## 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 cerebral palsy.

## ADVISORY STATUS

Cite as  
*College of Dental Hygienists of Ontario, CDHO Advisory Cerebral Palsy, 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)**

*Cerebral palsy*

**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 cerebral palsy, 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 (12 months 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 cerebral palsy.

MAJOR OUTCOMES CONSIDERED

For persons who have cerebral palsy: 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

- Cerebral Palsy: Hope Through Research: National Institute of Neurological Disorders and Stroke

Cerebral palsy, also termed spastic paralysis, spastic hemiplegia, spastic diplegia, and spastic quadriplegia, is a single condition or a group of disorders that
1. is incurable
2. occurs in children in the first years of life and persists for the rest of their lives
3. manifests as
   a. motor development delayed
   b. coordination impairment
   c. intellectual disability
   d. involuntary movement
   e. limb stiffness
   f. primitive reflexes persistence
   g. seizures
4. may involve brain and nervous system functions such as
   a. hearing
   b. learning
   c. moving
   d. seeing
   e. speaking
   f. thinking

5. exists as several different types
   a. spastic hemiplegia/hemiparesis
   b. spastic diplegia/diparesis
   c. dyskinetic cerebral palsy
   d. ataxic cerebral palsy
   e. spastic quadriplegia/quadriparesis
   f. mixed types.

Other terminology used in this Advisory is as follows.

1. Bruxism
   a. comprises clenching, grinding, and gnashing of teeth
   b. is common in children with cerebral palsy
   c. may be associated with temporomandibular joint disorders.

2. Clinical terminology relating to
   a. movement disorder
      i. ataxic, impaired balance and coordination
      ii. athetoid, writhing movements
      iii. spastic, stiffness of muscles
   b. effect on limbs
      i. hemiparesis, hemi = half, meaning only one side of the body, paresis = weakened
      ii. hemiplegia, hemi = half, meaning only one side of the body, plegia = paralyzed
      iii. quadriparesis, quad = four, paresis = weakened.

3. Dopamine, a chemical messenger, which
   a. supports brain processes that control
      i. movement
      ii. emotional response
      iii. ability to experience pleasure and pain
   b. may be deficient in cerebral palsy because of harm to certain types of brain cells.

4. Drooling in cerebral palsy, is believed
   a. to result from problems with swallowing
   b. not to result from excessive production of saliva.

5. Epilepsy, temporal lobe epilepsy, seizure disorder, a brain disorder
   a. characterized by seizures that recur over time
   b. caused by episodes of disturbed brain activity that temporarily alter attention or behaviour.

6. Pica
   a. is the compulsive eating of non-edible substances, such as sand, dirt, and paint chips
7. Pouching
   a. is the harbouring of food or medication between the cheek and teeth
   b. contributes to dental decay and/or oral lesions.

8. Rh incompatibilities
   a. occurs when
      i. the mother’s Rh blood type, either positive or negative, differs from that of the fetus
      ii. the mother develops antibodies which destroys the blood cells of the fetus
   b. are routinely tested for and treated as part of prenatal care.

9. Rumination
   a. comprises re-chewing, regurgitation, and re-swallowing of previously ingested food
   b. brings
      i. excess of acidic contents of the stomach into the mouth and in contact with tooth surfaces
      ii. demineralization and loss of tooth structure.

10. Seizure, convulsion
    a. is manifested as sudden alteration of behaviour, minor physical signs, thought disturbances, or a combination of such symptoms
    b. results from a temporary change in the electrical functioning of the brain, in particular the cortex
    c. occurs with various conditions, including
       i. cerebral palsy
       ii. epilepsy
       iii. head injury
       iv. brain tumour
       v. brain maldevelopment
       vi. genetic disorder
       vii. infectious illness
       viii. fevers
    d. has oral risks including
       i. chipping of teeth
       ii. biting of the tongue or inside of cheeks
    e. in some 50 percent of persons in which it occurs has no identifiable cause.

