# 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 asthma

## 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 asthma.

## Advisory Status

Cite as

*College of Dental Hygienists of Ontario, CDHO Advisory Asthma, 2010-07-15*

## 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)

**Asthma**

## 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 asthma, 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. Record keeping.

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 asthma.

MAJOR OUTCOMES CONSIDERED

For persons who have asthma: 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
- Asthma Society of Canada
- Health Canada
- National Heart, Lung, and Blood Institute
- MedlinePlus

1. Asthma, a chronic lung disease in which
   a. the inside walls of the airways are always inflamed to some degree and react to certain triggers by becoming even more inflamed and also swollen
   b. the symptoms become more severe as the inflammation increases
   c. the muscles surrounding the airways become hypersensitive, causing them to tighten and constrict spontaneously
   d. the lining of the walls of the airways excessively secrete mucus
   e. the airways are narrowed and thus obstruct airflow resulting in coughing, wheezing and shortness of breath.
2. Asthmatic attack, an intense reaction which, when especially severe, may require emergency care because of the risk of death.
3. Atopy, an inherited tendency to allergy.
4. Candidiasis, oral candidiasis, thrush; infection of the mouth caused by the Candida fungus, which is also known as yeast.
5. Eczema, used variously to refer to 
   a. the common skin condition, atopic dermatitis, which is more correctly termed eczema/atopic dermatitis  
   b. a family of skin conditions that causes the skin to become swollen, irritated, and itchy.
6. Immunomodulator, a relatively new class of medications used in the control of asthma which modify the immune response or the functioning of the immune system.
7. Long-acting beta2-agonists, bronchodilators that 
   a. are used daily to improve lung function  
   b. relax the muscles lining the airways that carry air to the lungs  
   c. increase airflow and ease breathing  
   d. are often used as a supplement to inhaled corticosteroids.
8. Reliever medication, also called rescue medication.
9. Short-acting beta2-agonists, bronchodilators that 
   a. are used to stop asthmatic attacks  
   b. relax the muscles lining the airways that carry air to the lungs within 5 minutes  
   c. increase airflow and ease breathing  
   d. relieve asthma symptoms for 3 to 6 hours  
   e. do not control the inflammation of the lining of the airways.
10. Trigger, something or some condition that causes in the airways inflammation which leads to the symptoms of asthma; the nature of triggers varies from person to person.
11. The three asthma zones, which comprise 
   a. Green zone, the state of total control of asthma 
      i. in which the person is  
         1. symptom-free  
         2. able to participate in normal activities, including strenuous physical activity  
         3. attending work or school  
         4. sleeping through the night without asthma symptoms  
         5. needing reliever medication no more than four times per week, with the exception of one dose prior to exercise.
      ii. during which, if maintained for three months, the prescribing physician may reduce or stop the controller medication.
   b. Yellow zone, the state of warning of loss of control, which 
      i. is defined as any of the following  
         1. difficulty with asthma symptoms during regular activities or exercise  
         2. asthma symptoms that begin to disturb sleep  
         3. cold or chest infection  
         4. reliever medication required four or more times per week  
         5. missing work or school because of asthma symptoms  
      ii. indicates the need for consultation about modifications to medications.
   c. Red zone, the state of emergency that requires immediate medical attention, marked by
Overview of asthma

Resources consulted
- Asthma Society of Canada
- Health Canada
- National Heart, Lung, and Blood Institute
- MedlinePlus
- National Heart, Lung, and Blood Institute, Guidelines for the Diagnosis and Management of Asthma

