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COLLEGE OF DENTAL HYGIENISTS OF ONTARIO ADVISORY	
ADVISORY TITLE	
<p>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 persons¹ with hyperthyroidism.</p>	
ADVISORY STATUS	
<p>Cite as <i>College of Dental Hygienists of Ontario, CDHO Advisory Hyperthyroidism, 2016-11-07</i></p>	
INTERVENTIONS AND PRACTICES CONSIDERED	
<p>Scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions (“the Procedures”).</p>	
SCOPE	
DISEASE/CONDITION(S)/PROCEDURE(S)	
<p>H y p e r t h y r o i d i s m</p>	
INTENDED USERS	
<p>Advanced practice nurses Dental assistants Dental hygienists Dentists Denturists Dieticians Health professional students</p>	<p>Nurses Patients/clients Pharmacists Physicians Public health departments Regulatory bodies</p>
ADVISORY OBJECTIVE(S)	
<p>To guide dental hygienists at the point of care relative to the use of the Procedures for persons who have hyperthyroidism, chiefly as follows.</p> <ol style="list-style-type: none"> 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. 	

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.
9. Advising the patient/client.

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 hyperthyroidism.

MAJOR OUTCOMES CONSIDERED

For persons who have hyperthyroidism: 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

Nomenclature of hyperthyroidism

The terms hyperthyroidism and thyrotoxicosis are used interchangeably here in consistency with most clinical purposes, exclusive of endocrinology in which the terms are differentiated.

Resources consulted

- [Graves' disease, Mayo Clinic](#)
- [Hyperthyroidism \(Thyrotoxicosis\), Thyroid Foundation of Canada](#)
- [Hyperthyroidism during pregnancy, Motherisk](#)
- [Hyperthyroidism, MedlinePlus](#)
- [Hyperthyroidism, Medscape](#)

1. Basedow's disease, a term used in Europe, equivalent to [Graves' disease](#).
2. [Goiter](#), goitre, enlargement of the thyroid generally or in parts termed nodules.
3. Graves' disease, Grave's disease, an [autoimmune](#) disorder
 - a. is by far the most common cause of [hyperthyroidism](#) in Canada
 - b. affects about one in every 100 people.

4. Graves' hyperthyroidism, an alternative name for [Graves' disease](#).
5. Hypermetabolic condition, hypermetabolism, an abnormally increased rate of metabolism.
6. Hyperthyroidism, a condition which
 - a. is caused by overproduction of thyroid hormone by the [thyroid gland](#)
 - b. raises thyroid hormone in the blood to excessive levels, which adversely affects various tissues of the body
 - c. causes an abnormally increased rate of metabolism.
7. Hyperactivity of the thyroid, an overactive thyroid.
8. Hypothyroidism, ([CDHO Advisory](#)) when the thyroid gland is underactive and fails to produce sufficient thyroid hormones.
9. Incidence, the total of new cases of an illness diagnosed during a specific time period.
10. Plummer disease, toxic nodular goiter
 - a. a thyroid that contains independently functioning thyroid nodules resulting in [hyperthyroidism](#)
 - b. is the second most common cause of hyperthyroidism in Western countries, after [Graves' disease](#).
11. Prevalence, the number of people currently with an illness in a given year.
12. Subacute thyroiditis, a self-limited thyroid condition associated with a three-stage clinical course of
 - a. [hyperthyroidism](#)
 - b. [hypothyroidism](#)
 - c. return to normal thyroid function.
13. Subclinical hyperthyroidism, a mild form of [hyperthyroidism](#) diagnosed by abnormal blood levels of thyroid hormones often in the absence of any symptoms.
14. Thyroid hormones
 - a. are controlled by the hypothalamus which, according to the blood level of thyroxine and triiodothyronine, stimulates the pituitary to produce thyroid-stimulating hormone, which regulates the thyroid's production of thyroid hormones
 - b. include
 - i. thyroxine, which
 1. is the body's main metabolic hormone
 2. regulates
 - a. the rate of oxygen use by cells
 - b. the generation of body heat
 3. promotes glucose metabolism
 - ii. free thyroxine, which is
 1. the amount of the free (unbound) active [thyroxine](#) circulating in the blood
 2. measured by specific laboratory procedures
 - iii. triiodothyronine, which
 1. is the most active thyroid hormone and affects all body processes
 2. helps regulate growth and development
 3. helps control metabolism and body temperature
 4. by negative feedback, acts to inhibit the secretion of thyroid-stimulating hormone by the pituitary gland
 5. circulates in blood almost completely bound to carrier proteins

- iv. free triiodothyronine, the free (unbound) portion of [triiodothyronine](#) believed responsible for the biological action
 - v. calcitonin, which regulates the amount of calcium in the blood.
15. Thyrotoxicosis, alternative name for [hyperthyroidism](#).
16. Toxic adenoma of the thyroid, an autonomously functioning thyroid nodule that produces excessive amounts of thyroid hormones.

