# COLLEGE OF DENTAL HYGIENISTS OF ONTARIO ADVISORY

## ADVISORY TITLE

Use of the dental hygiene interventions of scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions for persons\(^1\) with angina (angina pectoris).

## ADVISORY STATUS

Cite as

*College of Dental Hygienists of Ontario, CDHO Advisory Angina (Angina Pectoris), 2017-02-01*

## INTERVENTIONS AND PRACTICES CONSIDERED

Scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions ("the Procedures").

## SCOPE

### DISEASE/CONDITION(S)/PROCEDURE(S)

**Angina (angina pectoris)**

## INTENDED USERS

- Advanced practice nurses
- Dental assistants
- Dental hygienists
- Dentists
- Denturists
- Dieticians
- Health professional students
- Nurses
- Patients/clients
- Pharmacists
- Physicians
- Public health departments
- Regulatory bodies

## ADVISORY OBJECTIVE(S)

To guide dental hygienists at the point of care relative to the use of the Procedures for persons who have angina (angina pectoris), chiefly as follows.

1. Understanding the medical condition.
2. Sourcing medications information.
3. Taking the medical and medications history.
4. Identifying and contacting the most appropriate healthcare provider(s) for medical advice.

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\(^1\) Persons includes young persons and children
5. Understanding and taking appropriate precautions prior to and during the Procedures proposed.
6. Deciding when and when not to proceed with the Procedures proposed.
7. Dealing with adverse events arising during the Procedures.
8. Keeping records.

**TARGET POPULATION**

Adolescent (13 to 18 years)
Adult (19 to 44 years)
Middle Age (45 to 64 years)
Aged (65 to 79 years)
Aged 80 and over
Male
Female

Parents, guardians, and family caregivers of young persons and adults with angina.

**MAJOR OUTCOMES CONSIDERED**

For persons who have angina: to maximize health benefits and minimize adverse effects by promoting the performance of the Procedures at the right time with the appropriate precautions, and by discouraging the performance of the Procedures at the wrong time or in the absence of appropriate precautions.

**RECOMMENDATIONS**

**UNDERSTANDING THE MEDICAL CONDITION**

**Terminology used in this Advisory**

Resources consulted

- Angina: New World Encyclopedia
- Angina: The Free Dictionary
- Glossary of vascular terms: Medtronic
- Glossary: Heart-Healthy Living
- Glossary: San Antonio Community Hospital
- Glossary: Sanger Heart & Vascular Institute
- Myocardial Infarction: Medscape
- Value and Limitations of Chest Pain History in the Evaluation of Patients With Suspected Acute Coronary Syndromes: Journal of the American Medical Association

Note about terminology

‘Angina’ in this Advisory always refers to ‘angina pectoris’ to describe chest pain originating from insufficient oxygen to the heart muscle because in some clinical usages ‘angina’ also refers to conditions of the oral cavity, such as

1. Ludwig’s angina
2. Plaut’s angina
3. herpes angina.
4. Angina, angina pectoris
**Angina (Angina Pectoris)**

<table>
<thead>
<tr>
<th>a.</th>
<th>is recurring symptoms of pressure, tightness or pain in the chest, arm, neck, back or jaw owing to <a href="#">ischemia</a></th>
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<tbody>
<tr>
<td>b.</td>
<td>is pain or discomfort that is spasmodic and that may produce sensations of</td>
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<td></td>
<td>i. cramp-like choking</td>
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<td></td>
<td>ii. suffocation</td>
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<tr>
<td>c.</td>
<td>results from insufficient oxygen supply to the <a href="#">myocardium</a>, commonly caused by <a href="#">coronary artery disease</a></td>
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<tr>
<td>d.</td>
<td>is not an actual <a href="#">heart attack</a> but pain and discomfort that results when the heart muscle temporarily receives too little blood</td>
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<tr>
<td>e.</td>
<td>is usually a symptom of underlying heart disease, such as <a href="#">coronary artery disease</a></td>
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<td>f.</td>
<td>occurs chiefly as</td>
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<tr>
<td></td>
<td>i. <a href="#">stable angina</a></td>
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<tr>
<td></td>
<td>ii. <a href="#">unstable angina</a></td>
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2. Atherosclerosis, disease of large and medium-sized arteries in muscles, which

| a. | is characterized by hardening and narrowing of the arteries caused by the accumulation of fatty deposits called plaque |
| b. | may cause a [blood clot](#) to form at the site of the narrowing, which completely |
| | i. blocks the artery |
| | ii. and, in a coronary artery, causes [myocardial infarction](#) (CDHO Advisory) |

3. Blood clots

| a. | form if [plaque](#) in an artery ruptures or breaks open |
| b. | may form, partially dissolve and form again |
| c. | may create a larger blockage, with clots becoming large enough to completely block the artery |
| d. | cause pain when an artery is blocked. |