Asthma

1. Variously causes recurring periods of wheezing, chest tightness, shortness of breath, and coughing; the coughing often occurs at night or in the early morning.
2. Affects an estimated 2.7 million Canadian adults and children (aged 4 years and over).
3. In its most severe form may be fatal; each year, about 300 Canadians die from asthma; though the mortality rate has declined since 1990, likely reflecting efforts to improve the control of asthma.
4. Exhibits rising incidence rates for both sexes.
5. Starts most often in childhood, especially in children who have frequent episodes of wheezing and respiratory infections.
6. Is an important factor in school absences and hospitalizations of children.
7. In childhood, affects boys more often than girls.
8. Among adults, affects women more often than men.
9. Restricts activity, generates emergency room visits and results in hospitalizations to an extent which may indicate that many persons with asthma require help in keeping it under control.
10. Is provoked by triggers
   a. inflammatory or allergic type, such as
      i. dust mites
      ii. dusts from animal fur, mold, and pollens
      iii. cockroaches
      iv. virus infections
      v. colds and chest infections
      vi. certain air pollutants
b. symptom (non-allergic) type, such as
   i. irritants from cigarette smoke, second-hand cigarette smoke, air pollution, workplace chemicals or dust, strong-smelling substances like perfumes, and sprays
   ii. medications
   iii. chemicals in foods and drinks
   iv. physical exercise
   v. cold air
   vi. intense emotions.
11. When triggered, creates in the airways a sequential reaction, in which the
   a. inflammation causes the airways to become swollen, and therefore narrowed, and sensitive
   b. sensitivity creates irritation, often strong, in response to triggers
   c. irritation causes the muscles around the airways to tighten, further narrowing them
   d. narrowing may be increased by excessive secretion of mucus.
12. Presents a clinical picture of symptoms that
   a. vary from person to person
   b. vary from mild to severe
   c. vary from one episode to another
   d. may flare up from time to time, sometimes with long periods between the flare-ups.
13. Has causes not yet fully understood; current theories include some combination of
   a. atopy, an inherited tendency to allergy, though not all persons with asthma have allergies
   b. eczema
   c. familial asthma
   d. particular types of childhood respiratory infections
   e. contact with airborne allergens or viral infections during the development of the immune system in infancy or early childhood
   f. the Western lifestyle’s emphasis on hygiene and sanitation, which may retard the development of the immune system of children.
14. Is termed occupational asthma when it is associated with chemical irritants and dusts in the workplace.
15. May be seasonal.
16. Is not curable but is manageable for most persons, who can lead active lives.

Comorbidity, complications and associated conditions

Comorbid conditions are those which co-exist with asthma 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 may interfere with the management of asthma; these include
1. colds and chest infections
2. sinus infections
3. gastroesophageal reflux disease (CDHO Advisory)
4. psychological stress
5. sleep apnea (CDHO Advisory).

Oral health considerations

Resources consulted
- Asthma Society of Canada
- Point of Care: Should routine dental care for patients with asthma be any different than that for healthy patients?
- Point of Care: Emergency Preparedness in the Dental Office p. 839

1. Management of asthmatic patients in the oral healthcare setting relies on the medical history, which should seek to identify patients/clients in the Yellow zone for whom a medical opinion may be required relative to medications.
2. Patients with asthma should receive oral healthcare when their condition is clinically the most stable, the Green zone.
3. Patients/clients should be asked to bring inhalers to oral healthcare so that these are available if required.
4. Acute asthmatic attack during oral healthcare
   a. position the patient/client upright in the chair for maximum comfort
   b. encourage the patient/client to take 2 puffs repeated as necessary of their own inhaler or, if available, isalbutamol, salbutamol inhaler
   c. administer oxygen
   d. if symptoms worsen
      i. epinephrine 1:1,000, 0.5 mg IM
      ii. repeat every 10 minutes as required
      iii. activate emergency response (911) for medical attention.
5. Asthma in the Red zone is a medical emergency.
6. Certain studies suggest various links between asthma and several oral health conditions, but these are unrecognized in the recommendations of North America’s principal authoritative organizations for asthma and oral healthcare. The links suggested include
   a. a relation between dental anxiety and asthma symptoms, which supported the conclusion that oral healthcare providers should be alert to the possibility of adult patients/clients who have asthma and who exhibit signs of anxiety or indications of stress that could exacerbate asthma during or prior to dental treatment
   b. higher caries-susceptibility among asthmatic children undergoing treatment with short-acting beta2-agonists, but without a clear association among these drugs, salivary changes and the children’s dental caries
   c. a finding of higher caries risk among children with asthma, which was given as support for intensive preventive oral healthcare for children with asthma
   d. a relation between asthma and malocclusion in adolescents
   e. a relation between asthma and dento-facial anomalies
   f. increased prevalence of dental erosion in children with asthma.
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
   - Asthma Society of Canada
   - Lung Association, Canada
   - American Academy of Allergy, Asthma & Immunology
   - 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 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

