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

- Is medical consult advised? No, assuming COPD is well controlled.

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 COPD is suspected to be severe or unstable (an exacerbation being known as a COPD “lung attack”), medical clearance should be obtained. If systemic steroids are being taken on an ongoing basis for COPD, the patient/client’s physician may wish to increase the regular dose to prevent an adrenal crisis during a particularly stressful appointment. As well, prolonged use and/or high doses of systemic (oral or intravenous) steroids may predispose to infection, and medical clearance should be sought in these circumstances.
- 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).
- Is postponing treatment advised? .................................... No, if COPD is well controlled. Yes, if COPD is severe or unstable. Rescheduling of a routine dental hygiene appointment (and referral for medical attention) should occur if the patient/client has an acute respiratory tract infection, shortness of breath at rest, productive cough, or an oxygen saturation of less than 91% by pulse oximetry. If respiratory fatigue/failure is suspected, emergency protocol should be initiated and prompt transfer to an emergency department is indicated. Respiratory fatigue/failure requires immediate therapy.

Oral management implications

- In order to avoid a significant exacerbation of COPD in the office setting, the dental hygienist should determine the severity and control of the patient/client’s COPD via good history taking. Questions should be asked regarding exacerbating factors, frequency of signs/symptoms, and disease management.
- For severe exacerbations, patients/clients may use systemic (i.e., oral or intravenous) corticosteroids. Prolonged use (particularly longer than 2 weeks) can cause adrenal gland suppression (i.e., suppression of endogenous corticosteroid production). As a result, the body may have reduced capacity to respond to stress, including dental hygiene visits. Therefore, dental hygienists should enquire about recent systemic steroid use; steroid supplements may be required before dental hygiene care is administered. At a minimum, the dental hygienist should ensure that patients/clients taking systemic corticosteroids have taken their usual dose on the day of the appointment – supplemental steroids are usually not needed to perform routine dental hygiene care.
- Oral theophylline (generally reserved for the management of severe COPD) can manifest toxicity, which is sometimes triggered by concurrent use of certain antibiotics. The dental hygienist should be aware of signs/symptoms of toxicity; namely, anorexia, nausea, insomnia, agitation, anxiety, thirst, vomiting, headache, cardiac arrhythmias, and convulsions.
- Narcotics and barbiturates should generally be avoided prior to treatment due to the risk of respiratory depression. However, a low-dose (preferably short-acting) benzodiazepine may be a consideration for dentist or physician prescription to reduce appointment-associated stress. Antihistamines and anticholinergic drugs should also generally be avoided pre-appointment due to their drying properties and resultant increase in mucus tenacity.
- If the patient/client uses oxygen at home, he/she should be directed to bring a full portable oxygen tank to the dental hygiene appointment. Patients/clients with severe COPD may require oxygen and oximetry monitoring during the appointment, and specialized clinics are able to offer oxygen equipment and personnel trained in its use. Low flow (2 to 4 L/min.) supplemental oxygen via nasal prongs should be considered when oxygen saturation is less than 95% and may be necessary when saturation drops below 91%.

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Oral management implications  (cont’d)

- Some patients/clients require dental chair adjustments, because breathing is compromised in the supine position. Semi-supine or upright chair positions are usually best tolerated. Short appointments should be planned to decrease stress if the patient/client does not tolerate prolonged sitting in a dental chair.
- Rubber dam use should be modified in some cases – and avoided if possible – because this may further obstruct breathing, and patients/clients may complain of a suffocating sensation.
- Dental materials with a powder component (e.g., alginate or powdered gloves) should be used sparingly, if at all, because they may worsen the patient/clients’ airway obstruction if inhaled.
- Pre-procedural antimicrobial rinse and high-speed suction should be used to reduce contaminated dental aerosols that may be inhaled when using an ultrasonic scaler. Persons with COPD (particularly those hospitalized) can suffer infectious lung infection secondary to inhalation/aspiration of microorganisms associated with periodontal disease.
- Power-driven polishers should be avoided, because they may exacerbate breathing problems.
- Ambulatory general anaesthesia and nitrous oxide-oxygen inhalation sedation should generally be avoided, because they may produce apnea (cessation of breathing).
- Patients/clients using COPD medications should receive prophylactic attention. 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.
- Smoking is the major cause of COPD, as well as an important risk factor for periodontitis. Dental hygienists should counsel patients/clients who smoke to stop smoking and refer them to cessation supports in their local communities (e.g., public health unit, smokers’ help line, etc.). The Ontario Division of the Canadian Cancer Society, facilitated by Government of Ontario funding, offers a free, confidential Smokers’ Helpline for smokers via 1-877-513-5333; Smokers’ Helpline Online is available at www.smokershelpline.ca.