4. Cardiovascular disease (CVD), comprises various diseases of the circulatory system which

| a. | are the leading cause of death in adult Canadian men and women |
| b. | involve blood vessels of the heart |
| c. | involve blood vessels supplying other parts of the body, including |
| | i. brain |
| | ii. kidneys |
| | iii. lungs. |

5. Cholesterol, is

| a. | a waxy fat called a lipid produced naturally in the body |
| b. | essential for the body to make |
| | i. cell membranes |
| | ii. hormones |
| | iii. vitamin D |
| c. | of two types |
| | i. low-density lipoprotein (LDL), the ‘bad’ cholesterol which when in excess causes [atherosclerosis](#) |
| | ii. high-density lipoprotein (HDL), the ‘good’ cholesterol because it carries LDL away from the arterial walls where the [atherosclerosis](#) accumulates. |

6. Coronary heart disease (CHD), coronary artery disease (CAD) is

| a. | narrowing of the small blood vessels that supply blood and oxygen to the heart |
| b. | most likely to be caused by [atherosclerosis](#). |
7. Heart attack, **myocardial infarction** (*CDHO Advisory*), occurs when there is a blockage in one of the coronary arteries which obstructs the blood supply to a part of the heart, which may
   a. damage the heart and lead to death of heart muscle
   b. lead to disability or death depending on the extent to which the heart muscle is damaged.
8. **Heart failure**, when the heart is no longer able pump sufficient blood to supply the body.
9. Herpes angina, a viral infection usually in young children, characterized by
   a. sore throat, headache, anorexia, and pain in the abdomen, neck, and extremities
   b. papules or vesicles in the pharynx and on the tongue, the palate, or the tonsils
   c. lesions which evolve into shallow ulcers that heal spontaneously.
10. Hypertriglyceridemia, where triglyceride levels are elevated, a common disorder in North America, often caused or exacerbated by
    a. uncontrolled diabetes
    b. obesity
    c. sedentary habits.
11. Ischemia, decrease or restriction in blood supply to an organ or body part, often resulting in pain.
12. Inflammatory biomarkers
    a. proteins or enzymes which are measured in serum, plasma, or blood
    b. of which, for **coronary artery disease**, the most notable is C-reactive protein (CRP).
13. Ludwig’s angina, a type of **cellulitis** that
    a. involves the floor of the mouth, under the tongue
    b. often occurs after an infection of the roots of the teeth, such as tooth abscess, or a mouth injury.
14. Myocardial infarction, **heart attack**, (*CDHO Advisory*), when arteries that supply blood to the heart are blocked, preventing enough oxygen from getting to the heart; the heart muscle dies or becomes permanently damaged.
15. Myocardium, thick muscle layer of the heart that forms the bulk of the heart wall that contracts rhythmically to create heart beats.
16. Peripheral vascular disease, peripheral arterial disease, peripheral artery occlusive disease, the narrowing or blockage of blood vessels in the limbs.
17. Plaut’s angina, another name for **necrotizing ulcerative gingivostomatitis**.
18. Prevalence, total number of individuals in a given population with a health-related condition during a specified period of time, usually expressed as a percentage.
19. Pseudomembranous angina, another name for **necrotizing ulcerative gingivostomatitis**.
20. Silent angina, an episode of coronary artery insufficiency
    a. in which no pain is experienced
    b. which may be associated with myocardial infarction that is
       i. silent clinically
       ii. unrecognized by the person, families or healthcare providers.
21. **Stable angina**, angina of effort, which
    a. is the most common form of angina
    b. is stable in pattern
    c. occurs when the heart is working harder than usual
22. Stent, a wire mesh tube sometimes used in angioplasty, that is inserted into an artery to open it, prevent re-blockage and allow blood flow needed by the heart.

23. **Unstable angina**
   a. is a serious condition that may herald an impending myocardial infarction *(CDHO Advisory)*
   b. does not follow a predictable pattern
   c. can happen during strenuous activity or at rest
   d. is not always relieved with rest and medication.

24. Variant angina, Prinzmetal’s angina, the rarest form of angina, which
   a. is chest pain originating in coronary artery spasm, a sudden constriction of a coronary artery depriving the myocardium of blood and oxygen
   b. usually occurs at rest during sleeping hours and is usually easily treated with medication.

