction; their self-esteem; and their satisfaction concerning their oral health. Assessment of OHRQoL allows for a shift from traditional medical/dental criteria to assessment and care that focus on a person's social and emotional experience and physical functioning in defining appropriate treatment[14].

The efficacy of such home-care programs is yet to be fully explored; however, these programs can significantly improve the general and oral health and promote better healthy living among this disadvantaged population. This can be achieved by structured preventative models, since many of the oral diseases are preventable through dietary changes, oral hygiene, topical fluoride therapies, and professionally applied silver diamine fluoride for example. It is evident that such preventive approach could help in reducing gingival inflammation, and these interventions have shown to be effective in arresting or reversing carious lesions[16]. The biannual application of silver diamine fluoride (SDF) has been shown to arrest advanced cavitated lesions, and the application of fluoride varnish (5% NaF varnish) can arrest or reverse non-cavitated lesions[17].

Oral health reflects a state of well-being, free from pain and disease, and the presence of a functional dentition, facilitating chewing, swallowing, clear speech, nutrition, and normal digestion[11]. The integration of an oral health component in the home health care visit could prove beneficial and is highly relevant in the group of elderly and people with special needs. Hence, providing preventive oral measures during home care visits can play a major role in preventing oral diseases, halting the progression of existing oral disease, and improving the function, esthetics of disadvantaged people who find access to care difficult, which in turn will positively affect their overall quality of life.

Scope and aim:

To promote preventive dental care, standardize the basis of assessment and management, and equip the dental home care health care providers with the needed forms, that will eventually result in a better quality of life for our patients.

Targeted population:

Geriatric patients and those with special needs that hinders their ability to visit the dental clinic for routine check-ups. This cohort is usually under other home health care services and require dental visits to assure proper oral hygiene and absence of any active diseases that may cause a threat to the patient's overall health or negatively affects their quality of life.

Methodology:

Considering evidence-based dentistry, assessment forms will be adopted and reformatted to be aligned with the objectives of the preventive home dental care services, along with minor preventive dental procedures that may aid in stopping further progression of current diseases or prevent them from occurring, as well as addressing the effect of the oral health related quality of life of the patients to help construct a dental treatment plan based on their needs. All adopted forms used were chosen based on published validations of the results with the agreement of the scientific committee that was formed to run this task.

Updating

The first version of this protocol was created in 2023. This protocol will be updated every three years or whenever needed based on international/national protocols, health policies and guidelines. The feedback of dentists and home health care teams will also be considered in the periodic evaluation and updates.

Conflict of Interest

This protocol was developed based on current scientific evidence. No financial relationships with pharmaceutical, medical device, and biotechnology companies.

Funding

No fund was provided.

Disclaimer

This Clinical protocol is an evidence-based decision-making tool for assessing oral health status and to be used as a strict preventive oral health home care regimen. It is based on the best information available at the time of writing, and is to be updated regularly. This protocol is not intended to be followed as a rigid treatment protocol. It is also not meant to replace clinical judgment of the service providing dentist, but it serves as an adjunct tool to aid in preventing further oral health deterioration or development of new conditions. Treatment decisions must always be made on an individual basis, and visiting dentist must customize care and tailor treatments regimens to patients' unique situations based on both oral and medical histories.

Adopted assessment forms:

1- **Oral health assessment tool[4]:**
To be filled by the dentist performing the home dental care services. (Appendix 1)

2- **5 item Oral health impact profile (OHIP5-Ar)[5]:**
To be filled by the patient, guardian, care provider, or by the visiting dentist performing the home dental care service when needed. (Appendix 2)

Minor dental procedures to be performed in the visit based on the initial patient's oral health assessment after obtaining required consents:

1- Oral hygiene instructions to the caregiver
2- Fluoride application
3- Silver diamine fluoride (SDF) application on active cavitated carious lesions.
4- Simple scaling whether manual or ultrasonic.
5- Pit and fissure sealant whenever possible on newly erupted non carious permanent posterior teeth.

