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\(^1\) with liver disease.

Cite as

*College of Dental Hygienists of Ontario, CDHO Advisory Liver Disease, 2011-03-01*

Scaling of teeth and root planing including curetting surrounding tissue, orthodontic and restorative practices, and other invasive interventions (“the Procedures”).

Liver disease

Advanced practice nurses
Dental assistants
Dental hygienists
Dentists
Denturists
Dieticians
Health professional students
Nurses
Patients/clients
Pharmacists
Physicians
Public health departments
Regulatory bodies

To guide dental hygienists at the point of care relative to the use of the Procedures for persons who have liver disease, 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 liver disease.

**MAJOR OUTCOMES CONSIDERED**

For persons who have liver disease: 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
- Autoimmune Hepatitis: American Liver Foundation
- Blood Tests: KidsHealth
- Liver Disease: Canadian Liver Foundation
- Oral Hygiene: Sjögren’s Society of Canada

1. Biliary cirrhosis, bile duct disease, blockage of the bile ducts with obstruction of the flow of bile, resulting from conditions such as
   a. cancer
   b. gallstones
   c. infection
   d. scar tissue.
2. Candida, oral candidiasis, thrush, oral moniliasis, is
   a. a yeast infection of the mouth or throat
   b. most commonly caused by *Candida albicans*. 
3. Cholesterol, is
   a. a waxy fat called a lipid produced naturally in the body
   b. essential for the body to make
      i. cell membranes
      ii. hormones
      iii. vitamin D
   c. of two types
      i. low-density lipoprotein (LDL), the ‘bad’ cholesterol
      ii. high-density lipoprotein (HDL), the ‘good’ cholesterol

4. Ecchymosis, skin discoloration caused by the escape of blood into the tissues from ruptured blood vessels.

5. Hepatitis, swelling and inflammation of the liver.

6. Lesion, a term variously and loosely used in medicine for such things as
   a. a mass especially before a definite diagnosis is established
   b. an injury to living tissue, such as a cut or break in the skin
   c. any abnormality of tissue in the body, including the mouth and skin
   d. any localized abnormal structural change in a bodily part
   e. cancer.

7. Lichen planus, a disease
   a. in which there is an itchy, swollen rash on the skin or in the mouth
   b. which is of unknown cause though it is likely to be related to an allergic or immune reaction.

8. Liver cancer, hepatocellular carcinoma, which comprises
   a. primary liver cancer, which
      i. starts in the liver
      ii. arises chiefly from cirrhosis and hepatitis B or C (CDHO Advisory)
   b. metastatic liver cancer, which spreads to the liver from cancer in another organ.

9. Liver disease, a general term for the many diseases and disorders that impair or shut down liver function.

10. Liver failure, a life-threatening condition that arises in the advanced stages of loss of liver function, which
    a. is chiefly the end-stage of chronic liver failure from conditions such as
       i. cirrhosis
       ii. malnutrition (CDHO Advisory)
    b. is accompanied by lower than normal levels of blood urea
    c. may occur as an acute condition in reaction to toxins and medication overdose
    d. exhibits early symptoms that are non-specific, such as
       i. diarrhea
       ii. fatigue
       iii. loss of appetite
       iv. nausea
    e. presents an advanced clinical picture that includes
       i. confusion and disorientation
       ii. extreme sleepiness
       iii. risk of coma and death
    f. requires urgent medical care that
       i. is directed at preserving liver function
       ii. may include liver transplant.
11. Liver function, support of numerous processes necessary for life, such as
   a. combating infection
   b. detoxifying and removing toxins from the blood
   c. producing bile to help digest fat
   d. storing
      i. energy from food by converting glucose to glycogen
      ii. vitamins and minerals
   e. producing urea
   f. producing amino acids, the building blocks of protein
   g. producing cholesterol
   h. self-regeneration after physical injury or toxin damage.