**Overview of angina**

Resources consulted
- Angina Pectoris: eMedicine
- Angina Symptoms: Mayo Clinic
- Atherosclerosis: eMedicine
- Canadian Cardiovascular Society classification of effort angina: an angiographic correlation | Coronary Artery Disease
- Coronary heart disease: PubMedHealth
- Heart Attack Symptoms: An Action Plan for Women | Women’s Heart Foundation
- Heart attack symptoms: Know what's a medical emergency | Mayo Clinic
- Stable angina: MedlinePlus
- Tracking Heart Disease and Stroke in Canada: Public Health Agency of Canada
- Unstable Angina: eMedicine
- Unstable angina: MedlinePlus
- How does Heart Disease Affect Women: NHBLI

**Occurrence**

Angina in its occurrence relates to
1. age, which correlates with the
   a. prevalence of angina
   b. rates of death from coronary heart disease
2. sex differences, in which
   a. angina is more often the presenting symptom of coronary artery disease in women than in men, with a female-to-male ratio of 1.7:1
   b. atypical presentations may be more common among women than men
   c. women have a slightly higher death rate from coronary artery disease than men, in part because of
      i. older age at presentation
ii. frequent absence of lack of classic angina symptoms

3. ethnic factors affecting coronary heart disease rates, which
   a. vary among ethnic groups in Canada, and which are
      i. highest in incidence among individuals of South Asian ancestry, a
         phenomenon partly explained by the prevalence of
         1. glucose intolerance
         2. hypertriglyceridemia
         3. low levels of ‘good’ cholesterol
         4. obesity
      ii. high among individuals of First Nations ancestry, who are at increased
          risk for diabetes and coronary heart disease
      iii. lowest among individuals of Chinese ancestry
   b. call for greater focus on overweight and obese individuals aimed at
      identification of modifiable cardiovascular risks across all of Canada’s
      communities.

Types of angina include
1. **stable angina**, which
   a. is the most common type of angina
   b. is not a myocardial infarction (CDHO Advisory) but which is associated with
      increased likelihood of future myocardial infarction
   c. is most commonly the result of physical exertion
   d. may also be associated with
      i. emotional stress
      ii. exposure to extreme hot or cold
      iii. heavy meals
      iv. smoking
   e. is explained by severe narrowing of the coronary arteries, which
      i. is caused by atherosclerosis
      ii. allows enough oxygenated blood to reach the heart when demand for
          oxygen is low, but not during periods of exercise, stress, or excitement
          during which oxygen demand is increased
   f. is characterized by
      i. a consistent pattern which the person is often able to recognize and
         respond to appropriately
      ii. pain which usually subsides after a few minutes following
         1. rest
         2. for some persons, use of angina medications

2. **unstable angina**
   a. is a serious medical condition that requires immediate medical attention
      because it indicates that a myocardial infarction (CDHO Advisory) may be
      imminent
   b. arises when blood clots partially or completely obstruct an artery
   c. may arise without physical exertion
   d. is
      i. not characterized by a regular pattern
ii. not relieved by rest or medication

3. variant angina
   a. is uncommon
   b. arises independently of atherosclerosis
   c. arises at rest and is unrelated to excessive work by heart muscle
   d. is caused by coronary artery spasm of insufficient duration or intensity to cause an actual myocardial infarction (CDHO Advisory); such spasm
      i. causes the coronary artery to constrict thus creating the angina
      ii. narrows the coronary artery, slowing or stopping blood flow to the heart
     iii. may be caused by
          1. cocaine use (CDHO Advisory)
          2. emotional stress
          3. exposure to cold
          4. smoking
          5. vasoconstrictor medications
     e. is treated with nitrates to dilate the coronary arteries.

4. silent angina.

**Causes and risk factors**

of angina include

1. coronary heart disease, angina’s most common cause, the risk factors of which include
   a. age, the major determinant of risk of coronary heart disease
   b. atherosclerosis
   c. cigarette smoking
   d. diabetes (CDHO Advisory)
   e. family history of coronary heart disease before age 50
   f. hypercholesterolemia
   g. hypertension (CDHO Advisory)
   h. inflammatory biomarker abnormalities
   i. insufficient exercise
   j. male gender
   k. obesity

2. abnormal heart rhythms, especially those which raise the heart rate

3. anemia (CDHO Advisory)

4. cold weather

5. emotional stress

6. exercise

7. heart failure

8. heart valve disease

9. heavy meals

10. hyperthyroidism (CDHO Advisory)

**Signs and symptoms**

Angina’s pain or discomfort

1. is often described as pressure, squeezing, burning or tightness in the chest
2. may feel like heartburn or indigestion
3. usually begins behind the sternum and may also occur in one or more of the locations
CDHO Advisory | Angina (Angina Pectoris)

4. may be variously accompanied by
   a. anxiety
   b. dizziness
   c. fatigue
   d. light-headedness
   e. nausea
   f. shortness of breath
   g. sweating
   h. weakness