Overview of hyperthyroidism

Resources consulted

- [Hyperthyroidism \(Thyrotoxicosis\), Thyroid Foundation of Canada](#)
- [Hyperthyroidism during pregnancy, Motherisk](#)
- [Hyperthyroidism, MedlinePlus](#)
- [Hyperthyroidism, Medscape](#)
- [Pediatric Graves Disease, eMedicine](#)
- [Pediatric Hyperthyroidism, eMedicine](#)

[Hyperthyroidism](#)

1. is a [hypermetabolic](#) condition that
 - a. is associated with elevated levels of [free thyroxine](#) and/or free triiodothyronine
 - b. results from excess synthesis and secretion of [thyroid hormones](#) by the thyroid
 - c. occurs as [Graves' disease](#), [Plummer disease](#), [toxic adenoma](#), [subacute thyroiditis](#) and in older patients with long-standing nodular [goiters](#), which together account for some 90 percent of instances of hyperthyroidism
2. is characterized or signalled by
 - a. common symptoms or signs, by body system, which include
 - i. [oral complications](#)
 - ii. general
 1. fatigue
 2. intolerance to hot weather
 3. loss of body fat and muscle bulk
 4. muscle weakness
 5. weight loss
 - iii. skin
 1. blushing or flushing
 2. clammy
 3. excessively sweaty
 4. hair loss
 5. hot, moist, velvety
 6. itching
 - iv. nervous system
 1. difficulty concentrating
 2. irritability
 3. nervousness
 4. restlessness
 5. shakiness
 6. sleeping difficulty
 7. tremors
 - a. fingers, fine
 - b. hand

- v. digestive system
 - 1. diarrhea
 - 2. frequent bowel movements
 - 3. increased appetite
 - 4. nausea and vomiting
- vi. thyroid
 - 1. [goiter](#)
 - 2. [thyroid enlargement, nodular](#)
- vii. gender-related
 - 1. men: breast development
 - 2. women: menstrual periods
 - a. irregular
 - b. absent
- viii. cardiovascular
 - 1. hypertension
 - 2. pounding, rapid, or irregular pulse
 - 3. rapid, forceful, or irregular heartbeat
- b. visible signs in the neck
 - i. surgical scars on the neck
 - ii. swelling in the thyroid region
 - iii. lump(s) in the neck that move(s) with swallowing
- 3. overall
 - a. [incidence](#)
 - i. is estimated between 0.05 percent and 1.3 percent, with the majority comprising subclinical disease
 - ii. appears to increase with age
 - iii. appears to be becoming commoner
 - b. [prevalence](#), 5–10 times less than [hypothyroidism](#)
- 4. may, rarely, become a medical emergency marked by
 - a. change in consciousness
 - b. dizziness
 - c. rapid, irregular heartbeat
- 5. as a result of treatment, may develop into [hypothyroidism](#), which
 - a. signals the need for medical attention
 - b. presents signs and symptoms that include
 - i. depression
 - ii. mental and physical sluggishness
 - iii. weight gain
- 6. is most commonly caused by [Graves' disease](#), which is
 - a. an [autoimmune disorder](#)
 - b. an inherited disorder, although not every member of the affected family develops it
 - c. more common in females than in males
 - d. caused by an abnormal protein, called thyroid-stimulating antibody, which stimulates the thyroid gland to produce large, uncontrolled amounts of thyroid hormone
 - e. usually easily diagnosed from the clinical signs and symptoms, without blood tests for thyroid-stimulating antibody
 - f. clinically characterized by significant eye signs in about

