Is the initiation of non-invasive dental hygiene procedures* contra-indicated?  No

- Is medical consult advised?  No, assuming asthma is well controlled and there are no potential acute triggers.

Is the initiation of invasive dental hygiene procedures contra-indicated?** No

- Is medical consult advised?  See above.
- Is medical clearance required?  No, not typically. However, if asthma is suspected to be severe and unstable, medical clearance should be obtained. Similarly, prolonged use and/or high doses of systemic (oral) steroids may predispose to infection, and medical clearance should be sought in these circumstances. Furthermore, if prednisone is being taken on an ongoing basis for chronic asthma, the patient/client’s physician may wish to increase the regular dose to prevent an adrenal crisis during a particularly stressful appointment.
- Is antibiotic prophylaxis required?  No, not typically. However, antibiotic prophylaxis should be considered for patients/clients at risk of immunosuppression (e.g., prolonged use and/or high doses of systemic steroids, or use of biologics in severe asthma).
- Is postponing treatment advised?  No, if asthma is well controlled. Yes, if asthma is severe and unstable (as evidenced by wheezing, coughing, etc.); routine dental hygiene treatment should be postponed until better control is achieved. An acute asthma attack requires immediate management. If status asthmaticus is suspected, emergency protocol should be initiated and prompt transfer to an emergency department is indicated. An acute asthma attack requires immediate therapy.

Oral management implications

- In order to avoid an acute asthmatic attack in the office setting, the dental hygienist should determine the severity and stability of the patient/client’s asthma via good history taking. Questions should be asked regarding precipitating factors, frequency and severity of attacks, the times of day when attacks usually occur, whether this is a current or past problem, and whether the patient/client has ever received emergency treatment for an attack.
- Seasonality is characteristic of patients/clients’ asthma when signs/symptoms are triggered by plant allergens (e.g., in spring, summer, or fall) or cold (in winter). Elective dental/dental hygiene procedures may need to be scheduled around high-risk months.
- Patients/clients should be asked to bring their inhalers to their oral healthcare appointment so these are available if required.
- Use of air polishers, power-driven polishers, and ultrasonic scalers should be avoided or minimized, because their use may precipitate or worsen breathing problems, or result in pathogen aspiration into the lungs. Tooth enamel dust and aerosol creation should be minimized. Prolonged supine positioning should be avoided.
- Because stress is a precipitating factor in some asthma attacks, the dental hygienist and other staff members should endeavour to provide a stress-free environment.
- Status asthmaticus (also known as severe acute asthma) is the most serious manifestation of asthma. Signs of this severe and prolonged attack of asthma (one refractory to usual therapy) include progressive dyspnea, jugular venous pulsation, cyanosis, and pulsus paradoxus (a fall in systolic pressure with inspiration). Status asthmaticus, which is often triggered by a respiratory infection, can lead to exhaustion, severe dehydration, peripheral vascular collapse, and death.

1 Biologics used to treat asthma include omalizumab, mepolizumab, reslizumab, benralizumab, and dupilumab.
Disease/Medical Condition

ASTHMA

(also known as “reactive airway disease” and “bronchial asthma”)

Oral management implications (cont’d)

- Dental hygienists should recognize the signs and symptoms of a severe/worsening attack: inability to finish sentences with one breath; tachypnea with respiratory rate of 25 breaths/minute or more; tachycardia with heart rate of 110 beats/minute or more; diaphoresis (sweating); accessory muscle usage (e.g., sternocleidomastoid and scalene neck muscle assistance with breathing); pulsus paradoxus (which entails large decrease in systolic blood pressure during inspiration); ineffectiveness of bronchodilators to relieve dyspnea; and recent drop in forced expiratory volume in one second (FEV₁) by spirometry.

- For an acute asthma attack in the oral healthcare setting:
  - position the patient/client for maximum comfort (usually upright in the chair)
  - administer oxygen
  - encourage the patient/client to take 2 puffs, repeated as necessary, of his/her own reliever/rescue inhaler (i.e., aerosolized short-acting bronchodilator, such as salbutamol) or, if available, clinic’s reliever/rescue inhaler
  - if signs/symptoms fail to improve or worsen (e.g., when 3 doses of aerosolized bronchodilator fail to resolve acute episode):
    - activate emergency response (911) for medical attention
    - administer epinephrine 1:1000 dilution, 0.3 mL (0.3 mg) to 0.5 mL (0.5 mg) IM² or SC³ (adult patient) and repeat every 10 minutes as required

- Nitrous oxide is contraindicated for patients/clients with severe asthma.

- The analgesic of choice for asthmatic patients/clients post-treatment is acetaminophen (and not ASA or nonsteroidal anti-inflammatory drugs; see below).

- Patients/clients using asthma medications should receive education on prophylaxis. This includes instruction on rinsing their mouth after using a steroid inhaler to reduce the incidence of oral candidiasis. Occurrence can also be reduced if a “spacer” (aerosol-holding chamber) is attached to the metered-dose inhaler.

- Immediate brushing of the teeth after using an inhaler should be avoided, because it may damage enamel already weakened due to acidic pH.