5. for women may
   a. differ from the ‘classic’ angina symptoms and lead to delays in their seeking or receiving appropriate treatment
   b. be unnoticeable because of silent myocardial infarction
   c. variously includes
      i. dizziness with weakness
      ii. nausea, vomiting or severe indigestion
      iii. pain, pressure, fullness, discomfort or squeezing in the center of the chest
      iv. panic with feeling of impending doom
      v. pounding heartbeats (palpitations) or feeling extra heartbeats
      vi. radiating pain to shoulder(s), neck, back, arm(s) or jaw
      vii. shortness of breath or difficulty breathing
      viii. stabbing chest pain
      ix. sudden extreme fatigue
      x. sweating for no apparent reason
      xi. upper abdominal pain
   d. be deceptively mild, leading to under-reporting or delayed recognition of emergency, which affects
      i. a third of women who experience no chest pain when having a heart attack
      ii. two thirds of women who report flu-like symptoms for two to four weeks prior to experiencing
         1. significant chest discomfort
         2. severe shortness of breath

6. in stable angina
   a. occurs when the heart must work harder, usually during physical exertion
   b. is expected because it arises as episodes that are consistent in pattern
   c. usually lasts 5 minutes or less
   d. is relieved by rest or medication
   e. may feel like gas or indigestion
   f. may spread to the arms, back, or other areas
7. in **unstable angina**
   a. often occurs at rest, while sleeping at night, or with little physical exertion
   b. is unexpected and therefore unpredictable
   c. is more severe, lasting
      i. as long as 30 minutes
      ii. longer than the 5-minute episodes typical of **stable angina**
   d. is not usually relieved by rest or **nitrates**
   e. may continuously worsen

8. in **variant angina**
   a. usually occurs at rest and during the night or early morning hours
   b. tends to be severe
   c. is relieved by angina medication.

**Medical investigation**

of **angina**
1. for initial diagnosis is usually based on the history of type and pattern of symptoms
2. usually involves testing
   a. to
      i. confirm or exclude angina
      ii. determine the severity of the underlying heart disease
   b. with methods such as
      i. electrocardiogram
      ii. chest x-ray
      iii. exercise stress test, to
         1. elicit symptoms of angina
         2. investigate the functioning of the heart
         3. track blood pressure
         4. view by scanning the blood flow in the heart muscle during the most intense time of exercise, and after rest
      iv. angiogram, which involves
         1. imaging of a coronary artery
         2. catheterization of the artery
         3. use of dyes
         4. sequencing of images to view dynamic changes
      v. echocardiogram, using ultrasound for dynamic analysis of heart function and blood flow
   vi. blood tests for
      1. **biomarkers**
      2. blood cholesterol levels
      3. blood sugar levels
      4. hemoglobin levels.

**Treatment**

of **angina**
1. aims to reduce the frequency and severity of symptoms while striving to prevent or lower the risk of **myocardial infarction** and death
2. includes
   a. **medication**
b. surgery
   i. angioplasty, a procedure to open blocked or narrowed coronary arteries, that
      1. improves blood flow to the heart
      2. relieves chest pain
      3. may prevent myocardial infarction (CDHO Advisory)
      4. may require a stent within the artery to keep it open following surgery
   ii. coronary artery bypass, which
      1. uses arteries or veins from other parts of the body to bypass blocked coronary arteries
      2. increases blood flow to the heart
      3. relieves chest pain
      4. may help prevent myocardial infarction (CDHO Advisory)

c. cardiac rehabilitation, including
   i. exercise training to safely strengthen muscles and improve daily stamina
   ii. education, counseling and training to help the person
      1. deal with fears about the future
      2. learn ways to reduce risk of future heart problems
      3. understand his or her condition

d. changes to lifestyle, such as
   i. self-pacing for exertion-related angina
   ii. weight loss
   iii. prescribed exercise
   iv. avoiding heavy meals and rich foods
   v. healthy diet to combat
      1. hypertension (CDHO Advisory)
      2. raised cholesterol
      3. obesity
   vi. strict adherence to prescribed medications to reduce
      1. angina
      2. cholesterol
      3. hypertension (CDHO Advisory)
   vii. in diabetes, strict adherence to control of blood sugar (CDHO Advisory)
   viii. cessation of smoking
   ix. reduction of stress or emotional factors through
      1. avoidance of stressful situations
      2. coping mechanisms.

Prevention
   of angina hinges on the control of
   1. coronary heart disease (CDHO Advisory)
   2. causes and risk factors.

Prognosis
   of angina reflects the outlook for cardiovascular diseases, which
   1. cause one-third of deaths in Canada, more than any other illness
2. display steady declines  
   a. in rates of occurrence over the past 40 years  
      i. 25 percent over the past 10 years  
      ii. 50 percent over the past 20 years  
      iii. 70 percent between 1956 and 2002  
   b. in death rates, which have decreased by nearly 40 percent in the past several decades  
   c. which are attributed to  
      i. improvements in the control of risk factors, especially  
         1. cholesterol  
         2. hypertension  
         3. smoking  
      ii. improved medical management of patients with cardiovascular diseases  
   d. are nevertheless expected to increase in number in Canada in the next decade, chiefly because  
      i. relative to hypertension and other risk factors for cardiovascular disease  
         1. persons with these risk factors now live longer  
         2. increased awareness is leading to more frequent diagnosis  
      ii. of increasingly sedentary lifestyle  
      iii. of increases in  
         1. obesity  
         2. diabetes.