12. Liver function tests
   a. evaluate the liver for
      i. injury from the side effects of medication
      ii. infection by viruses
         1. hepatitis
         2. infectious mononucleosis
      iii. inflammation
   b. comprise tests of
      i. alanine aminotransferase (ALT), a liver enzyme involved in metabolism, of
         which blood levels increase with
         1. injury to the liver
         2. acute hepatitis
      ii. alkaline phosphatase (ALP), an enzyme occurring in the liver, bones, intestines, kidneys, and other organ, of which blood levels increase with
         1. blocked bile ducts
         2. liver disease
         3. viral infections
      iii. aspartate aminotransferase (AST), an enzyme involved in processing proteins, that
         1. occurs in the liver, heart, muscles, and kidneys
         2. increases in blood level with
            a. injury to the liver
            b. inflammation of the liver
      iv. bilirubin, by-product of breakdown of red blood cells that
         1. normally is processed through the liver for excretion
         2. in certain liver diseases increases in blood level, which causes jaundice, and is measured as the amount
            a. in total in the blood
            b. processed by the liver
      v. albumin and total protein, blood levels of which are decreased in liver disease, and which are measured as
         1. albumin
         2. total amount of all proteins.

13. Oral ulcer, an open lesion, often painful, inside the mouth or upper throat, also called
   a. aphthous stomatitis, canker sore
   b. aphthous ulcer
   c. cancerous ulcer
   d. mouth ulcer.
14. Palliative care, services of care for persons towards the end of life with terminal illnesses, when the focus of the care
   a. is relieving symptoms
   b. attending to physical and spiritual needs.
15. Sicca syndrome
   a. a term reserved for the combination of dryness of the mouth and of the eyes, regardless of cause
   b. when accompanied by lymphocyte infiltration of the salivary glands is named Sjögren syndrome.
16. Sjögren’s syndrome (CDHO Advisory), a serious, systemic, chronic autoimmune disease that
   a. is considered to be one of the most prevalent autoimmune diseases
   b. is often under-recognized and under-treated
   c. preferentially attacks and damages the salivary, tear and mucus-secreting glands, resulting in xerostomia or swollen salivary glands
   d. may cause
      i. arthritis
      ii. debilitating fatigue
      iii. neuropathy
      iv. painful weak muscles
   e. may result in inflammation of the
      i. blood vessels
      ii. brain
      iii. gastrointestinal system
      iv. kidneys
      v. liver
      vi. lungs
      vii. thyroid gland.
17. Supportive care, services of care to help persons meet the physical, emotional and spiritual challenges arising from the condition or its treatment.
18. Urea, the end-product of nitrogen metabolism, produced by the liver from the detoxification of ammonia, which is life-threatening if it accumulates in the blood; urea is excreted by the kidneys.
19. Xerostomia, abnormal dryness of the mouth resulting from decreased secretion of saliva; has various causes including
   a. sicca syndrome
   b. Sjögren syndrome (CDHO Advisory)
   c. some medications.

Overview of liver disease

Resources consulted
- Autoimmune Hepatitis: American Liver Foundation
- Hepatitis Why Is There No Vaccine For Hepatitis C?: About.com
- Liver Disease: Canadian Liver Foundation
- Liver Transplantation: Immunosuppression; Medscape
Liver Disease

1. Liver disease in adults
   a. Is slow to reveal itself as symptoms, and may therefore be difficult to diagnose.
   b. May remain unrecognized for years until its condition becomes critical.
   c. Is in some forms diagnosed in adults yet may in fact have originated in childhood.
   d. In some forms can affect almost anyone at any age but generally is of higher incidence in adults.

2. Liver disease in children
   a. Occurs at all ages and in various forms of the disease.
   b. Results chiefly from
      i. blockages of the flow of bile from the liver
      ii. genetic conditions
      iii. viral infections.
   c. Is often first manifested as jaundice.

3. Signs and symptoms, which
   a. strongly suggest liver disease include
      i. dark urine
      ii. jaundice
      iii. swelling in the abdomen and legs caused by fluid accumulation
   b. may indicate liver disease but which occur in other conditions include
      i. abdominal pain
      ii. bruising easily
      iii. fatigue
      iv. intestinal bleeding
      v. itching
      vi. loss of appetite
      vii. loss of interest in sex
      viii. mental problems, such as memory loss
      ix. nausea and vomiting
      x. small red, spider-like blood vessels under the skin
      xi. swollen legs and feet
      xii. under-nourishment
      xiii. weakness
      xiv. weight loss.

