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 a stroke.

ADVISORY STATUS

Cite as
College of Dental Hygienists of Ontario, CDHO Advisory Stroke, 2011-06-01

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)

Stroke

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 stroke, 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.

$^1$ 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

Child (2 to 12 years)
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 children, young persons and adults with a stroke.

MAJOR OUTCOMES CONSIDERED

For persons who have stroke: 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
- Stroke: Heart and Stroke Foundation
- Stroke: MedlinePlus
- Stroke: National Institute of Neurological Disorders and Stroke
- Stroke: PubMed Health

Stroke, cerebrovascular disease, cerebral infarction, cerebral hemorrhage, ischemic stroke, cerebrovascular accident

1. is an interruption of the blood supply to any part of the brain that
   a. results when a blood vessel in the brain
      i. is blocked
      ii. bursts open
   b. denies blood and oxygen to parts of the brain
   c. causes sudden loss of brain function
   d. causes permanent damage if the flow is interrupted for more than a few seconds
2. is a medical emergency
3. occurs chiefly as one of two types
   a. ischemic stroke
   b. haemorrhagic stroke.

Other terminology used in this advisory is as follows.

1. Atherosclerosis, which
   a. clogs arteries
   b. is caused by plaque, which
      i. is composed of cholesterol, fat and other substances
      ii. accumulates on the inner walls of arteries in
          1. the brain
          2. the neck
          3. the heart
          4. elsewhere in the body
      iii. impedes blood flow
      iv. causes clots.
2. Blood clot, is
   a. a mass that occurs when blood hardens from a liquid into a solid
   b. called a thrombus when it forms inside a blood vessel or within the heart and remains in place
   c. called an embolus when it separates from a thrombus and travels from one location in the body to another, in the process is called embolism.
3. Cardiac arrest (CDHO Advisory), which
   a. occurs when the heart develops an arrhythmia that causes it to cease beating
   b. causes death within a few minutes without medical attention
   c. requires emergency treatment including
      i. cardiopulmonary resuscitation
      ii. defibrillation.
4. Ischemic stroke, which
   a. occurs when a blood vessel supplying blood to the brain is blocked by a blood clot, which may
      i. form as a thrombus in an artery that is already narrow, which causes a thrombotic stroke
      ii. travels as an embolus to block a smaller artery in the brain, which causes an embolic stroke by breaking off from blood vessels in the
          1. brain
          2. heart
          3. another part of the body
   b. may result from
      i. atherosclerosis
      ii. tearing in the carotid artery
      iii. certain medications.
5. Hemorrhagic stroke
   a. occurs when a blood vessel in part of the brain becomes weak and bursts open, causing blood to leak into the brain, which damages the brain cells
   b. may be caused by pre-existing defects in the blood vessels of the brain.
6. **Transient Ischemic Attack (TIA, mini-stroke)**
   a. occurs when a clot briefly blocks blood flow to the brain
   b. produces symptoms closely resembling those of a stroke except that they fade or disappear within a few minutes or hours
   c. is an important warning sign of impending stroke and therefore a 911 medical emergency.

7. **Traumatic brain injury, acquired brain injury**, damage to the brain which
   a. occurs after birth
   b. is not related to a congenital disorder or a degenerative disease.

**Overview of stroke**

**Resources consulted**
- Statistics: Heart and Stroke Foundation
- Stroke Warning Signs: Heart and Stroke Foundation
- Stroke: Heart and Stroke Foundation
- Stroke: MedlinePlus
- Stroke: National Institute of Neurological Disorders and Stroke
- Stroke: PubMed Health
- Transient ischemic attack: PubMedHealth

**Stroke**

1. develops as types and instances, as follows
   a. ischemic: about 80 percent of all strokes
   b. hemorrhagic: about 20 percent of all strokes
   c. transient ischemic attacks: 15,000 persons per year, with many believed unreported

2. occurs in Canada
   a. at the rate of 50,000 strokes per year
   b. as the third leading cause of death, which accounts for
      i. the deaths of 14,000 Canadians each year
      ii. 7 percent of all deaths in Canada
   c. affects
      i. children under the age of 19 at the rate of 6.7 per 100,000 children
      ii. Canadians living with its consequences: 300,000

