### 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 with multiple sclerosis.

#### ADVISORY STATUS

Cite as  
College of Dental Hygienists of Ontario, CDHO Advisory Multiple Sclerosis, 2011-07-01

#### 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)**  
Multiple sclerosis

#### 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 multiple sclerosis, 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**

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 multiple sclerosis.

**MAJOR OUTCOMES CONSIDERED**

For persons who have multiple sclerosis: 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
- Frequently Asked Questions: MS Society of Canada
- Types of MS: MS Society of Canada
- Multiple Sclerosis: MedlinePlus

Multiple sclerosis (MS) is
1. a nervous system disease affecting myelin that sheaths the nerve fibres in the brain and spinal cord.
2. classified by type and sub-type, as follows
   a. relapsing remitting multiple sclerosis, which
      i. is characterized by unpredictable episodes
         1. during which
            a. new symptoms appear
            b. existing symptoms worsen
         2. which last from two days to several months
3. which are followed by remissions of variable duration, during which recovery to the pre-episode level of function
   a. is complete or nearly so
   b. persists for a clear period
ii. accounts for 85 percent of diagnoses
iii. comprises two sub-types
   1. benign multiple sclerosis, which
      a. is marked by post-relapse remission that is almost complete
      b. exhibits minimal disability 10 to 15 years after onset
      c. creates symptoms mainly with vision and or touch
      d. accounts for 10 to 15 percent of diagnoses, though some estimates are lower
   2. clinically isolated syndrome, which
      a. involves a single attack of neurological symptoms, though subsequent investigations may reveal evidence of a second attack
      b. is the earliest form of multiple sclerosis
b. primary-progressive multiple sclerosis, which
   i. accounts for 10 to 15 percent of multiple sclerosis diagnoses
   ii. manifests as almost continuous worsening from the outset without clear relapses or remissions
   iii. generally is diagnosed in persons after age 40
   iv. is the only form of multiple sclerosis that affects men and women equally
   c. secondary-progressive multiple sclerosis, which
      i. becomes progressive after an initial relapsing-remitting phase
      ii. progresses with or without relapses
      iii. usually recovers incompletely when attacks do occur
      iv. creates disability that accumulates over time
      v. develops within 10 years in about 50 percent of persons diagnosed with relapsing remitting multiple sclerosis
   d. progressive relapsing multiple sclerosis, which
      i. characterized by progressive worsening of the condition from the outset
      ii. the least common form of multiple sclerosis, accounting for 5 percent of diagnoses.

Other terminology used in this Advisory includes the following.

1. Myelin, an insulating layer that
   a. surrounds nerves, including those in the brain and spinal cord, in the form of a sheath
   b. is composed of protein and fatty substances
   c. facilitates transmission of neurochemical messages through the nerve cells
   d. when damaged, impairs the transmission of the neurochemical messages, as happens in multiple sclerosis.
2. Paresthesia, an abnormal sensation, typically tingling or pricking, caused chiefly by pressure on or damage to peripheral nerves.

3. Spasticity, sustained stiffness caused by
   a. increased muscle tone
   b. muscle spasms.

4. Tremor, unintentional, involuntary and seemingly rhythmic muscle movement involving to-and-fro movements of one or more parts of the body.

Overview of multiple sclerosis

Resources consulted
- Diagnosing MS: National MS Society
- Frequently Asked Questions: MS Society of Canada
- MS Research: What does the “cure” mean to you? | MS Society of Canada
- Multiple Sclerosis: MedlinePlus
- Multiple Sclerosis: Medscape
- Multiple Sclerosis: PubMed Health
- Types of MS: MS Society of Canada

Multiple sclerosis
1. in development, is characterized by
   a. a diagnosis that is
      i. either made soon after onset
      ii. or that is persistently elusive, leading to years of uncertainty dogged by inconsistent symptoms that inexplicably come and go
   b. unpredictability of severity, progression and symptomatology at the time of diagnosis
   c. affects only mildly most persons with the condition though, in the worst manifestations, it may variously prevent
      i. writing
      ii. speaking
      iii. walking
   d. lesions, plaques, in the protective myelin sheath of the brain and spinal cord that
      i. cause inflammation and often patchy destruction of myelin
      ii. disrupt communications between the brain and other parts of the body by impeding the flow of neurochemical messages in the nerve fibres
      iii. produce effects that depend on the part or parts of the brain and spinal cord involved
      iv. sometimes permanently damage the nerve fibres.