4. Is caused principally by or is associated with risk factors such as the following.
   a. Viral hepatitis (CDHO Advisory), which occurs most commonly as
      i. hepatitis A and B, which can be prevented by vaccine
      ii. hepatitis C for which no vaccine is available.
   b. Obesity, linked to fatty liver disease, the leading cause of liver disease in Canada.
   c. Alcohol dependency (CDHO Advisory); if the liver’s metabolism is constantly challenged by alcohol, the destruction of, or damage to, liver cells may result in
      i. alcoholic hepatitis
      ii. cirrhosis
      iii. fatty liver
      iv. liver cancer.
d. Genetic factors, which may be diagnosed in infancy or appear later in life, including
   i. alpha-1 antitrypsin deficiency
   ii. glycogen storage disease
   iii. hemochromatosis
   iv. tyrosinemia
   v. Wilson disease.

e. Autoimmune disorders, in which the immune system attacks the liver or bile ducts causing inflammation and scarring, which are suspected in diseases such as
   i. autoimmune hepatitis
   ii. primary biliary cirrhosis
   iii. primary sclerosing cholangitis.

f. Chemicals, medications and toxins, which put the liver at risk of acute or chronic liver disease because it is the site of detoxification of most of them.

g. Cancer, which is relatively uncommon in the primary form but is much more common as secondary cancers that spread to the liver through metastasis.

5. Is investigated with liver function tests.

6. Involves major pathological processes, in particular
   a. inflammation, which
      i. is the liver’s normal process for combating infection and healing injury but, if unduly prolonged, becomes the early stage of much liver disease
      ii. is reversible if diagnosed and treated successfully in its early stages, though it may be missed because it is unnoticeable to the person
      iii. develops into scarring if the inflammation is left untreated, which
         1. may evolve into fibrosis, the advanced and harmful stage of scarring, a process which increasingly replaces healthy liver with cells that
            a. cannot perform the functions of healthy liver cells
            b. may restrict blood flow through the liver
         2. is capable of recovery if the original liver disease is diagnosed and treated successfully at an early stage
      iv. becomes cirrhosis, the irreversible stage at which the liver is unable to heal itself because the scarring is so severe, which
         1. may lead to liver cancer, among several complications
         2. is associated with various signs and symptoms, including
            a. bleeding or bruising tendency
            b. edema of the legs, abdomen
            c. increased sensitivity to medications and side effects
            d. insulin resistant type-2 diabetes (CDHO Advisory)
            e. intense itching of the skin
            f. jaundice
            g. obstruction and even rupture of abdominal blood vessels
            h. problems with concentration, memory, sleeping, or other mental functions owing to toxin build-up in the brain
      v. is treated with the objective of preventing further damage and protecting remaining healthy liver tissue.

b. liver cancer
7. Is treated with
   a. medications suited to the particular type of liver disease
   b. in certain conditions with liver transplantation following which, following the transplantation, requires
      i. immunosuppression and immunosuppressive medications (CDHO Advisory)
      ii. particular attention to the side effects of the immunosuppressive medications rather than on any actual physical problems resulting from rejection.

Table: liver disease, adults and children

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<thead>
<tr>
<th>Adults, general population</th>
<th>Children</th>
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<tr>
<td>Amebic liver abscess</td>
<td>Alagille syndrome</td>
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<td>Autoimmune hepatitis</td>
<td>Alpha-1 antitrypsin deficiency</td>
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<td>Biliary atresia</td>
<td>Biliary atresia</td>
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<td>Cirrhosis</td>
<td>Choledochal cyst</td>
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<td>Coccidioidomycosis; disseminated</td>
<td>Galactosemia</td>
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<td>Delta agent (Hepatitis D) (CDHO Advisory)</td>
<td>Neonatal hepatitis</td>
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<td>Drug-induced cholestasis</td>
<td>Reye’s syndrome</td>
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<td>Fatty liver disease</td>
<td>Type 1 glycogen storage disease</td>
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<td>Gallstones</td>
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<td>Gilbert’s syndrome</td>
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<td>Hepatitis A (CDHO Advisory)</td>
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<td>Porphyria</td>
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<td>Primary biliary cirrhosis</td>
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<td>Pyogenic liver abscess</td>
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<td>Sarcoidosis</td>
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<td>Sclerosing cholangitis</td>
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<td>Toxic hepatitis</td>
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<tr>
<td>Wilson disease</td>
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Multimedia and images

Cirrhosis of the liver
Liver fattening, CT scan
Liver with disproportional fattening, CT scan

Comorbidity, complications and associated conditions

Comorbid conditions are those which co-exist with liver disease 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.