- Antimicrobial mouth rinses (e.g., chlorhexidine) should be considered for patient/clients on inhalation therapy.

- Sulfite preservatives (found in local anaesthetic solutions that contain epinephrine or levonordefrin) can cause allergic-type reactions in susceptible persons. Although rare, acute asthma attacks can be triggered. Therefore, local anaesthetics without vasoconstrictor should be considered in at-risk patients/clients.

Oral manifestations

- Nasal symptoms, allergic rhinitis, and mouth breathing are common in environmental allergy-induced asthma.

- Patients/clients with asthma who are mouth breathers may have higher palatal vault, greater overjet, and an increased prevalence of posterior crossbite. Malocclusion is common in mouth breathing asthmatic children.

- Medications used to manage asthma — principally bronchodilators, corticosteroids, and anticholinergics — can contribute to oral disease. β₂ (beta2) agonist inhalers (bronchodilators) and anticholinergics reduce salivary flow, resulting in xerostomia. In addition, β₂ agonist inhalers also lower plaque pH, cause unpleasant taste sensation, and are associated with increased prevalence of dental caries and gingivitis in patients/clients with moderate to severe asthma. Oral candidiasis, gingivitis, and/or periodontitis occur in some patients/clients who use inhaled corticosteroids for long periods of time or at high dose. The use of steroid inhalers can also result in throat irritation, voice impairment, cough, dry mouth, and, rarely, tongue enlargement. Patients/clients using inhaled asthma medications are also at increased risk of dental erosion and periodontal disease.

2 IM = intramuscular
3 SC = subcutaneous
Disease/Medical Condition

ASTHMA

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Oral manifestations (cont’d)

- **Gastroesophageal reflux**, which may be exacerbated by the use of β₂-agonists and theophylline, is common in persons with asthma. This reflux can lead to erosion of enamel.
- Sore throat is a side effect of several of the biologics used to treat severe asthma (including reslizumab, benralizumab, and dupilumab).
- Persons with asthma are at increased risk of calculus formation.

Related signs and symptoms

- Asthma affects more than 3.8 million people in Canada, with 850,000 of those being children under the age of 14 years. Onset may occur in childhood or in adulthood, with 2/3 of all cases being diagnosed before age 18 years. Prevalence has greatly increased worldwide since the 1960s. Symptoms and signs tend to improve in adulthood, and in some children asthma resolves spontaneously after puberty.
- Asthma is a chronic inflammatory respiratory disease characterized by reversible episodes of airway reactivity manifesting as bronchial smooth muscle spasm, inflammation of bronchial mucosa, mucus hypersecretion, and sputum plugging. This results in recurrent episodes of wheezing, coughing, and dyspnea (shortness of breath). There are three types of asthma: **allergic** (extrinsic), **non-allergic** (intrinsic), and **mixed** (combination of extrinsic and intrinsic). Attacks may be provoked by environmental allergens (e.g., pollen, ragweed, molds, foods, cockroaches, and dust mites), environmental pollutants and irritants (e.g., smoke and chemicals such as scent and house sprays), respiratory tract infections, cold air, exercise, certain medications (ASA, nonsteroidal anti-inflammatory drugs, cholinergic drugs, and β-adrenergic blocking drugs), and highly emotional states (i.e., anxiety, stress, and excitement).
- Typical signs and symptoms of asthma include cough that is worse at night and chest tightness. Onset is usually sudden, with peak signs/symptoms occurring within 10 to 15 minutes. Respirations become difficult and are accompanied by expiratory wheezing. Tachypnea (fast breathing) and prolonged expiration (due to narrowing of airways) are characteristic. Episodes are usually self-limiting, but severe attacks necessitate medical assistance.
- Rhinosinusitis and obesity are common comorbid conditions.
- Asthma deaths occur most often in persons aged more than 45 years of age and largely preventable, often being associated with delays in delivery of appropriate medical care.
- Exposure by oral healthcare personnel to methacrylates found in dental restorative and sealant materials has been linked to occupational asthma.

References and sources of more detailed information

- College of Dental Hygienists of Ontario
  [http://www.cdho.org/Advisories/CDHO_Advisory_Asthma.pdf](http://www.cdho.org/Advisories/CDHO_Advisory_Asthma.pdf)
  [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5405559/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5405559/)
Disease/Medical Condition

ASTHMA

(also known as “reactive airway disease” and “bronchial asthma”)

References and sources of more detailed information

- The Lung Association — Ontario https://lungontario.ca/disease/asthma
- University of Washington School of Dentistry http://depts.washington.edu/sodent2/wordpress/wp-content/media/sp_need_pdfs/Asthma-Dental.pdf
- Cleveland Clinic https://my.clevelandclinic.org/health/treatments/17711-biologic-therapy-for-severe-asthma

* Includes oral hygiene instruction, fitting a mouth guard, taking an impression, etc.

** Ontario Regulation 501/07 made under the Dental Hygiene Act, 1991. Invasive dental hygiene procedures are scaling teeth and root planing, including curetting surrounding tissue.

Date: November 11, 2014
Revised: October 2, 2019