Types of medications

Warnings
Individual medications may be subject to important warnings, which
1. change from time to time
2. may affect the appropriateness, efficacy or safety of the Procedures
3. are accessible via the links to the particular medications listed below or through the
   specialized organizations listed above
4. through the links, should be viewed by dental hygienists in the course of their
   familiarizing themselves about a medication or combination of medications identified in
   the patient/client’s medical and medications history.

Asthma medications, for which inhalation is the preferred route of administration, comprise

1. Controllers, also called preventers, which
   a. reduce inflammation of the airways
   b. should be taken every day even in the absence of symptoms
   c. include
     i. corticosteroids, the preferred medication for long-term control of asthma,
        which are normally inhaled but which may have to be taken orally to bring
        the asthma under control, such as
        1. inhaled
           budesonide (Pulmicort®)
           fluticasone (Flovent®)
2. oral
   - prednisone
   - dexamethasone (Decadron®)
3. combined inhaled corticosteroids and long-acting bronchodilators, such as
   - Symbicort®, a corticosteroid (budesonide / Pulmicort®) plus a long-acting bronchodilator (formoterol / Oxese®)
   - Advair®, a corticosteroid (fluticasone / Flovent®) plus a long-acting bronchodilator (salmeterol / Serevent®)

ii. inhaled long-acting beta2-agonists, which open the airways, and which may be added to low-dose inhaled corticosteroids to improve asthma control, such as
   - salmeterol (Serevent®)
   - formoterol (Foradil®, Oxeze®)

iii. leukotriene modifiers, taken orally, which help block the sequential reaction that increases inflammation in the airways, such as
   - zafirlukast (Accolate®)
   - montelukast (Singulair®)

iv. cromolyn and nedocromil, inhaled, which help prevent inflammation and may be used to treat mild asthma
v. theophylline, not commonly used; taken orally to help open the airways, such as
   - TheoDur®
   - Uniphyll®
   - Phyllocontin®
   - TheoLair®

2. Relievers, which
   a. provide rapid though only short-term relief by relaxation of constricted muscles to help alleviate symptoms such as coughing and wheezing
   b. do not affect the underlying inflammation
   c. signal worsening of asthma if their frequency of use increases
   d. include inhaled short-acting beta-2 agonists as the first choice, such as
      - isalbutamol, albuterol inhalation (Ventolin®, Apo-Salvent®, Novo Salmol®, Gen-salbutamol®, Alti-Salbutamol®, Airomir®)
      - terbutaline sulfate (Bricanyl® inhale; Bricanyl® pill is not a rescue medicine)
   e. also include
      - Symbicort®, which comprises a corticosteroid (budesonide / Pulmicort®) plus a long-acting bronchodilator (formoterol / Oxese®).

Side effects of medications

See also the links to the specific medications in the previous section.