**Social considerations**

of angina highlight the importance of attention to a woman’s concerns about her symptoms because her cardiac-related symptoms may result in incorrect clinical interpretation arising from  
1. erroneous beliefs on the part of physicians and other healthcare professionals that angina is less common in women than in men  
2. possible differences in women’s cardiac symptoms from those in men leading to insufficient recognition by women and by their healthcare providers  
3. women’s tendencies to under-report their cardiac symptoms.

**Multimedia and images**

Heart, section through the middle  
Ludwig’s angina

**Comorbidity, complications and associated conditions**

Comorbid conditions are those which co-exist with angina but which are not believed to be caused by it. Complications and associated conditions are those that may have some link with it. Distinguishing among comorbid conditions, complications and associated conditions may be difficult in clinical practice.  
1. Elderly persons with unstable angina or myocardial infarction (CDHO Advisory) commonly have as many as three or even more comorbidities, such as  
   a. kidney diseases (CDHO Advisory)  
   b. heart failure
c. hypertension (*CDHO Advisory*)
d. neurological diseases
e. obesity
f. type 2 diabetes (*CDHO Advisory*).

2. Comorbidities for adults generally include
   a. asthma (*CDHO Advisory*)
   b. chronic obstructive pulmonary disease (*CDHO Advisory*)
   c. diabetes (*CDHO Advisory*)
   d. emphysema (*CDHO Advisory*)
   e. hypercholesterolemia
   f. peripheral vascular disease associated with
      i. atherosclerosis
      ii. blood clots.

Oral health considerations

Resources consulted

- Basic management of medical emergencies: Journal of the American Dental Association
- Chest Pain: Inside Dentistry
- Craniofacial pain as the sole symptom of cardiac ischemia: Journal of the American Dental Association
- Dental Emergencies, Angina Pectoris: Oralcare India
- Oral care for patients with cardiovascular disease and stroke: Journal of the American Dental Association
- The effect of subantimicrobial-dose–doxycycline periodontal therapy on serum biomarkers of systemic inflammation: Journal of the American Dental Association
- What dose of epinephrine contained in local anesthesia can be safely administered to a patient with underlying cardiac disease during a dental procedure?: Journal of the Canadian Dental Association

A pre-planned and informed approach to recognition and management of angina is an integral part of the clinical responsibilities of health care professionals generally and dental hygienists in particular because

1. angina pectoris and myocardial infarction are the two most likely cardiac problems in a conscious patient/client who is exhibiting chest pain during oral healthcare
2. psychological and physiological stress during the Procedures has the potential to significantly and adversely affect the supply of oxygen to the heart, and therefore produce chest pain or discomfort, which
   a. may indicate unstable angina and thus signal imminent myocardial infarction (*CDHO Advisory*), a medical emergency, if it
      i. lasts longer than a few minutes
      ii. is not relieved by rest or angina medication
   b. may occur if cardiac stress suddenly increases because the coronary oxygen supply is overcome by the myocardium’s oxygen demand which causes episodes of chest pain or discomfort that
      i. are likely to be stable angina
      ii. may be precipitated by the stress of the Procedures
      iii. disappear when the cardiac stress is reduced
c. may not feature prominently or at all during or prior to a myocardial infarction (CDHO Advisory) because, in some instances, the sole symptom of the cardiac ischemia may be craniofacial pain
d. may have causes unrelated to the heart or the cardiovascular system