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Preventive Home Dental Care Services Protocol

Use of Silver Diamine Fluoride During Dental Home Care Services

Case selection for application of silver diamine fluoride:	**Criteria for tooth selection include**
• Patients with high caries risk who have active cavitated caries lesions in anterior or posterior teeth • Patients presenting with behavioral or medical management challenges and cavitated caries lesions • Patients with multiple cavitated caries lesions that may not all be treated in one visit • Patients with dental caries lesions that are difficult to treat • Patients without access to or with difficulty accessing dental care	• No clinical signs of pulpal inflammation or reports of unsolicited/spontaneous pain • Cavitated caries lesions that are not encroaching on the pulp. • Cavitated caries lesions on any surface as long as they are accessible with a brush for applying SDF

Clinical Application of Silver Diamine Fluoride

1. Dispense one drop of SDF on plastic dappen dish
2. Dry lesion with gentle flow of compressed air or using dry cotton pallet
3. Bend micro sponge brush, and Dip brush it into SDF and dab on the side of the plastic dappen dish to remove excess liquid before application
4. Apply SDF directly to only the affected tooth surface
5. Application time should be at least one minute (if possible)
6. Try to keep isolated for as long as three minutes
7. Apply five percent sodium fluoride varnish to all dentition

Additional Notes on Use of Silver Diamine Fluoride

- Remove gross debris from cavitation to allow better SDF contact with denatured dentin.
- Carious dentin excavation prior to SDF application is not necessary.
- A protective coating of Vaseline may be applied to the lips and skin to prevent temporary soft tissue staining. The protective coating must not come in contact with caries lesions.
- Isolate areas to be treated with cotton rolls or other isolation methods.
- Careful application with a microbrush should be adequate to prevent intraoral and extraoral soft tissue exposure.
- **No more than one drop of SDF should be used** for the entire appointment.
- After application, dry treated lesions with gentle flow of compressed air if available.
- Monitor carefully at post-operative and recall visits to evaluate caries arrest and consider reapplication.
- Hardness of tooth surfaces on probing is an indication that a lesion is arrested.
- An adverse effect associated with SDF is black staining of the lesion, which may not be acceptable to some patients, parents, or caregivers.

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Use of Fluoride Varnish During Dental Home Care Services

Fluoride varnish is a resin-based product containing 5% sodium fluoride or 22,600 PPM fluoride that is applied to the tooth surface as a thin coating to protect it from caries/ hypersensitivity. The US Food and Drug Administration (FDA) has approved fluoride varnish products as medical devices to be used as cavity liners and for the treatment of hypersensitive teeth, but they can be used off-label as caries-preventive agents).

The purpose of applying fluoride varnish is to retard, arrest, and reverse the process of cavity formation.

Fluoride varnish is indicated for caries prevention in moderate and high-caries risk individuals including:

- Patients who had cavities in the past or have white spot lesions and stained fissures
- Patients with a developmental disability
- Patients who have limited access to dental care
- Patients chronically using high sugar oral medications
- Patients having frequent cariogenic snacks/drinks
- Patients having visible plaque on the teeth
- Patients who do not drink water with an optimal amount of fluoride or do not get proper fluoride supplementation

Clinical Application of Fluoride Varnish

1. Gently remove excess saliva or plaque with a gauze sponge
2. Gently retract the right cheek with your finger or mirror and dry the upper right canine and molars with a cotton roll
3. Place the cotton roll in the upper right buccal sulcus
4. Holding the roll in place, apply a small amount of Fluoride Varnish to the buccal, palatal, approximal and occlusal surfaces of the molars
5. Retract the upper lip with a finger. Dry the incisor teeth with a cotton roll
6. Apply varnish to the buccal, approximal and palatal surfaces of the canines and incisors
7. Repeat for upper left, and whole lower arch
8. Once it is applied, the fluoride varnish sets quickly with contact of the saliva

Additional Notes on Use of Fluoride Varnish

- If there is insufficient varnish for full lower arch give priority to buccal, approximal and occlusal surfaces of molars on both sides of the mouth
- Advise the patient to avoid hot drinks and oral rinses containing alcohol for 4 hours
- Teeth may be yellow from the varnish.
- Ensure all equipment is removed from the mouth.
- If any immediate allergic reaction, remove product by toothbrushing and rinsing and follow protocol.
- Low risk patients – repeat application every 6 months.
- High/moderate risk patients (show signs of visible decay) – repeat application every 3 months

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Preventive Home Dental Care Services Protocol Sequence*

Step 1: After acquiring the relevant medical history information, the dentist fills the oral health assessment tool and indicates if urgent dental treatment is required

↓

Step 2: For all dentated patients, follow the clinical pathway for the nonrestorative treatment of noncavitated and cavitated carious lesions on primary teeth shown in appendix 3 and for permanent teeth follow the pathway shown in appendix 4

↓

Step 3: Manage supragingival calculus build up by removing it manually or ultrasonically if applicable and not contraindicated

The visiting dentist must report the following in the patient's medical records:

- Any signs of cancerous or precancerous lesions
- Any required emergency dental treatments
- Indicate the teeth that received silver diamine fluoride

*In patients with removable prosthesis, refer the patient to prosthodontics.