1. Candidiasis is a common side effect of inhaled corticosteroids. It is minimized by use of a spacer attached to the inhaler to prevent the medication from depositing in the mouth or on the back of the throat.
2. Hoarseness, reflex cough and bronchospasm which occur with inhaled corticosteroids.
3. For older adults, side effects from inhaled corticosteroids, especially at high doses, may include osteoporosis and osteonecrosis, with possible oral health implications, and cataracts.
4. For children, slowing of growth, though poorly controlled asthma may also reduce the rate of growth of a child.
5. In the treatment of asthma, corticosteroids are chiefly delivered by inhalation, yielding fewer side effects compared to oral administration. During inhalation the corticosteroids pass directly to the airways; with oral administration, they are distributed widely to other parts of the body.
6. Immunomodulators are found to cause severe allergic reactions in 1 in 1000 of persons taking them.
7. ASA and other pain relievers, and anti-inflammatory medications, may reduce the effectiveness of asthma medications. With severe asthma and ASA-induced asthma, non-steroidal anti-inflammatory medications are contraindicated in oral healthcare.
8. Medications unrelated to asthma, such as long-acting beta blockers and short-acting beta blockers, ASA and other pain relievers, and anti-inflammatory medications, may prevent asthma-specific medications from working properly and thus worsen asthma symptoms. The asthma-specific medications may have to be adjusted by the prescribing physician.

THE MEDICAL AND MEDICATIONS HISTORY

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.
2. Inquire about
   a. the patient/client’s understanding and acceptance of the need for oral healthcare
   b. the patient/client’s self assessment relative to the Green and Yellow zones
   c. medications considerations, including over-the-counter medications, herbals and supplements
   d. problems with previous dental/dental hygiene care
   e. problems with infections generally and 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

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

In an otherwise healthy patient/client in the Green zone, there is no contraindication to the Procedures. But the Procedures may be postponed pending medical advice if the patient/client has

1. Symptoms or signs suggestive of the Yellow zone.
2. Complications or comorbidities of asthma.
3. Not recently or ever sought and received such advice relative to dental procedures.
4. Recently changed medications, under medical advice or otherwise.
5. Recently experienced changes in his/her medical condition.
6. Substantial concerns 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.

See also asthma emergencies and the Red zone.
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 asthma, 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 patient/client is urged to alert any healthcare professional who proposes any intervention or test that he or she has a history of asthma.

As appropriate, discuss
1. The need to rinse the mouth (rinse and spit) after use of an inhaler for corticosteroids.
2. The importance of the patient/client’s
   a. self-checking the mouth regularly for suspicious signs or symptoms
   b. reporting to the appropriate healthcare provider any changes in the mouth indicative of suspicious lesions.
3. The need for regular oral health examinations and preventive oral healthcare.
4. Oral self-care including information about
   a. choice of toothpaste
   b. tooth-brushing techniques and related devices
   c. dental flossing
   d. mouth rinses
   e. management of a dry mouth.
5. The importance of an appropriate diet in the maintenance of oral health.
6. For patients/clients with **Yellow zone asthma**
   a. scheduling and duration of appointments to minimize stress and fatigue
   b. the role of the family caregiver, with emphasis on maintaining an infection-free environment through hand-washing and, if appropriate, wearing gloves.
7. Comfort level while reclining, and stress and anxiety related to the Procedures.
8. Medication side effects such as dry mouth, and recommend treatment.
9. Mouth ulcers and other conditions of the mouth relating to asthma, comorbidities, complications, medications or diet.

BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

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<thead>
<tr>
<th>POTENTIAL BENEFITS</th>
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<tbody>
<tr>
<td>1. Promotion of health through oral hygiene for persons who have asthma.</td>
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<tr>
<td>2. Reduction of the adverse effects, such as intense emotions, on persons who have asthma by</td>
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<tr>
<td>a. generally increasing the comfort level in the course of dental hygiene interventions</td>
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b. using appropriate techniques of communication
c. providing advice on scheduling and duration of appointments for persons with asthma.

3. Reduction of risk of oral health needs being unmet.

POTENTIAL HARMs

1. Causing harm by failing to recognize the emergency of a Red zone.
2. Triggering an asthmatic attack in a patient/client or predisposing him or her to an asthmatic attack.
3. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client is in the Yellow zone and requires adjustment of medications or when she or he is approaching the Red zone
   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.
4. Disturbing the normal dietary and medications routine of a person with asthma.
5. 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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