2. occurs as types that
   a. present most commonly with the relapsing-remitting form, which may in time develop into the secondary-progressive form
   b. may exist in one or other of the forms
      i. primary progressive
      ii. benign
      iii. clinically isolated syndrome
   c. in Canada appear
i. at any age, though are commonly diagnosed in the age range 15 to 40 years
ii. as new diagnoses at the rate of 1,000 cases per year and, at any one time, affect a total estimated population of 55,000–75,000 Canadians
iii. three times more often in women that in men
iv. most commonly in persons with a northern European heritage.

3. is of unknown cause and without clear risk factors, though it
   a. is believed to be an autoimmune disease (CDHO Advisory) in which malfunction of the body’s immune system causes the attacks on myelin, but the cause of the inflammation is unclear, though it may singly or jointly be
      i. triggered by a virus
      ii. associated with a genetic defect
   b. may be the subject of predisposition caused by genetic factors, though it is not a directly inherited condition.

4. creates signs and symptoms that
   a. vary
      i. in type, location and severity
      ii. considerably from person to person
      iii. from time to time in the same person
   b. occur episodically, with remissions
      i. in which symptoms are reduced or absent
      ii. which separate episodes
   c. reflect or contribute to disability that may be mild, moderate or severe
   d. develop variously in body systems, including
      i. bowel and bladder, causing
         1. constipation
         2. stool leakage
         3. urination problems
            a. difficulty in starting urination
            b. frequency of need to urinate
            c. strong urge to urinate
            d. incontinence
      ii. brain and mental function, causing
         1. decreased attention span, poor judgment, and memory loss, which are
            a. experienced by about half of persons with the condition
            b. usually mild and thus frequently overlooked
         2. short-term memory problems
         3. difficulty reasoning and solving problems
         4. depression, which is common
         5. dementia, a set of symptoms and signs associated with damage to particular parts of the brain (CDHO Advisory)
         6. extreme fatigue, which is very common
      iii. ear and hearing, causing
         1. dizziness and balance problems
         2. hearing loss, which is infrequent
      iv. eyes, which
         1. may be the site of the earliest symptoms, variously
a. blurred or double vision
b. red-green colour distortion
c. blindness in one eye

2. may also present
   a. discomfort
   b. uncontrollable, rapid eye movements

v. muscle and movement, causing
   1. muscle weakness and related symptoms of muscles, including
      a. stiffness
      b. spasms
      c. weakness in one or more arms or legs
      d. problems with
         i. coordination and making small movements
         ii. moving arms or legs
         iii. walking
   2. difficulty with coordination and balance that
      a. is experienced by most persons with the condition
      b. may be sufficiently severe to
         i. impair walking or standing
         ii. cause partial or complete paralysis
         iii. cause loss of balance

vi. nervous system, causing
   1. facial pain
   2. painful muscle spasms
   3. paresthesia, experienced by most persons with the condition
   4. numbness or abnormal sensation in any area
   5. tremor in one or both arms or one of both legs

vii. oral cavity, causing
   1. speech impediments, such as
      a. slurred speech
      b. difficult-to-understand speech
   2. trouble chewing and swallowing.

5. is clinically investigated by
   a. MRI, which
      i. provides the best imaging technology for detecting the presence of plaques
      ii. differentiates old lesions from those that are new or active
      iii. cannot be the sole basis for diagnosis because it does not sufficiently differentiate the condition from changes associated with aging or lesions caused by other conditions
   b. visual evoked potential tests
      i. to analyze the nervous system’s electrical response to the stimulation of specific sensory pathways
      ii. to provide evidence of damage to myelin that results in slowing of nerve conduction along the pathways tested
      iii. are considered most useful for confirming the diagnosis.

6. is treated with
   a. medications
b. endovascular surgical intervention, which is under intensive investigation as a treatment for chronic cerebrospinal venous insufficiency, which
   i. is itself under intensive investigation for its role as a factor contributory to the development of multiple sclerosis
   ii. is at the time of writing the subject of inconclusive evidence in support of its role as a causal or relevant factor for multiple sclerosis

c. lifestyle adjustments, such as
   i. balanced diet
   ii. adequate rest
   iii. regular exercise.

7. offers for prevention
   a. no known means
   b. though episodes may be triggered by avoidable stimuli such as
      i. fever
      ii. hot baths
      iii. stress
      iv. sun exposure.