1. The wide range of conditions classified as liver disease complicates the question of what constitutes comorbidity; the clearest picture comes from studies of factors predictive of the survival of liver transplant patients, with the cautions that
   a. candidates for liver transplants are at the advanced stages of liver disease
   b. alcohol and hepatitis from virus infection are major factors in liver disease (in Canada, hepatitis C is the most common reason for liver transplants).

2. Pre-transplant comorbidity among persons with alcoholic liver disease includes
   a. physical conditions
      i. diabetes (CDHO Advisory)
      ii. hepatitis C or hepatitis B infection (CDHO Advisory)
      iii. HIV-AIDS (CDHO Advisory)
   b. psychiatric conditions
      i. anxiety disorder (CDHO Advisory)
      ii. depressive disorder (CDHO Advisory)
      iii. non-alcohol substance use disorder (CDHO Advisory).

3. Comorbid conditions associated with diminished survival following liver transplant for various liver diseases include
   a. chronic obstructive pulmonary disease (CDHO Advisory)
   b. connective tissue disease
   c. coronary heart disease (CDHO Advisory)
   d. diabetes (CDHO Advisory)
   e. renal insufficiency (CDHO Advisory).

4. Other comorbidity relates to factors such as
   a. infections
   b. poly-medications
   c. toxicity of various types.

Oral health considerations

Resources consulted

- Liver Disease Current perspectives on medical and dental management: Oral Surgery (access fee applies)
- Liver Transplantation: Immunosuppression; Medscape
The dental hygienist should take clinical account of the following oral health considerations.

1. A patient/client with a recent or pending liver transplant should notify any intended dental procedures to the transplant team, whose advice on special precautions should be sought by the dental hygienist prior to implementation of the Procedures.

2. For patients/clients with liver disease or a history of liver transplant, the advice of the treating physician should be sought before the Procedures are begun, with particular reference to
   a. medications, including over-the-counter medications, that
      i. are currently taken, and their implications for the Procedures
      ii. are needed for premedication, such as antibiotic prophylaxis
      iii. that may need to be changed
   b. bleeding tendency, and precautions required
   c. immunosuppression (CDHO Advisory)

3. Comprehensive and current medical and oral health histories are important relative to
   a. bleeding tendency, which requires minimization of soft tissue trauma during dental procedures
   b. medications toxicity
   c. quality of life
   d. susceptibility to oral health problems of patients/clients with liver disease
   e. the possibility of viral hepatitis (CDHO Advisory).

4. In addition to the general signs and symptoms, the oral cavity may display evidence of liver disease or dysfunction in various ways, including
   a. ecchymosis
   b. gingival bleeding
   c. glossitis, especially with alcoholic hepatitis
   d. jaundiced mucosal tissues
   e. lichen planus
   f. petechiae, hematoma
   g. reduced healing
   h. Sjögren’s syndrome (CDHO Advisory).

5. Susceptibility to dental and periodontal diseases, which
   a. may be uncertain because dental and periodontal diseases
      i. may arise from social or other factors reflective of the diminished quality of life of the person with alcohol-related disease; such factors favour
         1. poor oral hygiene
         2. poor dental care
      ii. that occur with alcohol-linked cirrhosis appear not to be directly caused by the cirrhosis
   b. require oral healthcare regardless of the cause.

6. Viral hepatitis (CDHO Advisory), relative to which the American Dental Association holds that
   a. oral healthcare professionals
      i. are no more likely to be infected than the general population
      ii. appear to be at low risk of becoming infected at work
   b. hepatitis C is a concern for all healthcare personnel, including oral healthcare professionals, who come into contact with blood which may be infected
   c. prevention of the transmission of hepatitis C is especially important because
i. no effective vaccine or post-exposure prophylaxis is available for hepatitis C
ii. the rate of chronic infection is high
iii. treatment for hepatitis C infection is of limited efficacy (hepatitis C is the most common reason for liver transplants in Canada)

d. in healthcare settings, prevention relies on
   i. Infection Control in Dental Settings including barrier precautions, such as gloves, masks, and protective eyewear, and the safe handling of sharp instruments
   ii. Information contained in additional resources published by the American Dental Association on hepatitis C and infection control.