3. the primary management goal of oral healthcare for the patient/client with angina
   a. is to ensure that any effects on the circulation of oxygen-bearing blood to the heart produced by dental treatment do not exceed the cardiovascular reserve of the patient
   b. is achieved by monitoring the patient/client’s
      i. blood pressure, which has the associated benefit of screening for undiagnosed hypertension (CDHO Advisory) for subsequent referral for medical evaluation
      ii. heart rate and rhythm
   c. requires the dental hygienist to take the medical history
      i. with the intention of identifying patients/clients
         1. who may be at particular risk of myocardial infarction (CDHO Advisory) during or as a result of the Procedures
         2. whose hypertension (CDHO Advisory) is not sufficiently under control
         3. for whom medical clearance for the Procedures is required, chiefly those
            a. with unstable angina
            b. with a recent history of myocardial infarction (CDHO Advisory)
            c. who may benefit from pre-medication
               i. to alleviate anxiety
               ii. with nitrates
      ii. to identify the patients/client’s medications, including
         1. prescription medications and, where appropriate, dose and timing
         2. over-the-counter medications
         3. herbal, supplements and other remedies
         4. drug interactions and side effects
d. to consider stress-reduction techniques, such as short appointments, ideally in the morning when the patient is well-rested and has a greater physical reserve
e. to control pain
   i. as an essential prevention for patients/clients with cardiac conditions such as
      1. atherosclerosis
      2. recent myocardial infarction
      3. stable angina
   ii. which may require effective local anesthesia to avoid undue stress during the Procedures, subject to the guidelines for the use of epinephrine, because patients/clients who may be at particular risk from the effects of epinephrine include those with
      1. unstable angina
      2. a history of recent myocardial infarction
   iii. post-Procedure with appropriate pain relief
f. to ensure that emergency procedures are in place, understood and followed, and include
   i. early recognition of medical emergencies, which relies on perceiving and understanding early symptoms
   ii. as required
      1. appropriate positioning of the patient/client
      2. assessments of
         a. airways
         b. breathing
         c. circulation
      3. administration of
         a. oxygen
         b. nitrates
      4. termination of the Procedures or the appointment if
         a. angina symptoms intensify
         b. the patient/client becomes overly anxious

4. oral healthcare, along with matters of diet and lifestyle, is important
   a. in prevention of cardiovascular disease because
      i. of possible links between
         1. infections of the mouth and coronary artery disease
         2. periodontal disease and atherosclerosis
      ii. moderate to severe periodontitis may require medical evaluation and possible treatment especially for patients/clients with other risk factors, such as
         1. atherosclerosis
         2. cardiovascular disease
   b. in cardiac rehabilitation following myocardial infarction or surgical treatment for atherosclerosis.

MEDICATIONS SUMMARY

Sourcing medications information

1. Adverse effect databases
   ▪ Health Canada’s Marketed Health Products Directorate
toll-free 1-866-234-2345
   ▪ Health Canada’s Drug Product Database

2. Specialized organizations
   ▪ US National Library of Medicine and the National Institutes of Health Medline Plus Drug Information
   ▪ WebMD

3. Medications considerations
   All medications have potential side effects whether taken alone or in combination with other prescription medications, or as over-the-counter (OTC) or herbal medications.

4. Information on herbals and supplements
   ▪ US National Library of Medicine and the National Institutes of Health Medline Plus Drug Information All Herbs and Supplements
5. Complementary and alternative medicine
   - National Center for Complementary and Alternative Medicine

Types of medications

Resources consulted
- Diuretics: Texas Heart Institute
- Drugs and Health Products: Health Canada
- How heart disease medications work: Heart and Stroke Foundation

Guidelines
1. Apart from medications used to treat angina the patient/client may be prescribed medications for comorbidities, complications and associated conditions of angina.
2. Aspirin
   a. there is no indication to discontinue aspirin treatment of patient/clients with a history of myocardial infarction in connection with
      i. single-tooth extraction
      ii. the Procedures
   b. antiplatelet therapy with aspirin
      i. has been shown to reduce cardiac events after coronary stenting
      ii. should not be discontinued because doing so increases the risk of stent thrombosis, myocardial infarction and death.
3. Epinephrine in local anesthesia in oral healthcare
   a. Pain and other stressors can provoke sudden and significant release of epinephrine, which can adversely affect the diseased heart.
   b. The addition of epinephrine to local anesthetics improves both the depth and duration of anesthesia. Given the importance of good local anesthesia technique, use of some exogenous epinephrine may be beneficial for some patients/clients with angina, but the dose needs careful consideration.
   c. One of the most frequently quoted suggestions for a safe dose specifies a maximum dose of 40 µg epinephrine per oral healthcare appointment. Nevertheless, epinephrine should
      i. be used with caution with patients/clients with a history of stable angina
      ii. not be used with patients/clients with a history of unstable angina or myocardial infarction without clear medical concurrence.
4. New guidelines for prevention of heart disease no longer recommend
   a. hormone replacement therapy
   b. vitamins E or C
   c. antioxidants
   d. folic acid.