3. has various interlinked risks, risk factors and causes
   a. risk
      i. of stroke doubles every 10 years after age 55
      ii. increases by 20 percent the chances of another stroke within two years of a previous stroke
      iii. of stroke increases fivefold relative to the general population over the two years following a transient ischemic attack
      iv. of brain hemorrhage is increased by substance abuse (*CDHO Advisory*) including
         1. alcohol
         2. cocaine
   b. risk factors considered controllable are chiefly
      i. hypertension (*CDHO Advisory*) which
         1. is the greatest risk factor for stroke
2. affects one in five Canadians

ii. **high blood cholesterol**, which
   1. leads to **atherosclerosis**
   2. is major risk factor for stroke
   3. if lowered overall leads to marked reduction in the risk of stroke

iii. **atrial fibrillation**, which
   1. is the commonest type of cardiac arrhythmia
   2. increases risk of stroke between three and five times
   3. is thought to account for 15 percent of **ischemic strokes**
   4. increases with age: after age 60, 30 percent of strokes are attributed to it

iv. **diabetes** (*CDHO Advisory*), especially when poorly controlled, increases the risk of
   1. hypertension
   2. **atherosclerosis**
   3. stroke

v. **bleeding disorders** (*CDHO Advisory*)

vi. **obesity and overweight**, major risk factors for heart disease and stroke

vii. **excessive alcohol consumption**, alcohol consumption beyond certain limits is considered a risk factor

viii. head injury resulting in **brain injury**

ix. **physical inactivity**, doubles the risk of stroke

x. **smoking**, almost doubles the risk of ischemic stroke

xi. **stress**, when excessive, is believed to increase the risk of stroke

xii. **women’s risk factors**, while the same as those for men, also include unique risks for stroke and heart disease from
   1. **birth control pills**
   2. **hormone therapy**, which uses hormones such as
      a. estrogen
      b. progestin
      c. testosterone
   3. **cholesterol**
   4. estrogen
   5. heart attack (*CDHO Advisory*)
   6. menopause
   7. pregnancy and the post-partum phase
   8. triglycerides

xiii. **risk factors not considered controllable** are chiefly
   1. age
   2. **ethnicity**
   3. **family history**
   4. **gender**
   5. **history of stroke or Transient Ischemic Attack**

4. is characterized by signs and symptoms that
   a. present as **five warning signs**, all sudden, that signal a 911 medical emergency requiring hospital assessment for possible treatment that must be administered within 3 hours, as follows
i. **weakness**: sudden loss of strength or sudden numbness in the face, arm or leg, even if temporary
ii. **trouble speaking**: sudden difficulty speaking or understanding or sudden confusion, even if temporary
iii. **vision problems**: sudden trouble with vision, even if temporary
iv. **headache**: sudden severe and unusual headache
v. **dizziness**: sudden loss of balance, especially with any of the four signs above

b. depend on the severity of the stroke and the part of the brain affected, as follows

   i. **effects on mental functioning**
      1. alertness changes including sleepiness, unconsciousness, and coma
      2. confusion or loss of memory
      3. personality, mood, or emotional changes
      4. speaking or understanding difficulties
      5. writing or reading difficulty

   ii. **effects on the neurological system**
      1. balance impaired or lost
      2. bladder or bowel control impaired
      3. clumsiness
      4. coordination lost or impaired
      5. dizziness or vertigo
      6. eyesight changes including
         a. decreased vision
         b. double vision
         c. total loss of vision
      7. hearing changes
      8. muscle weakness, usually unilateral, in the face, arm, or leg
      9. numbness or tingling on one side of the body
     10. sensation changes affecting touch and the ability to feel pain, pressure, different temperatures, or other stimuli
     11. walking difficulty

   iii. **effects on the oral area**
      1. difficulty swallowing
      2. changes in taste

c. is medically investigated by means of

   i. complete physical and neurological examination, which includes checking
      1. frequently blood pressure
      2. frequently vision, movement, sensation, reflexes, understanding, and speaking
      3. for abnormal sounds in the neck caused by turbulent blood flow in the carotid arteries

   ii. special clinical tests, including
      1. angiography or arteriography
      2. blood and urine tests
      3. carotid ultrasound (Doppler)
4. CT or CAT scan
5. echocardiogram
6. electrocardiogram
7. electroencephalogram (EEG)
8. Holter or event monitoring
9. magnetic resonance imaging (MRI)/magnetic resonance angiography (MRA)
10. transesophageal echocardiogram (TEE)