11. Tremor, an involuntary shaking movement, that
    a. is often most noticeable in the hands and arms
    b. may affect almost any
       i. body part including the head
       ii. body function including the voice
    c. is of three main types
       i. resting tremors, which
          1. are present when the muscles are at rest
          2. disappear or diminish when the affected muscles are moved
       ii. intention tremors, which
1. occur at the end of an intended movement
2. are absent while the affected body part is at rest
   
   iii. action tremors, which occur when the arm or leg is held against gravity in one position for a period of time.

12. Types of cerebral palsy
   a. spastic hemiplegia/hemiparesis, which
      i. typically affects the arm and hand on one side of the body
      ii. also may affect the leg
      iii. causes, variously
         1. delay in development of walking
         2. walking on tip-toe
         3. short and thin arms
         4. curvature of the spine
         5. seizure
         6. speech impediment
      iv. leaves intelligence unimpaired
   b. spastic diplegia/diparesis, which
      i. causes muscle stiffness, that
         1. chiefly affects the legs, causing
            a. the toes to point up
            b. scissor-like movements of the legs
            c. need for walkers or leg braces
         2. less severely affects the arms, though it may bring clumsiness of the hands
      ii. leaves intelligence and language skills unimpaired
   c. dyskinetic cerebral palsy, which
      i. causes
         1. athetoid movements of hands, feet, arms, or legs, which lead to difficulties
            a. sitting upright
            b. walking
            c. coordinating muscle movements involved in speaking
         2. may be associated with hyperactivity in the muscles of the face and tongue, leading to
            a. grimacing
            b. drooling of cerebral palsy
      ii. rarely affects intelligence
   d. ataxic cerebral palsy, which
      i. is rare
      ii. affects balance and depth perception
      iii. impairs coordination
      iv. causes an unsteady gait with the feet wide apart
      v. creates difficulties with fast or precise movements, such as writing or fastening buttons
      vi. intention tremor
   e. spastic quadriplegia/quadriparesis, which
      i. is the most severe form of cerebral palsy
      ii. is often associated with mental retardation of some degree
iii. is caused by widespread damage to the brain or significant brain malformations

iv. causes
   1. severe stiffness of the limbs
   2. floppy neck
   3. inability to walk
   4. problems speaking and being understood
   5. seizures

f. mixed types, in which symptoms do not correspond to any one type of cerebral palsy.

Overview of cerebral palsy

Resources consulted
- Cerebral Palsy: eMedicineHealth
- Cerebral Palsy: Hope Through Research: National Institute of Neurological Disorders and Stroke

Cerebral palsy
1. affects between 1 in 500 and 1 in 1,000 newborns, including those whose condition is considered mild
2. in children is
   a. the commonest physical disability
   b. accompanied by seizures in about half of the children diagnosed with cerebral palsy
3. includes
   a. congenital cerebral palsy, a condition
      i. in which the child is born with cerebral palsy though it may remain undetected for months or years after birth
      ii. that was in the past attributed to oxygen lack during birth, but extensive research indicates that birth defects involving asphyxia account for only 5 to 10 percent of babies born with congenital cerebral palsy
   b. acquired cerebral palsy, a condition
      i. in which the cerebral palsy begins after birth
      ii. for which an explanation can be established with reasonable certainty, such as
         1. brain damage in the first few months or years of life
         2. brain infections such as
            a. bacterial meningitis
            b. viral encephalitis
         3. head injury from
            a. child abuse
            b. fall
            c. motor vehicle accident
   c. multiple causes, such as
      i. fetal injury
      ii. genetic abnormalities
      iii. maternal infections or fevers
4. results from four types of harm in the brain
a. damage to the white matter of the brain
b. abnormal development of the brain
c. bleeding in the brain, including fetal stroke
d. damage caused by a lack of oxygen in the brain