7. Transplantation creates risk of serious mouth problems and complicates oral healthcare because of the side effects of anti-rejection, immunosuppression medications used for transplant, which include
   a. xerostomia
   b. mouth ulcers
   c. infections, such as
      i. candidiasis
      ii. gingivitis
      iii. thrush
   d. gingival overgrowth
   e. tumours in the mouth cancers that occur in some transplant patients, especially those who have smoked.

8. Quality of life
   a. the therapeutic expectations of patients/clients with liver disease may be a factor in their quality of life
   b. to the extent that therapeutic expectations of individual patients/clients can be positively influenced by oral healthcare, it may be viewed as benefitting the quality of life of these persons with liver disease.

9. Healthy lifestyles for persons with liver disease include oral healthcare when aimed at
   a. helping patients/clients feel better
   b. preventing some of the secondary symptoms of liver diseases such as oral health problems.

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 herbas and supplements
   - US National Library of Medicine and the National Institutes of Health Medline Plus Drug Information All Herbs and Supplements

5. Complementary and alternative medicine
   - National Center for Complementary and Alternative Medicine

Types of medications

Medications
1. For information about the types of medications, if any, likely to be used in the medical care of persons with the particular disease of the liver, see the individual liver disease.
2. The liver is the site of detoxification and of many medications: if liver function is impaired, medications may be retained in the body at high levels and for long periods resulting in accumulation, creating concerns about toxicity and side effects.

Side effects of medications

Resources consulted
- The American College of Gastroenterology: Medications and the Liver
- Oral Surgery: Liver disease: Current perspectives on medical and dental management (access fee applies)

1. Prescription medications known to be toxic to persons with liver disease normally carry warnings to this effect.
2. Most common prescription and non-prescription medications currently available are with rare exceptions safe at the recommended dose for persons with liver disease, though a person with liver disease
   a. who does develop liver injury from a medication may experience more severe liver damage than would be expected in a healthy person
   b. may be prescribed ‘liver-safe medications’.
3. For persons with severe types of liver disease, such as cirrhosis, a cautious approach is required for all types and doses of medications.
4. Specialized prescription-medication toxicity with significance for oral healthcare, includes
   a. interferon, such as interferon alfa-2a and alfa-2b injection, used in hepatitis virus treatment, which
      i. induces dry mouth
      ii. may be associated with tooth decay and gum disease
   b. medications used for prevention of rejection of a transplanted kidney, such as cyclosporine (Neoral®, Sandimmune®, Gengraf®).
5. Some prescription medications at some times can harm the liver because
   a. of idiosyncratic reaction, which is rare and unpredictable
   b. a medication proven safe during testing is found with experience to be harmful or potentially so.
6. Medical advice is required for medications used for oral healthcare that
   a. are metabolized in the liver
   b. may impair detoxification
   c. may impair hemostasis
   d. include
      i. analgesics
         ▪ acetaminophen (Tylenol®, among others), which
            1. is safe for people with liver disease when used as directed
            2. may damage the liver if taken
               a. in a single dose that is too high
               b. as a high dose continuously over several days
            3. should not be taken by healthy persons
               a. in excess of 1,000 mg per dose
               b. in excess of 4,000 mg in one day
               c. for more than 3 to 5 days as a daily dose of 4,000 mg
            4. should not be taken by persons with liver disease
               a. in excess of 2,000 mg per day
               b. even at 2,000 mg per day if severe liver disease is present
               c. should not be taken regularly or at all by persons who drink alcohol regularly
         ▪ aspirin (ASA, among others)
         ▪ codeine (Tylenol with Codeine®, among others)
         ▪ ibuprofen (Advil®, among others)
      ii. local anesthetics
      iii. antibiotics
         ▪ ampicillin (Principen®)
         ▪ tetracycline (Sumycin®, among others)
      iv. sedatives
         ▪ diazepam (Diazepam Intensol®, Valium®)
   7. Over-the-counter products, supplements and herbs despite their description as ‘natural’
      can be toxic to the liver, which
      a. are not regulated as thoroughly as prescription medications
      b. may themselves cause liver damage or may be accompanied by impurities toxic to the liver
      c. as vitamin or mineral dietary supplements in excess can be harmful to the liver.