8. offers a prognosis
   a. that, expressed as outcome, is difficult to predict for individuals, though
      i. most persons with the condition continue with minimal disability for 20 or more years and are variously able to
         1. walk
         2. work
      ii. typically have the best outlook if they
         1. are female
         2. were aged under 30 years when the condition began
         3. experience episodes infrequently
         4. have the relapsing-remitting type
         5. have imaging studies indicative of limited disease
   b. that, expressed as life expectancy, results in little or no shortening of life span even though the condition is chronic and incurable.

9. involves social considerations
   a. because persons with a support system are often able to remain in their home
   b. that invoke support organizations
      i. in Canada, which include
         ▪ MS Society of Canada
         ▪ Hospice Palliative Care
      ii. in the US, include
         ▪ Multiple Sclerosis Foundation
         ▪ National Institute of Neurological Disorders and Stroke
         ▪ National Multiple Sclerosis Society.

Multimedia and images

- Multiple sclerosis
- MRI of the brain
- Myelin and nerve structure
- Central nervous system and peripheral nervous system
- Muscular atrophy
Comorbidity, complications and associated conditions

Comorbid conditions are those which co-exist with multiple sclerosis 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.

For multiple sclerosis, comorbid conditions, complications and associated conditions are as follows.

Resources consulted

- Multiple Sclerosis: Medscape
- Comorbidity delays diagnosis and increases disability at diagnosis in MS: American Academy of Neurology

1. Psychiatric and psychological comorbid conditions, complications and associated conditions include
   a. depression, anxiety, psychosis, and behavioural problems, which
      i. may complicate diagnosis and treatment
      ii. may result in under-recognition and sub-optimal treatment of multiple sclerosis
      iii. require consideration of multiple causes, including
           1. the multiple sclerosis itself
           2. primary psychiatric disorders
           3. dementia, a set of symptoms associated with changes in particular parts of the brain (CDHO Advisory)
           4. side effects of treatment of both the mental condition and the multiple sclerosis
           5. other psychological factors
      iv. may benefit from psychotherapy and social support as adjunctive treatment
      v. result in symptoms such as headache that are more likely to be associated with a comorbid condition than with the multiple sclerosis
      vi. may delay diagnosis or complicate disability assessment because of
         1. behaviour-related factors such as smoking and obesity
         2. depression, which should be considered specifically as a possible factor in
            a. self-assessments of quality of life
            b. attitudes to treatment and self-care.

2. Physical comorbid conditions, complications and associated conditions include
   a. diminishing ability for self-care
   b. medication side effects
   c. osteoporosis (CDHO Advisory)
   d. pressure sores
   e. reliance on indwelling urinary catheters
   f. swallowing problems
   g. urinary tract infections.
3. Limited evidence suggests that autoimmune diseases tend to co-occur, though the topic is a complex one and the subject of intense research; one study suggested an unexpected inverse relation between multiple sclerosis and rheumatoid arthritis.

Oral health considerations

Resources consulted

 Patients with Special Health Care Needs in General and Pediatric Dental Practices in Ontario: Journal of the Canadian Dental Association
 What are the common causes of facial neuropathy?: Point of Care Question 1, Journal of the Canadian Dental Association
 Diagnostic Challenges of Neuropathic Tooth Pain: Journal of the Canadian Dental Association

Dental hygienists should take account of the factors of multiple sclerosis that are relevant to oral health and oral healthcare, as follows.

1. Symptoms
   a. of some relevance to the Procedures include
      i. physiological fatigue, which may be exacerbated by the stress of a prolonged treatment session in a warm environment
      ii. the presence or absence of a sense of wellbeing and good quality of life, supported by attention to oral self-care, assisted or otherwise
   b. that may interfere with the patient/client’s efforts to brush and floss, include
      i. facial pain
      ii. fatigue
      iii. paresthesia with or without pain in the hands
      iv. spasticity
      v. tremor
      vi. weakness.

2. Strategies and assistive devices include
   a. help from a family or other caregiver with brushing and flossing
   b. attention to dry mouth caused by some medications
   c. toothbrushes with modified handles
   d. electric toothbrushes and flossing devices
   e. combating fatigue by
      i. sitting to brush and floss if standing is tiring
      ii. flossing in bed or, after a period of rest
   f. a weighted glove while brushing to manage tremors.

3. Oral healthcare visits should be organized with the intention of
   a. reduction of the challenges of fatigue, poor balance, spasticity, and transportation by
      i. alerting the patient/client to office building accessibility procedures
      ii. ensuring that the patient/client’s special needs are known to office staff before the appointment
      iii. considering the availability of a dental chair that is sufficiently accessible
      iv. advising on extra rest for the patient/client prior to and after the appointment
v. scheduling appointments for a time of day when the patient/client normally feels most rested
b. facilitation of access to dental treatment services and assistance with daily oral healthcare by
i. exploring the availability of special services or funding for oral healthcare for persons with special needs, and their caregivers
ii. ensuring that appropriate oral health assessments are performed and reported to the community care services access coordinator for patients/clients resident in the community or in long-term care facilities.