5. is treated
   a. as a medical emergency, requiring
      i. a call to 911 or other emergency service, at the first warning signs of a stroke
      ii. patients to reach a hospital within 3 hours of the onset of symptoms
   b. according to the severity and cause of the stroke, with
      i. various medications
      ii. carotid artery surgery
   c. with the intention of
      i. rehabilitation for
         1. bladder and bowel problems
         2. muscle and nerve problems
         3. speech problems
         4. swallowing and eating problems
         5. thinking and memory problems
      ii. transfer to life at home from a nursing facility
      iii. prevention of recurrence

6. is associated with a prognosis that
   a. expressed as a percentage of persons with stroke outcomes comprises
      i. complete recovery: 10 percent
      ii. recovery with minor impairment or disability: 25 percent
      iii. residual moderate-to-severe impairment: 40 percent
      iv. impairment sufficiently severe to require long-term care: 10 percent
      v. death: 15 percent
   b. depends on
      i. the type of stroke because, in general, ischemic stroke has better chances of survival than hemorrhagic stroke
      ii. how much brain tissue is damaged
      iii. what body functions are affected
      iv. how quickly treatment was administered
   c. reflects the experience that
      i. over half of the persons who have had a stroke are able to function independently at home
      ii. the risk for a second stroke is highest over the first few weeks or months after the first stroke, after which time it begins to reduce.

7. is prevented by
   a. low-fat diet
   b. limitation of consumption of alcoholic drinks
   c. regular, appropriate exercise
   d. routine checking of
i. blood pressure
ii. blood cholesterol
e. specialized preventive regimes for
   i. congestive heart failure
   ii. diabetes
   iii. heart disease
   iv. high cholesterol
   v. hypertension
   vi. irregular heartbeat, such as atrial fibrillation
   vii. mechanical heart valves
   viii. other risk factors for stroke
f. stopping smoking
g. aspirin therapy, where clinically appropriate
h. specialized surgery, where clinically appropriate

8. invokes social considerations, including requirements for support and resources, such as the
   a. Heart and Stroke Foundation of Ontario
   b. Stroke Survivors Association of Ottawa
   c. American Stroke Association

Multimedia and images
- Brain
- Brainstem function
- Cerebellum function
- Circle of Willis
- Endarterectomy
- Left cerebral hemisphere function
- Plaque buildup in arteries
- Right cerebral hemisphere function
- Stroke

Comorbidity, complications and associated conditions

Comorbid conditions are those which co-exist with a stroke 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.

Comorbid conditions, complications and associated conditions of stroke include the following.

1. Various of the risk factors associated with stroke are also comorbidities, such as
   a. atrial fibrillation
   b. coronary artery disease
   c. diabetes
   d. excessive alcohol consumption
   e. high blood cholesterol
2. Other comorbidities and associated conditions that may need to be taken into consideration in the provision of oral healthcare include
   a. dependency on caregivers in daily life activities, apparently associated with lower health-related quality of life
   b. depression and depressed mood, which
      i. affects about 20 percent of hemorrhagic stroke survivors
      ii. undermines quality of life
   c. impaired spatial orientation, found in
      i. 23 percent of stroke patients at acute admission
      ii. 12 percent of survivors after completed rehabilitation
   d. incontinence of urine after stroke; this and other poor outcomes may be associated with treatable conditions such as malnutrition and infections
   e. osteoarthritis, which generally impedes rehabilitation and, when in the fingers, oral self-care
   f. post-stroke fatigue, common, chiefly characterized by increased levels of physical fatigue
   g. lowered self-esteem, a factor in the prediction of functional outcome of patients after stroke.

3. Complications include
   a. aspiration of food into the airway
   b. brain functions: permanent loss
   c. communications problems
   d. fractures
   e. life span decrease
   f. malnutrition
   g. medications side effects
   h. mobility problems, including joint contractures and pressure sores
   i. movement or sensation in one or more parts of the body: permanent loss
   j. muscle spasticity
   k. self-care ability: loss
   l. social interactions: impairment

Oral health considerations

Resources consulted
- Oral care for patients with cardiovascular disease and stroke: Journal of the American Dental Association
- The State of Oral Health in Personal Care Homes: A Public Health Issue?: Journal of the Canadian Dental Association
- Oral Adverse Drug Reactions to Cardiovascular Drugs: Critical Reviews in Oral Biology & Medicine

See also Other Comorbidities
Dental hygienists providing oral healthcare to persons affected by stroke should take account of the following conditions and factors attributable to stroke or its comorbidities, complications, associated conditions and treatments.