THE MEDICAL AND MEDICATION 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. explore the need for advice from the appropriate primary or specialized care provider(s)
3. inquire about
   a. the type of liver disease
b. the type of treatment, including
   i. medications
   ii. transplantation, past or pending

c. need for specific advice from the treating primary care or specialist physician

d. the patient/client’s understanding and acceptance of the need for oral healthcare

e. medications considerations, including over-the-counter medications, herbals and supplements

f. problems with previous dental/dental hygiene care

g. problems with infections generally and specifically associated with dental/dental hygiene care

h. the patient/client’s current state of health

i. 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

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

The dental hygienist

1. should not implement the Procedures without prior consultation with the appropriate primary or specialist care provider(s)

   a. if the patient/client
i. has recently received or is about to receive liver transplantation  
ii. has a bleeding tendency  
iii. is receiving immunosuppression  
iv. has a history of comorbidity, complication or associated condition for which a medical opinion is required prior to implementation of the procedures, including  
   1. active chemotherapy  
   2. drug or alcohol dependency  
b. if the dental hygienist is uncertain about  
   i. the liver condition and requirements for special precautions  
   ii. medication considerations  
2. may postpone the Procedures pending medical advice if the patient/client  
   a. appears debilitated  
   b. is unable to provide the dental hygienist with sufficient information about  
      i. medications  
      ii. bleeding tendency  
      iii. history or possibilities of viral hepatitis  
      iv. transplantation  
      v. treatment for liver disease  
   c. recently changed significant medications, under medical advice or otherwise  
   d. has symptoms or signs of  
      i. exacerbation of liver disease  
      ii. comorbidity, complication or an associated condition of liver disease  
   e. not recently or ever sought and received medical advice relative to oral healthcare procedures  
   f. recently experienced changes in his/her medical condition such as medication or other side effects of treatment  
   g. is deeply concerned 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 liver disease, 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 hygienist should
1. urge the patient/client to alert any healthcare professional who proposes any intervention or test that he or she has a history of
   a. liver disease
   b. liver transplantation, if this is the case
2. discuss, as appropriate
   a. the importance of the patient/client’s
      i. self-checking the mouth regularly for suspicious signs or symptoms
      ii. reporting to the appropriate healthcare provider any changes in the mouth indicative of suspicious lesions
   b. the importance of oral health for liver transplant recipients
   c. the need for regular oral health examinations and preventive oral healthcare
   d. 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 xerostomia
   e. the importance of a good diet in the maintenance of oral health; patients/clients should be encouraged with advice consistent with good oral hygiene, in particular, to reduce consumption of
      i. simple sugar
      ii. sweetened beverages
   f. for persons at an advanced stage of a disease or debilitation discuss
      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
   g. comfort level while reclining, and stress and anxiety related to the Procedures
   h. medication side effects such as dry mouth, and recommend treatment
   i. comorbidities, complications or associated conditions of the liver disease to the extent that these have relevance for oral healthcare
   j. mouth ulcers and other conditions of the mouth relating to liver disease, comorbidities, complications or associated conditions, medications or diet.

BENEFITS/HARMS OF IMPLEMENTING THE RECOMMENDATIONS

POTENTIAL BENEFITS

1. Promoting health through oral hygiene for persons who have liver disease.
2. Reducing adverse effects, such as the mouth problems that occur as complications of transplantation, and stress on debilitated persons, by
   a. taking a detailed history
   b. generally increasing the comfort level of persons in the course of dental hygiene interventions
c. using appropriate techniques of communication
d. providing advice on scheduling and duration of appointments for persons who are debilitated.

3. Reducing the risk that oral health needs are unmet.

POTENTIAL HARMS

1. Performing the Procedures at an inappropriate time, such as
   a. when the patient/client is at risk of excessive bleeding
   b. in the presence of comorbidities, complications or associated conditions for which prior medical advice is required
   c. in the presence of acute oral infection without prior medical advice.
2. Disturbing the normal dietary and medications routine of a person with liver disease.
3. 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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