5. occurs as six main types

6. has causes and risk factors that include
   a. events that may occur during pregnancy and delivery that increase the risk of baby’s being born with cerebral palsy but which do not make cerebral palsy an inevitable consequence of such events, including
      i. low birth-weight, premature birth and smallness for gestational age
      ii. multiple births
      iii. virus infections during pregnancy which can infect the uterus and placenta, such as
         1. cytomegalovirus
         2. herpes
         3. rubella
         4. toxoplasmosis
      iv. Rh incompatibility
   v. exposure to toxic substances during pregnancy, such as methyl mercury
   vi. thyroid abnormalities, mental retardation, or seizures in mothers
   vii. complications during labour and delivery, and immediately after delivery, including
      1. breech presentation
      2. difficult labour and delivery that causes brain damage or abnormalities
      3. jaundice that, when untreated, may
         a. kill brain cells
         b. cause deafness
         c. cause cerebral palsy
   viii. seizures in an infant
   b. injuries or abnormalities of the brain, which may occur
      i. at any time during the first two years of life, when the infant’s brain is still developing
      ii. when parts of the brain are injured by hypoxia of unknown origin
      iii. during early infancy as a result of several conditions, including
         1. brain hemorrhage
         2. brain infection
            a. encephalitis
            b. herpes simplex
            c. meningitis
         3. head injury
         4. infection in the mother during pregnancy, such as rubella
         5. severe jaundice
      c. prematurity of infants, which slightly increases the risk of cerebral palsy
      d. causes that remain undetermined

7. is associated with signs and symptoms that
   a. may first be noticed by parents who see that the child is delayed in
     i. crawling
ii. reaching
iii. rolling
iv. sitting
v. walking

b. may
   i. be more pronounced in the arms or the legs
   ii. be unilateral
   iii. involve both the arms and legs more or less equally

c. usually are recognized prior to the age of two years, and may be recognized as early as 3 months

d. vary
   i. from person to person
   ii. from mild to severe
   iii. according to the types of cerebral palsy and which variously include

1. movement challenges, such as
   a. athetotic movements of the hands, feet, arms, or legs while awake, and which worsen under stress
   b. tremors
   c. unsteady gait
   d. loss of coordination
   e. floppiness of muscles, especially at rest
   f. joints that are unduly loose

2. other brain and nervous system symptoms, such as
   a. decreased intelligence or learning disabilities, which are common, but not inevitable
   b. speech problems
   c. hearing problems
   d. vision problems
   e. seizures
   f. pain, which
      i. occurs chiefly in adults
      ii. may be difficult to manage

3. eating and digestive challenges, such as
   a. difficulty
      i. sucking or feeding in infants
      ii. chewing and swallowing in older children and adults
      iii. swallowing, at all ages
   b. vomiting
   c. constipation
   d. gastrointestinal reflux disease ([CDHO Advisory](#))

4. other challenges, which include
   a. drooling of cerebral palsy
   b. abnormally slow growth
   c. breathing difficulties
   d. urinary incontinence, loss of bladder control

8. is clinically
   a. diagnosed chiefly on the basis of significant delays in motor development
b. investigated by
   i. blood tests
   ii. CT scan of the head
   iii. electroencephalogram (EEG)
   iv. full neurological examination
   v. hearing testing
   vi. MRI of the head
   vii. neuroimaging
   viii. testing of cognitive function in adolescents and adults
   ix. vision testing

9. is treated
   a. by controlling the effects and challenges because no cure is known
   b. with the intention of
      i. minimizing comorbidities, complications and associated conditions
      ii. maximizing independence, requiring a team approach that includes
            1. regular schools for children, wherever feasible
            2. assistive devices, such as
               a. eye glasses
               b. hearing aids
               c. muscle and bone braces
               d. walking aids
               e. wheelchairs
               f. computer-assisted augmentative and alternative
                  communication
            3. services, such as
               a. primary care
               b. oral healthcare
               c. occupational therapy
               d. physical therapy
               e. speech therapy
            4. specialties such as
               a. gastroenterology
               b. neurology
               c. psychiatry
               d. psychology
               e. respirology
      c. with self-care and home care, to emphasize
         i. adequacy of nutrition
         ii. appropriate physical exercise
         iii. bowel care (stool softeners, fluids, fibre, laxatives, regular bowel habits)
         iv. protection of joints from injury
         v. safety in the home
      d. medications
      e. with surgery to
         i. control gastroesophageal reflux (CDHO Advisory)
         ii. cut certain nerves from the spinal cord to help with pain and muscle
             stiffness
         iii. place feeding tubes
         iv. relieve joint contractures
10. is considered
   a. largely unpreventable by good prenatal care in its **congenital form** because this
      i. can be prevented only in certain specific circumstances, including
         1. pre-pregnancy vaccination against rubella
         2. management of **Rh incompatibilities** early in pregnancy
      ii. continues to occur despite good prenatal care
   b. preventable in its **acquired form** in children by safety precautions to reduce the
      risk of accidental injury, such as
      i. car seats for infants and toddlers
      ii. bicycle helmets for young children
      iii. supervision of babies and young children during bathing