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Health Cluster/Region:

Appendix 1

Oral health assessment form*

Name: Sex: MR #: Medical Hx/alert:

Age: Mobile #: Guardian's name: Guardian's mobile:

	Healthy	Changes	Unhealthy	Requires Dental Tx
Dental Pain	☐ No signs or symptoms of pain	☐ Verbal &/or behavioral signs of pain such as pulling at face, chewing lips, not eating, changed behavior.	☐ Physical signs of pain (swelling, broken teeth, ulcers), as well as verbal &/or behavioral signs (pulling at face, not eating, interrupting sleep)	☐Yes ☐No
Lips	☐ Smooth, moist, pink	☐ Dry, chapped, or red at the corners	☐ Swelling or lump, red / white / ulcerated / bleeding	☐Yes ☐No
Tongue	☐ Normal, moist, pink	☐ Patchy, fissured, red, coated	☐ Patch that is red / white / ulcerated, swollen	☐Yes ☐No
Gums and Oral Tissue	☐ Moist, pink, smooth, no bleeding	☐ Dry, shiny, rough, red, swollen, sore, sore under denture	☐ Swollen, bleeding, ulcers, white / red patches, generalized redness under dentures	☐Yes ☐No
Saliva	☐ Moist tissues watery and free flowing	☐ Dry, sticky tissues, little saliva present	☐ Tissues parched and red, very little / no saliva present, or saliva is thick	☐Yes ☐No
Natural Teeth	☐ No decay or broken teeth of roots	☐ 1- 3 decayed, worn, or broken teeth / roots	☐ ≥ 4 decayed, worn, or broken teeth / roots	☐Yes ☐No
Dentures	☐ No broken areas or teeth, worn regularly	☐ 1 broken area or tooth, or worn 1-2 hours per day only	☐ 1 or more broken areas or teeth, denture missing / not worn, need adhesive	☐Yes ☐No
Oral Cleanliness	☐ Clean and no food particles or tartar in mouth or on denture	☐ Food, tartar, plaque 1-2 areas of mouth, or on small area of dentures	☐ Food particles, tartar, plaque most areas of mouth, or on most of dentures	☐Yes ☐No

Filled by : ..... Date: .....

* Extracted and modified from: Chalmers JM, King PL, Spencer AJ, Wright FA, Carter KD. The oral health assessment tool--validity and reliability. Aust Dent J. 2005 Sep;50(3):191-9. doi: 10.1111/j.1834-7819.2005.tb00360.x. PMID: 16238218.

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Appendix 2

Health Cluster/Region:

5-item oral health impact profile

How often have you had one or more of the following problem(s) during the last month?

خلال الشهر الماضي، كم مرة عانيت من أي من المشاكل التالية؟

Do you have any difficulty chewing foods? صعوبة في مضغ الطعام بسبب أسنانك أو فمك أو التركيبات السنية أو الفكين؟	Never لا يوجد □	Hardly ever نادرا □	Occasionally بعض الاحيان □	Fairly often أغلب الأحيان □	Very often دائما □
Do you have any painful aching in your mouth? ألم مزعج بسبب أسنانك أو فمك أو التركيبات السنية أو الفكين؟	Never لا يوجد □	Hardly ever نادرا □	Occasionally بعض الاحيان □	Fairly often أغلب الأحيان □	Very often دائما □
Do you feel uncomfortable about the appearance of your teeth? عدم الارتياح تجاه مظهر أسنانك أو فمك أو التركيبات السنية أو الفكين؟	Never لا يوجد □	Hardly ever نادرا □	Occasionally بعض الاحيان □	Fairly often أغلب الأحيان □	Very often دائما □
Do you feel that there has been less flavor in your food? شعرت بنقص في تذوق طعامك بسبب مشاكل في أسنانك أو فمك أو التركيبات السنية أو الفكين؟	Never لا يوجد □	Hardly ever نادرا □	Occasionally بعض الاحيان □	Fairly often أغلب الأحيان □	Very often دائما □
Do you experience any difficulties performing your activities of daily livings due to problems related to your teeth, mouth, dentures, or jaws? صعوبة في القيام بأعمالك المعتادة بسبب مشاكل في أسنانك أو فمك أو التركيبات السنية أو الفكين؟	Never لا يوجد □	Hardly ever نادرا □	Occasionally بعض الاحيان □	Fairly often أغلب الأحيان □	Very often دائما □

اسم المريض (Patient's name): الجنس (sex): العمر (Age): الملف الطبي (MR#):

التاريخ المرضي (Medical Hx/alerts):