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
- Consensus Statement by Canadian Network of MS Clinics | MS Society of Canada
- Guide to MS Medications: Multiple Sclerosis Society of Canada
- Modifying the Disease Course: MS Society of Canada
- MS Disease-Modifying Therapies in Canada: General Information | MS Society of Canada

Medications
1. Disease-modifying, immunomodulatory medications, which
   a. impact the underlying disease
      i. are classed as immunomodulators
      ii. generally target some part of the inflammatory process
iii. aim at preventing the inflammation that causes relapses
   b. include Health-Canada-approved medications that reduce the frequency and severity of multiple sclerosis relapses; some may slow the progression of disability
      ▪ fingolimod (Gilenya®)
      ▪ glatiramer acetate (Copaxone®)
      ▪ interferon beta-1a (Avonex®, Rebif®)
      ▪ interferon beta-1b (Betaseron®, Extavia®)
      ▪ natalizumab (Tysabri®).

2. Steroids
   a. help to decrease the severity and duration of relapses by suppressing the areas of acute inflammation in the spinal cord and brain
   b. do not affect the long-term course of the condition
   c. have various side effects if taken for lengthy periods
   d. are used for short periods to relieve symptoms of relapse and to speed healing
   e. include
      ▪ dexamethasone (Decadron®, Dexamethasone Intensol®)
      ▪ methylprednisolone (Medrol®, Meprolone®)
      ▪ prednisone (Prednison Intensol®, Sterapred®).

3. Medications for symptomatic treatment of
   a. bladder problems
      ▪ amitriptyline (Elavil®, Endep®, Vanatrip®)
      ▪ flavoxate (Urispas®)
      ▪ oxybutynin (Ditropan®)
      ▪ tolterodine (Detrol®).
   b. fatigue, reduced in some but not all patients by
      ▪ amantadine (Symmetrel®).
   c. spasticity
      ▪ baclofen (Lioresal® Intrathecal)
      ▪ clonazepam (Klonopin®)
      ▪ dantrolene (Dantrium®)
      ▪ diazepam (Valium®, Valrelease®)
      ▪ tizanidine (Zanaflex®).
   d. vision problems, treated oral steroids preceded by a short course of
      ▪ methylprednisolone (Medrol®, Meprolone®).

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 to the provision of oral healthcare and oral self-care, such as
      i. fatigue
      ii. poor balance
      iii. spasticity
      iv. tremor
      v. weakness
      v. vision problems.
   b. symptoms indicative of psychiatric and psychological comorbid conditions, dementia, complications and associated conditions.
   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

1. There is no contraindication to the Procedures.
2. With a healthy patient/client whose symptoms are under control and whose treatment is proceeding normally, the dental hygienist should implement the Procedures, though these may be postponed pending medical advice, which is likely to be required if the patient/client has
   a. symptoms or signs of an active episode or exacerbation of multiple sclerosis
   b. a history of comorbidity, complication or an associated condition of multiple sclerosis
   c. not recently or ever sought and received medical advice relative to oral healthcare procedures
   d. recently changed significant medications, under medical advice or otherwise
   e. recently experienced changes in his/her medical condition such as medication or other side effects of treatment
   f. 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 multiple sclerosis, 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 to
   a. his or her history of multiple sclerosis
b. the medications he or she is taking.

2. should discuss, as appropriate
   a. the importance of
      i. 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. mouth 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 condition 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 multiple sclerosis, 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 multiple sclerosis.
2. Reducing the adverse effects, such as stress and exacerbation of fatigue, by
   a. generally increasing the comfort level of persons in the course of dental hygiene interventions
   b. using appropriate techniques of communication
   c. providing advice on scheduling and duration of appointments.
3. Reducing the risk that oral health needs are unmet.

**POTENTIAL HARMS**

1. Causing injury from falls in the dental office through failure to recognize the patient/client’s problems with balance.
2. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client’s physiological fatigue may be exacerbated by the stress of a prolonged treatment session in a warm environment
   b. in the presence of comorbidities, complications and associated conditions for which prior medical advice is required
   c. in the presence of acute oral infection without prior medical advice.
3. Disturbing the normal dietary and medications routine of a person with multiple sclerosis.
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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