11. is associated with a prognosis that reflects the lifelong nature of the disorder which
   a. does not curtail life expectancy
   b. entails disability that in adults
      i. is mostly compatible with community living
         1. independently
         2. with various levels of help
      ii. may be so severe that it requires long-term, specialized care.

12. invokes important social considerations, for which support groups are important
   a. Canada
      - Ontario Federation for Cerebral Palsy
      - The Cerebral Palsy Support Foundation of Canada
   b. US
      - Cerebral Palsy Associations of New York State
      - United Cerebral Palsy
      - U.S. Centers for Disease Control and Prevention

**Multimedia and images**
- Cerebral Palsy
- Dental Hygiene and Cerebral Palsy

**Comorbidity, complications and associated conditions**

**Resources consulted**
- Cerebral Palsy: An Overview | American Academy of Family Physicians
- NINDS Cerebral Palsy Information Page: National Institute of Neurological Disorders and Stroke

Comorbid conditions are those which co-exist with cerebral palsy 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 cerebral palsy
1. create in combination with cerebral palsy childhood’s commonest physical and
devotional disabilities, which
   a. may not be apparent in early life
   b. require recognition and treatment appropriate for the person’s circumstances
   c. should be regarded as major disorders
2. include potentially severe challenges which
   a. include neurodevelopmental disorders, such as
      i. behavioural challenges
      ii. epilepsy, and other types of seizures
      iii. learning difficulties
      iv. sensory impairments
         1. visual impairment
         2. hearing impairment
      v. speech and communications impairment
   b. involve motor and movement disorders, such as
      i. functional gastrointestinal abnormalities that contribute to
         1. bowel obstruction
         2. vomiting
         3. constipation
      ii. movement and motor disabilities
         1. evolution of muscle tone from floppiness to stiffness in the first 5 years of life
         2. feeding difficulties, including
            a. pneumonia caused by choking
            b. nutrition-related disorders, such as
               i. inadequate nutrition (CDHO Advisory)
               ii. osteoporosis (CDHO Advisory)
      c. arise from skeletal disorders and injuries, such as
         i. hip dislocation
         ii. arthritis of the hip joint
         iii. joint contractures
         iv. spinal curvature
         v. falls
      d. create social and psychosocial impairments of the quality of life for
         i. individuals, such as
            1. underemployment
            2. social stigmatization
            3. mobility limitations that act as barriers to
               a. community and social participation
               b. public transportation
         ii. families, such as
            1. burdens on families, including
               a. stress
               b. coping with the complexities of the individual’s and the family’s needs, short-term and long-term
            2. inadequacies in appropriate support in the form of
               a. counselling
               b. trustworthy, comprehensible and usable information and instruction.
Oral health considerations

Resources consulted

- Cerebral palsy, a review for dental professionals: Southern Association of Institutional Dentists
- Dental Care Every Day: A Caregiver’s Guide: National Institute of Dental and Craniofacial Research
- Epilepsy in dental practice: Journal of the Irish Dental Association, at p 176
- Health Challenges in Cerebral Palsy and Strategies for Care: National Institute of Dental and Craniofacial Research
- Practical Oral Care for People With Cerebral Palsy: National Institute of Dental and Craniofacial Research
- Special Needs Fact Sheets for Providers and Caregivers: School of Dentistry, University of Washington

Oral health considerations, especially for children with cerebral palsy, include the following.