1. Angiotensin-converting enzyme inhibitors’ side effects such as cough, loss of taste and, reportedly, a burning sensation described as ‘scalded mouth’ syndrome.

2. Anticoagulant dosage, which may require adjustment by the treating physician in preparation for the Procedures.

3. Cardiovascular disease, which may be associated with periodontal disease; while plausible biological explanations for the association have yet to be established, theories include
   a. bacteremia originating in periodontal disease contributing directly to the atheromatous or thrombotic processes
   b. the existence of some immune-inflammatory factors that are common to periodontal disease and cardiovascular disease.

4. Dysphagia and mastication difficulties, which lead to
   a. unplanned alterations in diet, with adverse effects on nutrition and body weight
   b. the inability to completely clear the mouth of food particles, leading to halitosis, caries and increased risk of infection, all calling for particular attention to oral hygiene
   c. impairment of chewing through disturbance of tongue function, which leads to accumulation of food in the cheeks and on the mouth floor
   d. dysphagia, which may
      i. create the risk of pneumonia caused by aspiration of bacteria in the mouth, food or fluids
      ii. create the possibility of swallowing of dentures
      iii. call for attention to the posture of the patient/client, such as sitting upright with the chin pointing down during mouth washing or drinking.

5. Epinephrine in local anesthetics and the potential for problems arising from their interactions with
   a. nonselective beta-blockers, which
      i. in theory may result in a reduction in cardiac output and, for this reason, in some oral healthcare practices led to the avoidance of epinephrine in local anesthetic solutions, but systematic review in 2004 by the American Heart Association, see p. 1237 concluded that, although adverse events may occur in patients whose hypertension is uncontrolled during dental procedures, the use of epinephrine had minimal effect
      ii. may be administered to an individual patient/client in a single session
         1. to the extent of two or three cartridges of anesthetic with 1:100,000 epinephrine
         2. with careful administration, frequent aspiration and monitoring of vital signs
   b. non-potassium-sparing diuretics, which may cause potassium levels to decrease, resulting in dysrhythmia.

6. Facial muscles weakness which, with or without paralysis of extremities, impedes oral self-care.

7. Gag reflex impairment which, during oral healthcare, may
   a. require adjustment of the patient/client’s head position
b. require thorough and continuing evacuation to prevent aspiration of foreign matter.

8. Gingival overgrowth, which
   a. may be caused by calcium channel blockers, leading to pain, gingival bleeding and difficulty with mastication
   b. is prevented or reduced by rigorous oral hygiene
   c. may be reversible with change in anti-hypertensive medication
   d. may require gingivectomy or gingivoplasty for extensive overgrowth.

9. Hand or arm functional impairment, which
   a. is believed to be a major factor in poor periodontal health in seniors who have recovered from a stroke sufficiently to return to the community
   b. may require
      i. assistance of a family caregiver with tooth-brushing
      ii. modification of tooth brushes and techniques of tooth-brushing
   c. undermine self-care of dentures.

10. Heart disease history, which calls for medical advice about the use of antibiotics to combat infective endocarditis (CDHO Advisory).

11. Lichenoid reactions, which
   a. closely resemble lichen planus
   b. are caused by various cardiovascular medications, such as
      i. angiotensin-converting enzyme inhibitors
      ii. beta blockers
      iii. diuretics
   c. are treated
      i. in the first approach by change of medication; if the lichenoid lesions are associated with an anti-hypertensive medication, they will resolve when it is changed
      ii. if the first approach is unsuccessful, with topical corticosteroids.

12. Nonsteroidal anti-inflammatory agents (NSAIDs), prolonged use of which reduces the effectiveness of various anti-hypertensive medications or may raise blood pressure: patients/clients should be given no more than a ten-day course.

13. Orthostatic (postural) hypotension, which
   a. is a risk for persons, especially older persons, taking multiple medications for hypertension
   b. occurs if the person attempts to quickly stand upright after a prolonged period reclining or in the supine position
   c. may cause syncope with the risk of falling and associated injury
   d. is avoided by enabling the patient/client to sit upright for a few minutes after completion of the oral healthcare procedure.


