Disease/Medical Condition

EPILEPSY
(also known as “seizure disorder”)

Date of Publication: August 7, 2014

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

- Is medical consult advised? No (assuming patient/client is already under medical care for epilepsy, which is well controlled)

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

- Is medical consult advised? ………………………………………. Possibly (e.g., if there is medication non-compliance)
- Is medical clearance required? ………………………………………. Possibly (e.g., if there is significant risk of seizure)
- Is antibiotic prophylaxis required? …………………………………… No
- Is postponing treatment advised? …………………………………… No (assuming patient/client is already under medical care for epilepsy, which is well controlled and for which there are no anticipated exacerbating factors in the office setting)

Oral management implications

- Important considerations in the management of epileptic patients/clients are prevention of seizures in the dental chair and preparation for managing seizures if they occur. When a patient/client responds positively to questions about seizures/epilepsy during health history taking, further information should be obtained. Based on the patient/client’s responses, the dental hygienist may choose to postpone treatment for fear of triggering a seizure in the dental chair.

- It is valuable for the dental hygienist to know what factors have the potential to exacerbate epileptic seizures in a particular patient/client, so that trigger stimuli can be avoided. The dental hygienist can reduce stress and anxiety by explaining procedures before starting. Bright light should be kept out of the patient/client’s eyes; dark glasses may assist with this.

- The dental hygienist should check that the patient/client has taken his/her routine medications, has eaten normally, is not excessively tired, and has not been recently ill before starting treatment.

- Noncompliance with treatment regimen (especially the taking of prescribed medications) is a significant problem in the medical management of some epileptic patients/clients. The dental hygienist should be alert to this possibility for each patient/client with epilepsy, to inform the decision to proceed or not proceed with a particular dental hygiene appointment, as well as to inform potential medical referral.

- Fatigue can trigger seizures, and thus dental hygiene appointments should be considered for early in the day or at other times when seizures are less likely to occur for a specific patient/client.

- Hormonal changes during an epileptic woman’s reproductive cycle may affect the tendency to have seizures.

- Nitrous oxide and oxygen sedation is known to induce seizures in persons with epilepsy, and it is therefore not generally recommended for them.

- Most persons with epilepsy (two out of three) achieve good seizure control with prescribed medication.

- Despite preventive measures, seizures may still occur in the dental hygiene office. Management should focus on preventing injury and maintaining adequate ventilation.
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## Oral management implications (cont’d)

<table>
<thead>
<tr>
<th>Management of generalized tonic-clonic (grand mal) seizures is as follows:</th>
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<tr>
<td>1. Terminate procedure — Remove instruments and dental appliances from patient/client’s mouth.</td>
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<tr>
<td>2. Position the patient/client supine with legs elevated — Turn patient/client onto his/her side to minimize aspiration of secretions. Place nothing in mouth or between teeth — Loosen tight clothing.</td>
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<td>3. Time the seizure.</td>
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<td>4. Summon medical assistance — Call 911 if the seizure lasts longer than 3 minutes or the patient/client becomes cyanotic from the onset.</td>
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<tr>
<td>5. Assess and perform, when necessary, Basic Life Support — Perform head tilt-chin lift to maintain airway — Protect patient/client from injury.</td>
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<tr>
<td>6. After seizure, reassure patient/client and allow him/her to recover — Assess oral cavity for injury to teeth and tissues.</td>
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<tr>
<td>7. Discharge patient/client to hospital, physician, or home with a responsible adult.</td>
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- For patients/clients being treated with the phenytoin, the frequency of continuing care appointments should be based on the presence and severity of drug-induced gingival enlargement.
- Powered toothbrushes may be too stimulating for some patients/clients and should be recommended only after determining if they can be tolerated.
- Drowsiness is a side effect of some anticonvulsants, particularly phenobarbital.

## Oral manifestations

- While epilepsy and seizures themselves do not produce oral changes, accidents resulting from seizures and medications used to treat the condition may result in oral sequelae.
- Scarring of the lips, buccal mucosa, and the tongue may indicate past injury to the oral cavity due to biting during a seizure. Teeth may be fractured due to forceful biting that often accompanies tonic-clonic seizures. Enzyme-inducing drugs, antiepileptic drugs (e.g., phenytoin, phenobarbital, and carbamazepine) alter the metabolism and clearance of Vitamin D and thus contribute to increased fracture risk via osteopenia and osteomalacia. TMJ dislocation can result from seizure-related trauma.
- The most common significant oral complication seen in epileptic patients/clients is gingival hyperplasia, which is associated with the antiepileptic medications phenytoin, phenobarbital, and, more rarely, valproic acid and vigabatrin. Phenytoin alters the metabolism of gingival fibroblasts, resulting in the production of excessive amounts of collagen. Drug-induced gingival hyperplasia occurs in about half of patients/clients on continual phenytoin therapy within 12-24 months of initiation, and it may be disfiguring as well as interfere with mastication and speech.
- The medical management of epilepsy is usually based on long-term drug treatment. Phenytoin, carbamazepine, and valproic acid are first-line agents commonly used in the ongoing management of tonic-clonic seizures, whereas drugs of choice for absence seizures included ethosuximide, valproic acid, lamotrigine, and clonazepam. These medications may have adverse effects on oral tissues.
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Oral manifestations (cont’d)