Oral manifestations

- COPD does not directly affect the mouth and teeth.
- Medications used to manage COPD – such as inhaled anticholinergics (e.g., ipratropium and tiotropium), β2-adrenergic bronchodilators (long-acting and short-acting), and, in more severe cases, inhaled corticosteroids – can contribute to oral disease. β2-agonist inhalers and anticholinergics reduce salivary flow, resulting in xerostomia. Anti-cholinergics can also result in a metallic taste after inhalation, and β2-agonist inhalers cause unpleasant taste sensation, lower plaque pH, and are associated with increased prevalence of dental caries and gingivitis.
- 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 medications may also be at increased risk of dental erosion and periodontal disease.
- Gastroesophageal reflux may be exacerbated by the use of β2-agonists and methylxanthines (e.g., theophylline). This reflux can lead to erosion of enamel.
- Rarely, oral theophylline has been associated with Stevens-Johnson syndrome (SJS), which has manifestations that include blistering of the oral mucous membranes and skin; facial and tongue swelling; hives; and sore mouth and throat. SJS constitutes a medical emergency.
**Disease/Medical Condition**

**CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

(also known as “COPD”, “chronic obstructive lung disease”, “COLD”, and “emphysema + chronic bronchitis”)

**Oral manifestations  (cont’d)**

- Chronic smokers are prone to halitosis, tooth staining, nicotine stomatitis, periodontal disease, premalignant lesions, and oral cancer.

**Related signs and symptoms**

- COPD is characterized by chronic airflow obstruction, which is not fully reversible. COPD’s course is usually one of progressive deterioration with periodic exacerbations. The disease typically results from chronic pulmonary inflammation secondary to exposure to harmful gases or particles – in particular, cigarette smoke. Less common causes include long-term exposure to occupational or environmental pollutants, as well as deficiency of the lung enzyme α₁-antitrypsin.

- Historically, COPD was classified as either emphysema (over-inflation of the lungs and irreversible destruction of alveolar walls) or chronic bronchitis (inflammation of the bronchi coupled with excessive bronchial mucus production and chronic sputum-producing cough). More recently, COPD has been defined as the occurrence of emphysema and chronic bronchitis together, and it is diagnosed on the basis of the presence of chronic cough, sputum production, and dyspnea (shortness of breath), coupled with abnormal spirometry (measurement of lung function). Essentially, COPD damages the airways and alveoli in the lungs by reducing elasticity, thereby making breathing more difficult.

- COPD is estimated to affect up to 2.6 million Canadians aged 35 to 79 years, with 50% or more of these persons being undiagnosed. It is the fourth leading cause of death in Canada. The onset phase of COPD usually takes many years to manifest in most affected persons, and sign/symptoms usually begin after 40 years of age.

- Emphysema is more prevalent in older men, correlated with cumulative smoking history. However, prevalence is increasing rapidly among older women, as the “smoking epidemic” manifests its sequelae. In advanced cases, there may be a “barrel chest” appearance, coupled with shortness of breath and use of accessory respiratory muscles (e.g., sternocleidomastoid). Many persons may find it easier to breathe in a sitting position, bent over and resting their elbows on their thighs. In end-stage emphysema, signs of respiratory failure (e.g., cyanosis, altered mental state, headache, weakness, and muscle tremor) may occur.

- Chronic bronchitis more prevalent in females than males, and usually manifests in persons more than 45 years old. Symptoms/signs appear gradually but intensify in person who continue to smoke or when atmospheric pollutants increase. Respiratory tract infections become more serious. As airway obstruction increases, there is a prolonged expiratory phase and wheezing. Acute attacks of breathing distress involve elevated respiratory rate, labored breathing, intense coughing, and bluish skin (cyanosis due to reduced oxygenation). Recurrent pulmonary infections are common.

- For both emphysema and chronic bronchitis, dyspnea (shortness of breath) is initially brought on only by exertion. Eventually, breathing difficulty becomes more frequent with minimal effort.

- Because of the progressive nature of the disease, quality of life is greatly compromised in severe cases. Pulmonary hypertension may develop, and lead to right-sided heart failure and associated peripheral edema. Nocturnal hypoxemia can cause poor quality sleep. As well, many persons with COPD often experience associated significant non-pulmonary conditions, such as weight loss, muscle wasting, cardiovascular disease, hypertension, anaemia, osteoporosis, and depression.

- Up to 30% of patients with clinical COPD may also have a concomitant diagnosis of asthma.

- While there is no cure for COPD, the disease can be managed with medications, immunizations, and pulmonary rehabilitation. Avoidance of pulmonary irritants improves symptomatology and decreases mortality.

*cont’d on next page*
Disease/Medical Condition

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

(also known as “COPD”, “chronic obstructive lung disease”, “COLD”, and “emphysema + chronic bronchitis”)

References and sources of more detailed information

- Mayo Clinic http://www.mayoclinic.org/diseases-conditions/stevens-johnson-syndrome/basics/symptoms/con-20029623

* 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: August 3, 2015