Filled by: □ Patient. □ Patient's guardian. (Name): Mobile: □ Dentist/ Team member. (Name):	تم تعبئة النموذج بواسطة: □ المريض □ ولي المريض (الاسم): الجوال: □ الطبيب/عضو الفريق الطبي (الاسم):

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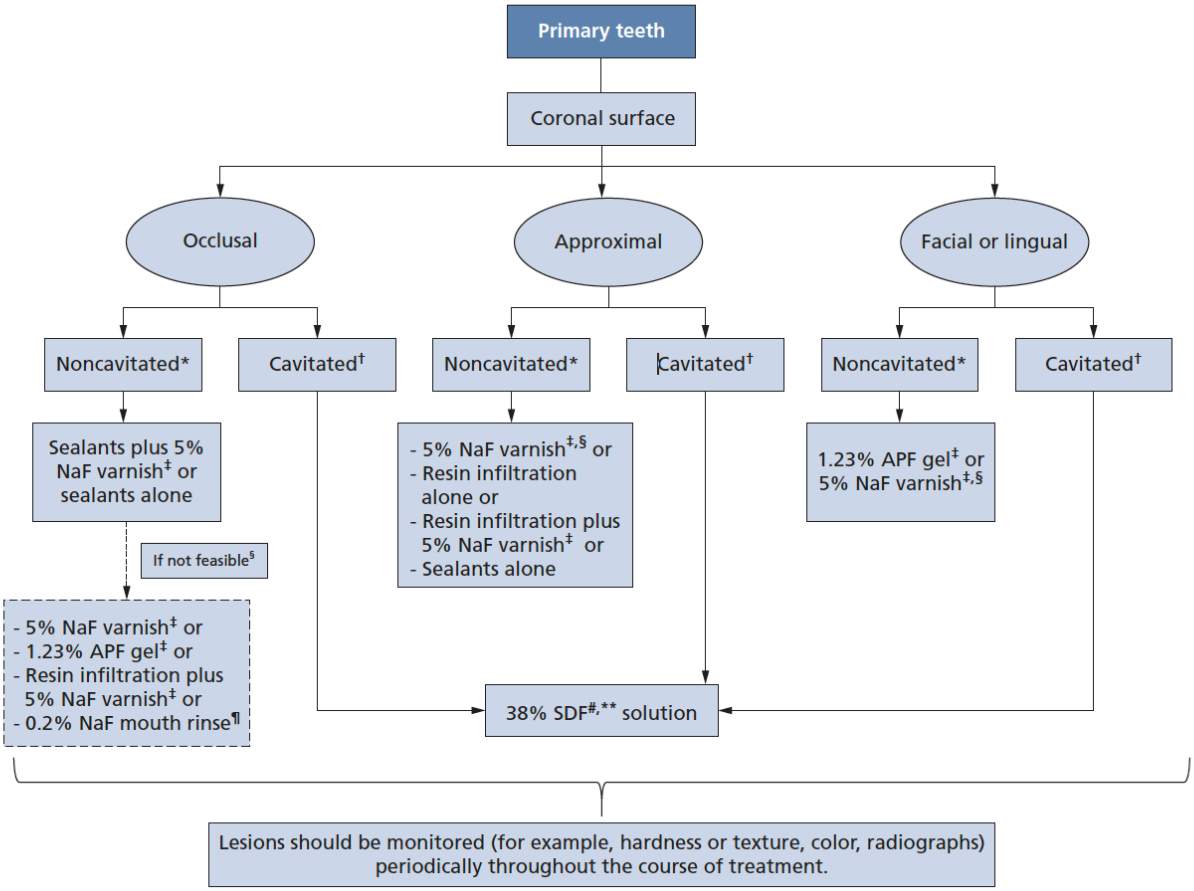
Appendix 3