15. Susceptibility to stress

16. Xerostomia, which
   a. is linked to various anti-hypertensive medications, such as
      i. alpha blockers
      ii. angiotensin-converting enzyme inhibitors
      iii. beta blockers
      iv. calcium channel blockers
      v. diuretics
b. may cause
   i. candidiasis
   ii. caries
   iii. difficulties with mastication, swallowing and speech
   iv. oral burning

c. sometimes self-correction through the adaptation of salivary function, but may
   nevertheless require
   i. change in medication
   ii. self-care by the patient/client, with or without family caregiver assistance, such as
      1. frequent sips of water
      2. moisturizing gels
      3. sugarless hard candy, sugarless mints or gums
      4. minimizing caffeine intake
      5. avoiding alcohol-containing oral rinses
      6. direct treatment involving parasympathomimetic agents such as
         a. pilocarpine (Salagen®)
         b. cevimeline (Evoxac®)
   iii. application or increased application of fluoride to combat the potential for caries.

MEDICATIONS SUMMARY

Sourcing medications information

1. Adverse effect database
   ▪ 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**
- [Stroke medications: Hamilton Health Sciences](#)
- [Stroke medications: Heart and Stroke Foundation](#)

**Medications**

1. **Thrombolytic therapy**, which involves clot-dissolving medication, such as tPA tissue plasminogen activator
   - used only for ischemic stroke within 3 hours following onset of symptoms
   - given intravenously by trained healthcare personnel.

2. **Anticoagulants and anti-platelets**
   - used selectively in some circumstances of ischemic stroke to decrease the clotting function
   - do not dissolve existing blood clots
   - may prevent clots from becoming larger and causing additional problems
   - used chiefly and cautiously are
     - heparin
     - warfarin
   - other medications that inhibit clotting include
     - acetylsalicylic acid (ASA, aspirin)
     - clopidogrel (Plavix®)
     - dipyridamole (Persantine®)
     - ticlopidine (Ticlid®)

3. **Anti-hypertensives**, often taken in combinations, comprise
   - Diuretics, which remove excess sodium and fluid to reduce the amount of water and therefore the volume of fluid circulating in the blood; include
     - furosemide (Lasix®)
     - hydrochlorothiazide (HydroDiuril®, Microzide®)
     - indapamide (Lozol®)
   - Beta blockers, which block the effects of adrenaline, thereby reducing the heart rate and the force of the heart pumping action; include
     - atenolol (Tenormin®)
     - carvedilol (Coreg®)
     - metoprolol (Lopressor®)
     - propranolol (Inderal®)
   - Calcium channel blockers, which inhibit blood-vessel constriction by blocking calcium from entering the cells of the heart and blood vessel, or by reducing the force with which the blood is pumped, thereby reducing the blood pressure; include
     - amlodipine (Norvasc®)
     - diltiazem (Cardizem®)
     - felodipine (Plendil®)
     - verapamil (Isoptin®)
   - Angiotensin-converting enzyme (ACE) inhibitors, which inhibit blood-vessel constriction by blocking production of angiotensin II, a substance that constricts blood vessels; include
     - benazepril (Lotensin®)
e. Angiotensin II Receptor blockers, which are similar to ACE inhibitors, but block angiotensin’s narrowing action on blood vessels; include
   - **candesartan** (Atacand®)
   - **irbesartan** (Avapro®)
   - **losartan** (Cozaar®)
   - **telmisartan** (Micardis®)
   - **valsartan** (Diovan®)

f. Alpha blockers, which relax certain muscles and combat the constricting effect of noradrenaline on blood vessels; include
   - **alfuzosin** (Uroxatral®)
   - **doxazosin** (Cardura®)
   - **prazosin** (Minipress®)
   - **tamsulosin** (Flomax®)
   - **terazosin** (Hytrin®)

4. **Cholesterol-lowering medications**
5. **Chlorhexidine** oral rinse to aid in biofilm control.