- i. 50 percent of patients, in which the eyes
 - 1. bulge from their sockets
 - 2. are red and watery
 - 3. do not move normally because the swollen eye muscles are unable to work precisely
 - 4. are framed by swollen eyelids
 - ii. 50 percent of patients, in which the eyes are only slightly bulging, giving them a staring appearance
7. is also caused by
 - a. excessive intake of thyroid hormones
 - b. noncancerous tumours of the thyroid gland or pituitary gland
 - c. tumors of the testes or ovaries
8. occurs during pregnancy ([CDHO Advisory](#))
 - a. in 1 to 2 of every 1000 pregnant women
 - b. during which it is caused by
 - i. [Graves' disease](#) in about 80 percent of instances, which
 - 1. worsens during the first trimester
 - 2. improves later in pregnancy
 - 3. worsens again after delivery
 - ii. [toxic adenoma](#)
 - iii. [subacute thyroiditis](#)
 - c. is treated
 - i. according to clinical practice guidelines for the management of hyperthyroidism during pregnancy
 - 1. [Endocrine Society](#)
 - 2. [medications in pregnancy](#)
 - ii. with
 - 1. [antithyroid medications](#) which
 - a. are the treatment of choice during
 - i. pregnancy
 - ii. lactation
 - b. are required in reduced doses as pregnancy progresses
 - 2. close monitoring of thyroid function continued after delivery
 - a. for possible postpartum exacerbation
 - b. until the woman reaches a stable state of normal thyroid function
9. is generally treated with
 - a. [antithyroid medications](#) that
 - i. decrease thyroid hormone production
 - ii. are considered essential for children and adults under the age of 25
 - iii. may also be used at any age
 - 1. to induce remissions
 - 2. prior to thyroid surgery
 - iv. must be taken for many months or years
 - v. once stopped, are followed by a 50 percent chance that the condition will reassert itself
 - b. [radioactive iodine](#), which
 - i. destroys thyroid tissue causing the cells to permanently cease producing thyroid hormones

- ii. is a convenient and effective treatment which is eventually needed for patients who do not have thyroid surgery
- iii. may not be recommended in the presence of certain eye conditions
- iv. in younger adults and children was and may still be a matter of concern because of harmful effects of the ionizing radiation even though its use for over 40 years produced little convincing evidence of harmful effects
- c. surgical removal of part of the thyroid with the intention of leaving enough tissue to function normally, a procedure
 - i. usually recommended for
 - 1. persons under the age of 20 with recurrence of hyperthyroidism after [antithyroid medications](#)
 - 2. persons of any age in whom the goiter is large enough to impede the trachea or esophagus
 - ii. which may be followed by [hypothyroidism](#) that requires treatment with thyroid hormones.

Multimedia and images

[Goiter](#)

[Thyroid gland](#)

Comorbidity, complications and associated conditions

Comorbid conditions are those which co-exist with hyperthyroidism 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.

Resources consulted

- [Cardiovascular Manifestations of Hyperthyroidism Before and After Antithyroid Therapy](#)
 - [Increased risk of affective disorder following hospitalisation with hyperthyroidism – a register-based study](#)
1. As an autoimmune disorder, Graves' disease is associated with other autoimmune disorders, such as
 - a. Addison's disease ([CDHO Advisory](#))
 - b. autoimmune adrenal insufficiency ([CDHO Advisory](#))
 - c. [myasthenia gravis](#)
 - d. pernicious anemia ([CDHO Advisory](#))
 - e. rheumatoid arthritis ([CDHO Advisory](#))
 - f. [Sjögren syndrome](#)
 - g. systemic lupus erythematosus ([CDHO Advisory](#))
 - h. type 1 diabetes ([CDHO Advisory](#))
 - i. [vitiligo](#)
 2. Mental health conditions
 - a. psychiatric symptoms and disorders show a high prevalence in thyroid diseases
 - b. persons hospitalized with [hyperthyroidism](#) are at greater risk of re-admission with depressive disorder ([CDHO Advisory](#)) or bipolar disorder ([CDHO Advisory](#)) than controlled patients.

3. Cardiovascular conditions
 - a. at initial diagnosis, cardiovascular abnormalities
 - i. are common in persons with overt [hyperthyroidism](#)
 - ii. may persist despite effective treatment of the hyperthyroidism
 - b. [atrial fibrillation](#).