1. While cerebral palsy does not cause unique oral abnormalities, it is associated with various oral abnormalities that are more common or more severe in persons with cerebral palsy than in the general population.
2. Oral healthcare is one part of the overall care for cerebral palsy; the dental hygienist is one member of the team.
3. The uncontrolled body movements that are common in cerebral palsy create complications for patients/clients because, when they attempt to help by moving their limbs or bodies during the Procedures, their muscles may tense thereby increasing uncontrolled movements.
4. Primitive reflexes are common in cerebral palsy and
   a. create complications for oral care because the patient/client’s efforts to control them may make them more intense
   b. are most commonly observed during oral care as the
      i. asymmetric tonic neck reflex, which responds when the head is turned, and which causes the arm and leg on
         1. the side towards which the head is turned to stiffen and extend
         2. the opposite side to flex
      ii. tonic labyrinthine reflex, which responds when the neck is extended with the patient/client supine, causing
          1. the legs and arms also to extend
          2. the back and neck to arch
      iii. startle reflex, which responds to any surprising stimulus
          1. such as noises, lights, or a sudden movement
          2. by triggering uncontrolled, often forceful movements involving the whole body
      iv. hyperactive bite and gag reflexes, which call for care in introducing instruments into the mouth.
5. Oral motor dysfunction, which occurs in the vast majority of children with cerebral palsy, may
   a. be sufficiently severe to lead to undernutrition because of impairment of eating and drinking
   b. create the drooling of cerebral palsy
   c. result in disorders of speaking
   d. lead to poor dental alignment and periodontal problems associated with abnormal neuromuscular coordination of the tongue, lips, and cheeks.

6. Face and mouth trauma, which occurs commonly in children with cerebral palsy, and which may arise from one or both of
   a. cerebral palsy
   b. physical abuse.

7. Self-injurious actions or behaviour, including
   a. biting of tongue, cheek, and lip
   b. chewing of fingers, hands and arms
   c. bruxism
   d. rumination
   e. pouching
   f. pica.

8. Oral findings encountered in children with cerebral palsy include
   a. dental decay, the incidence of which is disputed, which seems
      i. chiefly due to poor oral hygiene resulting from inability to adequately brush and floss
      ii. associated with other factors, such as
         1. anti-drooling medications
         2. enamel hypoplasia
         3. food retained in the mouth for too long
         4. mouth breathing
         5. soft diet
   b. dental erosion or loss of tooth structure associated with
      i. gastroesophageal reflux disease (CDHO Advisory), which
         1. increases thermal sensitivity
         2. causes pain
      ii. episodes of vomiting
   c. periodontal disease and gingivitis, which are estimated to be three times higher than in the general population, and which are attributed to
      i. poor oral hygiene
      ii. gingival overgrowth, as a side effect of certain seizure medications
   d. malocclusion, associated with
      i. abnormal muscle and tongue movements, which are responsible for tongue thrust and mouth breathing
      ii. the anterior open bite which
         1. with the protruding splayed anterior teeth, abnormal muscle movements and posture problems are responsible for much of the observed trauma to anterior teeth
         2. leads to tooth fractures and avulsions
   e. delayed eruption of permanent teeth
   f. oral hypersensitivity to touch, taste, or smell
g. prolonged and exaggerated bite reflexes
h. in the particular types of cerebral palsy
   i. spastic hemiplegia/hemiparesis, spastic diplegia/diparesis, spastic quadriplegia/quadriparesis
      1. head, tensely reclined
      2. mouth open; facial movements, tense
      3. tongue, hypertonic and cigar-shaped
      4. tongue thrust during swallowing and speaking
      5. front teeth misalignment, due to insufficient pressure from upper lip underdevelopment for correct alignment
   ii. dyskinetic cerebral palsy
      1. tongue, spontaneous wave-like movements
      2. tongue, jaw, and face muscles, uncoordinated movement
      3. mouth, abrupt and wide opening risking jaw dislocation
   iii. ataxic cerebral palsy
      1. tongue, large, flat and protruded
      2. facial movements, weak
      3. upper lip, inactive.