**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 decision relative to
   a. key symptoms
   b. medications considerations
   c. contraindications
   d. complications
   e. comorbidities
   f. associated conditions

2. explore the need for advice from the primary or specialized care provider(s)

3. inquire about
   a. pointers in the history of significance relative to the Procedures, especially a history of heart disease and use of antibiotics to combat infective endocarditis (**CDHO Advisory**)
   b. anticoagulation medications; dosage may require adjustment and therefore physician consultation prior to the Procedures
   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  
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  
3. relevant public health legislative requirements  
4. best practices or other protocols specific to the medical condition of the patient/client.

**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)  
   a. if the patient/client  
      i. has a history of heart disease  
      ii. has a bleeding tendency  
   b. if the dental hygienist is uncertain about  
      i. the health condition and requirements for special precautions
ii. medication considerations

2. may postpone the Procedures pending medical advice if the patient/client
   a. appears debilitated
   b. is unable to provide the dental hygienist with sufficient information about
      i. medications
      ii. the medical history
   c. recently changed medications, under medical advice or otherwise
   d. has symptoms or signs of
      i. significant deterioration in neurological functions
      ii. comorbidity, complication or an associated condition of stroke
   e. not recently or ever sought and received medical advice relative to oral healthcare procedures
   f. recently changed significant medications, under medical advice or otherwise
   g. recently experienced changes in his/her medical condition such as medication or other side effects of treatment
   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.

Reference warning signs

### 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 stroke, 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

The dental hygienists should

1. urge the patient/client to alert any healthcare professional who proposes any intervention or test
   a. that he or she has a history of stroke
   b. of the medications he or she is taking
2. discuss, as appropriate
   a. 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
b. the need for regular oral health examinations and preventive oral healthcare
c. oral self-care including information about
   i. choice of toothpaste
   ii. tooth-brushing techniques and related devices
   iii. dental flossing
   iv. oral rinses
   v. management of a dry mouth
d. the importance of an appropriate diet in the maintenance of oral health
e. for persons at an advanced stage of a disease or debilitation
   i. regimens for oral hygiene as a component of supportive care and palliative care
   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 relating to stroke, comorbidities, complications or associated conditions, medications or diet
   i. pain management with NSAIDs.

BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

POTENTIAL BENEFITS

1. Promoting health through oral hygiene for persons with a history of stroke.
2. Reducing the potentially adverse effects of the Procedures, such as stress, on the neurological systems of patients/clients with a stroke history by
   a. taking appropriate precautions
   b. generally increasing the comfort level of persons in the course of dental hygiene interventions
   c. using appropriate techniques of communication
   d. providing advice on scheduling and duration of appointments.
3. Reducing the risk that oral health needs are unmet.

POTENTIAL HARMs

1. Causing aspiration of foreign matter during the Procedures.
2. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client is experiencing warning signs of stroke
   b. without confirming with the treating physician whether or not
      i. anticoagulation dosage requires adjustment
      ii. antibiotic prophylaxis is required
   c. in the presence of complications for which prior medical advice is required
   d. in the presence of acute oral infection without prior medical advice.
3. Disturbing the normal dietary and medications routine of a person with stroke.
4. Inappropriate management of pain or medication.
**CONTRAINDICATIONS**

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<thead>
<tr>
<th>CONTRAINDICATIONS IN REGULATIONS</th>
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<tr>
<td>Identified in the <em>Dental Hygiene Act, 1991 – O. Reg. 218/94 Part III</em></td>
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<tr>
<td>College of Dental Hygienists of Ontario, regulatory body</td>
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<tr>
<td>Greyhead Associates, medical information service specialists</td>
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<tr>
<td>College of Dental Hygienists of Ontario, Practice Advisors</td>
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<th>COMPOSITION OF GROUP THAT AUTHORED THE ADVISORY</th>
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<tbody>
<tr>
<td><strong>Dr Gordon Atherley</strong></td>
</tr>
<tr>
<td>O StJ, MB ChB, DIH, MD, MFCM (Royal College of Physicians, UK), FFOM (Royal College of Physicians, UK), FACOM (American College of Occupational Medicine), LLD (hc), FRSA</td>
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| Lisa Taylor  |
| RDH, BA, MEd |

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<td>The College of Dental Hygienists of Ontario gratefully acknowledges the <em>Template of Guideline Attributes</em>, on which this advisory is modelled, of <em>The National Guideline Clearinghouse™</em> (NGC), sponsored by the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services.</td>
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| Denise Lalande  |
| Final layout and proofreading |

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