Specific Medications
1. Thrombolytic therapy
   - aspirin (ASA)
   - clopidogrel (Plavix®)
2. Anti-platelets
Prevent blood clots from forming
- **aspirin** (ASA)
- **clopidogrel** (Plavix®)
- **dipyridamole** (Permole®, Persantine®)
- **ticlopidine** (Ticlid®)

3. Anticoagulants
- **aspirin** (ASA)
- **clopidogrel** (Plavix®)
- **warfarin** (Coumadin®)

4. Nitrates
Prevent or treat angina
- **isosorbide** (Dilatrate®-SR, Imdur®, Ismo®, Ismotic®, Isoditrate®, Isordil®, Monoket®)
- **nitroglycerin** (Nitromist®, Nitrostat®, Nitro-Time®)
- **nitroglycerin topical** (Nitro-Bid®)
- **nitroglycerin transdermal** (Minitran®, Nitro-Dur®)

5. Beta-blockers
Heart failure and hypertension
- **carvedilol** (Coreg®)
- **labetalol oral** (Normodyne®, Trandate®)
- **metoprolol** (Lopressor®, Toprol®)
- **pindolol** (Visken®)
- **propranolol oral** (Inderal®)

6. Calcium channel blockers
Hypertension and angina
- **amlodipine** (Norvasc®)
- **diltiazem** (Cardizem®)
- **nifedipine** (Procardia®)
- **verapamil** (Calan®, Isoptin®)

7. **Cholesterol** absorption inhibition and dietary restriction
- **ezetimibe** (Zetia®)
- **niacin** (Niacor®)

8. Resins (bile acid sequestrants)
Promote formation of bile, which reduces LDL-cholesterol
- **cholestyramine resin** (Questran®)
- **colestipol** (Colestid®)

9. Statins
Lower cholesterol and other fats
- **atorvastatin** (Lipitor®)
- **fluvastatin** (Lescol®)
- **lovastatin** (Mevacor®)
- **pravastatin** (Pravachol®)
- **simvastatin** (Zocor®)
10. Angiotensin-converting enzyme (ACE) inhibitors
   Hypertension and heart failure
   - captopril (Capoten®)
   - enalapril (Vasotec®)
   - lisinopril (Prinivil®, Zestril®)
   - ramipril (Altace®)
   - ranolazine (Ranexa®)

11. Thiazide diuretics
    Thiazide diuretics are used to treat high blood pressure by reducing the amount of sodium and water in the body. Thiazides are the only type of diuretic that dilates the blood vessels, which also helps to lower blood pressure.
    - chlorthalidone (Thalitone®, Hygroton®)
    - hydrochlorothiazide (HydroDIURIL®)
    - methyclothiazide (Duretic®)
    - metolazone (Zaroxolyn®)

12. Potassium-sparing diuretics
    Potassium-sparing diuretics are used to reduce the amount of water in the body. Unlike the other diuretic medications, these do not cause the body to lose potassium.
    - amiloride and hydrochlorothiazide (Moduretic®)
    - spironolactone (Aldactone®)
    - triamterene (Dyrenium®)

13. Loop-acting diuretics
    Loop-acting diuretics cause the kidneys to increase the flow of urine. This helps reduce the amount of water in the body and lower the blood pressure.
    - ethacrynic acid (Edecrin®)
    - furosemide (Lasix®)

14. Heart failure, arrhythmia, hypertension
    - digoxin oral (Cardoxin®)
    - spironolactone (Aldactone®)

15. Fibrates (Fibric Acid Derivatives)
    Reduce cholesterol and triglycerides, increase HDL
    - fenofibrate (Lipidil®)
    - gemfibrozil (Lopid®)

Side effects of medications

See the links above to the specific medications.

THE MEDICAL AND MEDICATIONS HISTORY

The dental hygienist in taking the medical and medications history-taking should
1. focus on screening the patient/client prior to treatment decisions relative to
   a. key symptoms
   b. medications considerations
   c. contraindications
   d. complications
2. explore the need for advice from the primary or specialized care provider(s)
3. inquire about
   a. symptoms and pointers in the recent history to identify symptoms suggestive of unstable angina, which is a
      i. contraindication to the Procedures
      ii. potential medical emergency
   b. symptoms suggestive of stable angina, which is not a contraindication to the Procedures provided that the patient/client is receiving appropriate medical care
   c. the patient/client’s understanding and acceptance of the need for oral healthcare
   d. medications considerations, including over-the-counter medications, herbals and supplements, with specific reference to nitrates
   e. problems with previous dental/dental hygiene care
   f. problems with infections generally and specifically associated with dental/dental hygiene care
   g. the patient/client’s current state of health
   h. how the patient/client’s current symptoms relate to
      i. oral health
      ii. health generally
      iii. recent changes in the patient/client’s condition.

IDENTIFYING AND CONTACTING THE MOST APPROPRIATE HEALTHCARE PROVIDER(S) FOR ADVICE

Identifying and contacting the most appropriate healthcare provider(s) from whom to obtain medical or other advice pertinent to a particular patient/client

The dental hygienist should
1. record the name of the physician/primary care provider most closely associated with the patient/client’s healthcare, and the telephone number
2. obtain from the patient/client or parent/guardian written, informed consent to contact the identified physician/primary healthcare provider
3. use a consent/medical consultation form, and be prepared to fax the form to the provider
4. include on the form a standardized statement of the Procedures proposed, with a request for advice on proceeding or not at the particular time, and any precautions to be observed.