9. Care of the dental hygiene patient/client involves
   a. scheduling
      i. short appointments early in the day for children with cerebral palsy
      ii. periodic recall appointments for
         1. evaluation of oral hygiene
         2. monitoring for gingival overgrowth caused by anticonvulsant medications
      iii. to enable the child’s medical history to be obtained and discussed prior to the first appointment so that any necessary medical consultations can be arranged with reference to
         1. medications
         2. sedation for medical procedures
         3. risks of seizures
         4. history of gastrointestinal reflux disease (CDHO Advisory)
   b. developing rapport with the patient/client by
      i. helping communications with persons with speech problems with
         1. sufficient time to make themselves understood
         2. conversation that includes parents and family caregivers
         3. recognition that a speech problem may conceal a normal intelligence
      ii. gaining cooperation of the child with techniques such as
         1. positive reinforcement
         2. voice control
      iii. enhancing comprehension for a child with severe cognitive impairment by repetition of commands and requests
      iv. providing spoken description of the Procedures for a child with severe visual impairment to allay fear and anxiety
      v. communicating with visual techniques for children with hearing impairment
      vi. considering sedation techniques or muscle relaxants for calming the child
c. obtaining cooperation in the dental chair, which variously requires
   i. taking account of the intellectual disability of the particular child by
      providing explanations of the Procedures that are understandable by
      the child
   ii. using short, clear instructions one direction at a time
   iii. placing dental instruments slowly into the mouth with the child’s chin in
        downward position to mitigate hyperactive gag reflex
   iv. considering use of a mouth prop
   v. listening actively, with sensitivity to the communication methods relied
      on by the child, including gestures, and consultation with the caregiver
      as required
   vi. developing trust between the oral healthcare personnel and the child
   vii. maintaining consistency in staffing, operatory, and appointment times
        from one visit to another
   viii. using the Tell-Show-Do approach prior to the Procedures, as
        appropriate
   ix. exerting firm but gentle pressure to calm shaking limbs while not
      1. forcing limbs into unnatural positions
      2. attempting to stop uncontrolled body movements
   x. giving the patient/client advance warning of sudden lights, sounds, and
      movements, which should be minimized

   d. preparing for the options of
      i. transferring of the patient/client from wheel chair to dental chair
      ii. performing the Procedures in the wheel chair

   e. understanding and combating fear of having the mouth examined

   f. recognizing clinical circumstances in which
      i. specialist dental appliances may be helpful, and recommending
         appropriate referrals
      ii. medical advice is needed and making the appropriate referral

   g. placing the dental chair at 45 degrees to protect airway by avoiding the supine
      position

   h. providing padding or restraints as required

   i. moving the dental chair only slowly to avoid spastic muscle responses

   j. managing
      i. severe gag reflex
      ii. dysphagia, which creates risk from coughing, gagging, choking, and
          aspiration

   k. reviewing office procedures for
      i. seizure management during treatment
      ii. reporting suspected abuse

   l. explaining to the parent or caregiver
      i. the ways in which oral healthcare is made less distressing to the child
      ii. the importance of starting oral healthcare early
         1. cleansing mouth and gums with a clean damp cloth prior to
            tooth eruption
         2. with a small soft tooth brush and water after first tooth appears
         3. optimum posture and seating arrangements including wheel
            chairs
iii. that fixed bridgework is usually not done with cerebral palsy because of the risk of dental injury from falls, especially with a history of seizures

iv. the option of myofunctional therapy for young children to
   1. increase the muscle tone of the lips
   2. keep the tongue inside of the mouth

v. growth and development of the teeth and orofacial structures

vi. the role of oral health in nutrition

m. counselling
   i. on home dental hygiene procedures
   ii. on daily use of chlorhexidine or other antimicrobial agents and fluorides, as required
   iii. that includes discussion of the role of enamel loss in tooth decay with the intention of avoiding needless feeling of neglect on the part of parents or family caregivers.