Oral health considerations

Resources consulted

- [Management of patients with thyroid disease: Oral health considerations, Journal of the American Dental Association](#)
1. Early detection by the dental hygienist of indications that [hyperthyroidism](#) and/or its complications are inadequately controlled
 - a. when followed by prompt referral to the treating physician
 - b. benefits the patient/client
 - c. contributes to healthcare and health promotion.
 2. Brief appointments and stress management may be required for persons with a history of hyperthyroidism and of troublesome anxiety during oral healthcare.
 3. The risks that may be precipitated by dental hygiene treatment in the presence of inadequately controlled hyperthyroidism include
 - a. [thyrotoxic crisis](#), a rare medical emergency
 - i. marked by
 1. fever
 2. tachycardia or arrhythmia
 3. central nervous system symptoms
 4. gastrointestinal symptoms
 - ii. requiring
 1. 911 call to emergency medical service
 2. monitoring of vital signs
 3. cardiopulmonary resuscitation, if necessary
 4. wet packs
 5. ice packs
 - b. acute anxiety and palpitations ([CDHO Advisory](#)), resembling a panic attack, which
 - i. are common symptoms of inadequately controlled hyperthyroidism
 - ii. occasionally occur even in adequately controlled hyperthyroidism, and are associated with
 1. cardiac disease
 2. mental health conditions.
 4. Adverse reaction to [epinephrine](#), which
 - a. may lead to hypertensive crisis, a severe rise in blood pressure
 - b. requires urgent or emergency care.
 5. Oral complications
 - a. increased susceptibility to
 - i. caries
 - ii. periodontal disease
 - b. osteoporosis of alveolar bone
 - c. [Sjögren syndrome](#) and associated xerostomia

- d. enlargement of extra-glandular thyroid tissue in the lateral posterior tongue
- e. in children
 - i. rapid development of
 - 1. teeth and jaws
 - 2. dental caries and periodontal disease
 - ii. premature loss of deciduous teeth
 - iii. early eruption of permanent teeth.

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](#)

Types of medications

Resources consulted

- [Hyperthyroidism: Overactivity of the Thyroid Gland, Endocrine Web](#)
- [Radiation Safety in the Treatment of Patients with Thyroid Diseases by Radioiodine ¹³¹I: Practice Recommendations of the American Thyroid Association](#)
- [Iodine-131 Therapy](#)
- [Radioactive Iodine](#)
- [Radioactive iodine treatment](#)

Anti-thyroid medications

- [methimazole](#) (Tapazole®)
- [propylthiouracil](#) (PTU)

Other medications

- [propranolol](#) (Inderal®), which has no direct effect on the thyroid but blocks the effects of excessive thyroid hormones on the
 1. heart
 2. blood vessels
 3. nervous system

Side effects of medications

See the medications links above.

THE MEDICAL AND MEDICATIONS HISTORY

The dental hygienist's 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. explore the need for advice from the primary or specialized care provider(s)
3. inquire about
 - a. pointers in the history of significance to hyperthyroidism, such as a developing comorbidity involving [mental health conditions](#)
 - b. symptoms indicative of problems in the control of hyperthyroidism, such as the development of [treatment-induced hypothyroidism](#)
 - 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 may be contraindications to the Procedures, depending on the certainty of diagnosis and level of control.
2. With an otherwise 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. suspected undiagnosed hyperthyroidism
 - b. very recently been treated with radioactive iodine (which is usually administered as one oral dose) in order to protect the dental hygienist, other staff, and patients/clients from radiation exposure
 - 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. adequately controlled hyperthyroidism, is also receiving medication for cardiac complications, and requires pain management
 - g. deeply 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.

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 hyperthyroidism, 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 that he or she
 - a. has a history of hyperthyroidism
 - b. is taking medication
2. should discuss, as appropriate
 - a. the importance of the patient/client's
 - i. self-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 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 disorders of the adrenal gland, 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 hyperthyroidism.
2. Reduction of adverse effects, such as stress, on persons who have hyperthyroidism, 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
<ol style="list-style-type: none"> 1. Causing acute anxiety and palpitations. 2. Performing the Procedures at an inappropriate time, such as <ol style="list-style-type: none"> a. when the patient/client’s hyperthyroidism is inadequately controlled 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 hyperthyroidism. 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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2009-10-27
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College of Dental Hygienists of Ontario, regulatory body Greyhead Associates, medical information service specialists
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COMPOSITION OF GROUP THAT AUTHORED THE ADVISORY
<p>Dr Gordon Atherley O StJ , MB ChB, DIH, MD, MFCM (Royal College of Physicians, UK), FFOM (Royal College of Physicians, UK), FACOM (American College of Occupational Medicine), LLD (hc), FRSA</p> <p>Lisa Taylor RDH, BA, MEd</p> <p>Dr Kevin Glasgow MD, MHSc, MBA, DTM&H, CHE, CCFP, DABPM, LFACE, FCFP, FACPM, FRCPC</p> <p>Roula Anastasopoulos RDH, BEd</p>

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Denise Lalande
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