UNDERSTANDING AND TAKING APPROPRIATE PRECAUTIONS

Infection Control

Dental hygienists are required to keep their practices current with infection control policies and procedures, especially in relation to
1. the Recommendations published by the Centers for Disease Control and Prevention (a frequently updated resource)
2. relevant occupational health and safety legislative requirements
DECIDING WHEN AND WHEN NOT TO INITIATE THE PROCEDURES PROPOSED

The dental hygienist
1. should not implement the Procedures without prior consultation with the appropriate primary or specialist care provider(s) if the patient/clients’ history or present condition appears suggestive of **unstable angina**
2. may postpone the Procedures pending medical advice if the patient/client
   a. is experiencing symptoms suggestive of **stable angina** and is not receiving routine medical care
   b. has not complied with pre-medication, such as **nitrates**, as directed by the prescribing physician
   c. has recently changed significant medications, under medical advice or otherwise
   d. recently experienced changes
      i. in his/her medical condition
      ii. such as effects of medication or other treatment
   e. is unable to provide the dental hygienist with sufficient information about the medical history relating to **coronary artery disease** or **cardiovascular disease**
   f. has symptoms or signs of
      i. exacerbation of the medical condition
      ii. **comorbidity, complication or an associated condition**
   g. not recently or ever sought and received medical advice relative to oral healthcare procedures
   h. is deeply concerned about any aspect of his or her medical condition.

DEALING WITH ANY ADVERSE EVENTS ARISING DURING THE PROCEDURES

Dental hygienists are required to initiate emergency protocols as required by the College of Dental Hygienists of Ontario’s **Standards of Practice**, and as appropriate for the condition of the patient/client.

First-aid provisions and responses as required for current certification in first aid.

RECORD KEEPING

Subject to **Ontario Regulation 9/08** Part III.1, **Records**, in particular S 12.1 (1) and (2) for a patient/client with a history of angina, the dental hygienist should specifically record
1. a summary of the medical and medications history
2. any advice received from the physician/primary care provider relative to the patient/client’s condition
3. the decision made by the dental hygienist, with reasons
4. compliance with the precautions required
5. all Procedure(s) used
6. any advice given to the patient/client.
ADVISING THE PATIENT/CLIENT

Resources consulted

**Cardiovascular conditions: Colgate Oral Care Centre**

The dental hygienists should

1. urge the patient/client to alert any healthcare professional who proposes any intervention or test that he or she
   a. has a history of angina
   b. is taking medication
   c. should as a matter of routine take any prescribed nitrates
2. explain to the patient/client that some cardiovascular diseases may
   a. affect oral health
   b. may require
      i. medical advice before the Procedures are implemented
      ii. changes to oral health care
3. advise the patient/client to bring angina-related medications, such as nitrates, to oral health appointments
4. discuss, as appropriate
   a. the patient/client’s medications, including
      i. most recent use of required medications in relation the dental hygiene
      ii. sub-lingual nitrates, where appropriate, with advice for combating dry mouth with moistening of the area under the tongue
      iii. effects
         1. nature
         2. duration
   b. the importance of the patient/client’s
      i. self-checking the mouth regularly for new signs or symptoms
      ii. reporting to the appropriate healthcare provider any changes in the mouth
   c. the need for regular oral health examinations and preventive oral healthcare
   d. oral self-care including information about
      i. choice of toothpaste
      ii. tooth-brushing techniques and related devices
      iii. dental flossing
      iv. mouth rinses
      v. management of a dry mouth
   e. the importance of an appropriate diet in the maintenance of oral health
      i. for persons at an advanced stage of debilitation
      ii. the role of the family caregiver, with emphasis on maintaining an infection-free environment through hand-washing and, if appropriate, wearing gloves
      iii. scheduling and duration of appointments to minimize stress and fatigue
   f. comfort level while reclining, and stress and anxiety related to the Procedures
   g. medication side effects such as dry mouth, and recommend treatment
h. mouth ulcers and other conditions of the mouth, comorbidities, complications or associated conditions, medications or diet
i. pain management.

### BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

#### POTENTIAL BENEFITS

1. Promoting health through oral hygiene for persons who have angina.
2. Reducing the adverse effects, such as inappropriately implementing the Procedures because of failure to obtain medical advice or urgent care for a patient/client with unstable angina.
3. Reducing the risk that oral health needs are unmet.

#### POTENTIAL HARMS

2. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client’s angina is unrecognized
   b. in the presence of complications for which prior medical advice is required.
3. Disturbing the normal dietary and medications routine of a person with angina.
4. Inappropriate management of pain or medication.

### CONTRAINDICATIONS

#### CONTRAINDICATIONS IN REGULATIONS

Identified in the *Dental Hygiene Act, 1991 – O. Reg. 218/94 Part III*

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