### 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

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

The goal of medications is to reduce the effects of cerebral palsy and prevent complications. In particular, medications are prescribed to reduce muscle stiffness and abnormal movements, and to prevent seizures. No medications cure cerebral palsy.

**Medications**

1. to relieve stiffness and abnormal movements
   a. dopaminergic drugs, which increase the level of dopamine, with the effect of decreasing rigidity and abnormal movements.
      - baclofen oral (Lioresal® Intrathecal)
b. muscle relaxants, used to treat stiffness or muscle spasms associated with cerebral palsy
   ▪ **dantrolene oral** (Dantrium®)

c. Botox®, to decrease rigidity of muscles of the arms or legs, to improve range of motion and overall mobility, to enable a child to fit into a brace or splint or to be comfortably positioned in a wheelchair
   ▪ **onabotulinumtoxinA injection** (Botox®)

2. anticonvulsants to control or prevent seizures
   ▪ **gabapentin** (Gabarone®, Neurontin®)
   ▪ **lamotrigine** (Lamictal®)
   ▪ **phenytoin** (Dilantin®)
   ▪ **topiramate** (Topamax®)

3. benzodiazepines to relax muscles by acting on the brain, to relieve anxiety, muscle spasms, and seizures, and to control agitation
   ▪ **alprazolam** (Xanax®)
   ▪ **diazepam** (Valium®)
   ▪ **triazolam** (Halcion®)

4. anticholinergics to combat uncontrollable body movements or drooling
   ▪ **benztropine mesylate oral** (Cogentin®)
   ▪ **glycopyrrolate** (Robinul®)
   ▪ **levodopa and carbidopa** (Atamet®, Parcopa®, Sinemet®)
   ▪ **trihexyphenidyl** (Artane®, Trihexane®)

**Side effects of medications**

See the links above to the specific medications.

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**THE MEDICAL AND MEDICATIONS HISTORY**

The dental hygienist in taking the medical and medications history-taking should with the caregiver as well as the patient/client

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) by inquiring about symptoms indicative of need for medical advice prior to implementing the Procedures, such as
   a. history of self-injurious behaviour
   b. occasions when medications were used to control fear or behaviour

3. ask about
   a. the patient/client’s understanding and acceptance of the need for oral healthcare
b. medications considerations, including over-the-counter medications, herbals and supplements
c. problems with previous dental/dental hygiene care
d. oral habits
e. problems with infections generally and specifically associated with dental/dental hygiene care
f. the patient/client’s current state of health
g. 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 has a history suggestive of instability, reflecting
      i. a need for pre-medication for calming, seizure control, or other behavioural challenges
      ii. physical abuse
iii. seizures  
iv. self-injurious behaviour  
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 unusually debilitated  
b. or the caregiver is unable to provide the dental hygienist with sufficient  
information about the medical or medications history  
c. recently changed medications, under medical advice or otherwise  
d. has symptoms or signs of  
i. exacerbation of the medical condition  
ii. comorbidity, complication or an associated condition of cerebral palsy  
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. or caregiver 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.

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 cerebral palsy, 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, parent or caregiver to alert any healthcare professional who  
proposes any intervention or test  
a. of the details of the history of the particular difficulties created by the cerebral  
palsy  
b. of the medications  
2. should discuss, as appropriate  
a. the importance of the patient/client’s
i. self-checking the mouth regularly for new signs or symptoms of oral lesions or trauma
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, modifications and related oral health aids
   iii. dental flossing
   iv. oral rinses
   v. management of a dry mouth
d. techniques of oral hygiene for family caregivers
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 cerebral palsy, comorbidities, complications or associated conditions, medications or diet
i. the importance of an appropriate diet in the maintenance of oral health
j. pain management.

BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

POTENTIAL BENEFITS

1. Promoting health through oral hygiene for persons who have cerebral palsy.
2. Reducing the adverse effects, such as stress and miscommunications, by
   a. taking account of the nature and effects of cerebral palsy
   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 avoidable harm by mismanagement of uncontrollable movements and primitive reflexes.
2. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client is fatigued, fearful and stressed
   b. in the presence of complications 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 cerebral palsy.
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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