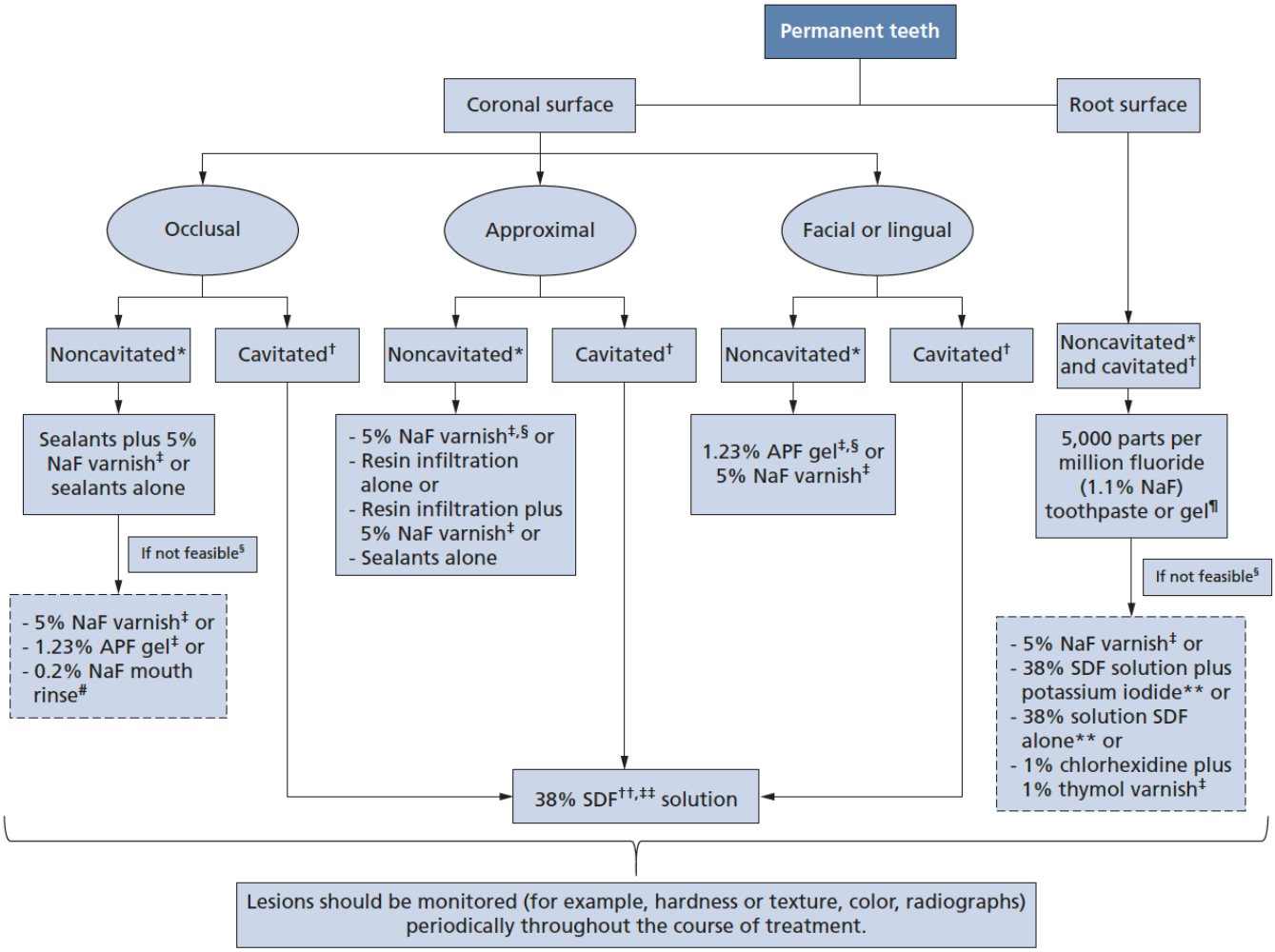
Clinical pathway for the nonrestorative treatment of non-cavitated and cavitated carious lesions on primary teeth



Adapted from Slayton, R. L., Urquhart, O., Araujo, M. W. B., Fontana, M., Guzmán-Armstrong, S., Nascimento, M. M., Nový, B. B., Tinanoff, N., Weyant, R. J., Wolff, M. S., Young, D. A., Zero, D. T., Tampi, M. P., Pilcher, L., Banfield, L., & Carrasco-Labra, A. (2018). Evidence-based clinical practice guideline on nonrestorative treatments for carious lesions: A report from the American Dental Association. *Journal of the American Dental Association (1939)*, *149*(10), 837–849.e19. https://doi.org/10.1016/j.adaj.2018.07.002

Appendix 4

Clinical pathway for the nonrestorative treatment of noncavitated and cavitated carious lesions on permanent teeth



Adapted from Slayton, R. L., Urquhart, O., Araujo, M. W. B., Fontana, M., Guzmán-Armstrong, S., Nascimento, M. M., Nový, B. B., Tinanoff, N., Weyant, R. J., Wolff, M. S., Young, D. A., Zero, D. T., Tampi, M. P., Pilcher, L., Banfield, L., & Carrasco-Labra, A. (2018). Evidence-based clinical practice guideline on nonrestorative treatments for carious lesions: A report from the American Dental Association. *Journal of the American Dental Association (1939)*, *149*(10), 837–849.e19. https://doi.org/10.1016/j.adaj.2018.07.002