- Ulcerations and glossitis may result from medication-induced vitamin B-12 deficiency.
- Adverse effects of phenytoin, in addition to gingival hyperplasia, include aphthous ulcers, delayed healing, increased incidence of microbial infection, gingival bleeding, and osteoporosis. More rarely, phenytoin (and some other anticonvulsants) may trigger Stevens-Johnson syndrome, a serious condition that involves sloughing of the skin and mucous membranes.
- Xerostomia and stomatitis are infrequent side effects of carbamazepine, and rash that may involve the oral cavity has been associated with lamotrigine. Valproic acid can cause bone marrow suppression and decrease platelet count, which may occasionally lead to clinically significant bleeding and impair wound healing. Valproic acid can also cause direct bone marrow suppression, which can impair wound healing and increase post-operative bleeding and infections.

Related signs and symptoms

- Epilepsy is a general term for conditions characterized by recurrent seizures. There are many kinds of seizures (i.e., paroxysmal changes in central neurologic function), but all involve abnormal electrical activity in the brain that causes discrete episodes of involuntary changes in body movement (e.g., convulsions) or in sensation, awareness, or behaviour. Epileptic seizures may be generalized, where the whole brain is involved, or partial, where the abnormal activity involves only part of the brain.
- While seizures are required for the diagnosis of epilepsy, not all seizures imply the presence of epilepsy. Seizures do not necessarily indicate epilepsy if they only occur as a result of a temporary medical condition such as a high fever, hypoglycemia, alcohol or drug withdrawal, or immediately following a brain concussion.
- While there are many types of seizures, three of the common ones most relevant for dental hygienists are: tonic-clonic (grand mal) seizures; absence (petit mal) seizures; and generalized status epilepticus.
- Tonic-clonic seizures have a typically rapid onset and are preceded by a momentary aura. Associated with tonic and clonic phases of muscular spasm, the patient/client loses consciousness. Defecation and micturition may occur. Cyanosis may be observed during the tonic phase (continuous tension or contraction) lasting for 20–40 seconds. The clonic phase (alternating series of contractions and partial relaxation) may last for several minutes. The patient/client wakes up from the seizure with severe headache and confusion. Recovery may be quick or the patient/client may be irritable.
- Absence seizures usually appear between 3 years of age and puberty. They consist of a transient loss of consciousness, and episodes typically last less than 30 seconds. Upward rolling of the eyes, drooling, rhythmic nodding of the head, and/or slight quivering of the trunk and limb muscles may be observed.
- Generalized status epilepticus is defined as a single seizure lasting for at least 20 minutes or recurrent generalized seizures without the regaining of consciousness between the seizure episodes. This condition is most frequently caused by an abrupt withdrawal of anticonvulsant medication or an abused substance, but it may also be triggered by infection, neoplasm, or trauma. It is a life-threatening medical emergency, which requires prompt medical intervention.
- Epilepsy affects persons of all ages, with a peak incidence of seizures in childhood and old age. The prevalence of epilepsy in Canada is 5.6 per 1000 people. Up to 10% of the population will have at least one seizure in a lifetime, and 2% to 4% will experience recurrent seizures at some point. Most children outgrow the disorder, but about 4 in 1000 do not, and will require ongoing medical care. 75% of epilepsy is classified as primary or idiopathic (i.e., no known cause), with the remainder being secondary, due to causes such as birth asphyxia, head injury, or meningitis in children, or cerebrovascular disease or metastatic tumours in older persons.
- Rash is a common side effect of antiepileptic drugs, occurring in 5% to 7% of patients/clients taking phenytoin and 5% to 17% of patients/clients taking carbamazepine.

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Related signs and symptoms (cont’d)

- Some drugs prescribed by dentists or physicians can interfere with seizure control because they interact with antiepileptic medications. For example, metronidazole, antifungal agents (e.g., fluconazole) and antibiotics (e.g., erythromycin and clarithromycin) may alter the metabolism of certain antiepileptic drugs.
- Coarsening of facial features may occur in patients/clients on long-term phenytoin, which is related to increased osteoblast activity.
- Epilepsy is generally more severe in persons who have developmental disabilities. Dental hygienists should be alert to potential co-morbid conditions in patients/clients with epilepsy.
- Persons living with epilepsy — particularly children — often have psychosocial and emotional sequelae of living with a chronic, potentially unpredictable disease.
- Parents may interfere with their child’s psychosocial adjustment by being overprotective or having low expectations of him/her.

References and sources of more detailed information

- US Centers for Disease Control and Prevention  [http://www.cdc.gov/Epilepsy/]
- Epilepsy Ontario  [http://epilepsyontario.org/]

Management of generalized tonic-clonic (grand mal) seizures adapted from:


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: July 10, 2014