

# CDHO

COLLEGE OF DENTAL  
HYGIENISTS OF ONTARIO

## Drugs in Dental Hygiene Practice: A Refresher Course



**Drugs in Dental Hygiene Practice:  
A Refresher Course**

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## **Course Objective**

This course is designed to prepare you to successfully complete the **Drugs in Dental Hygiene Practice Examination (DDHPE)** and provides you with the information needed to recommend, prescribe, dispense, sell and use drugs according to the Designated Drugs Regulation and the Guidelines, with an emphasis on fully assessing a client's drug history, potential adverse reactions, and drug interactions that may interfere with dental hygiene treatment and oral health care. The need and importance of using current resources to obtain proper drug references is emphasized in addition to the requirements of the record keeping regulation as it applies to recording accurate information regarding client drug histories, drugs used during dental hygiene treatment and prescribed drugs as well as nutritional supplements and herbal remedies.

### **Note to users**

*This course has been designed to be completed by independent study with the final goal being the successful completion of the Drugs in Dental Hygiene Practice Examination. As each unit of the course builds upon knowledge presented earlier in the course, it is strongly advised that you complete the units in order and that you do not skip over any sections as all areas contain relevant and critical information that may be used as the basis for questions on the Examination.*

## Required Resources

- **A current dental hygiene text or eBook:**

Darby, M.L. & Walsh, M. (2015). [\*Dental Hygiene Theory and Practice\*](#) (5<sup>th</sup> ed.). St-Louis, Missouri: Saunders Elsevier.

OR

Wilkins, E.M. (2016). [\*Clinical Practice of the Dental Hygienist\*](#) (12<sup>th</sup> ed.). Philadelphia, Pennsylvania: Lippincott, Williams & Wilkins.

- **CPS or eCPS:**

CPhA (2014), [\*Compendium of Pharmaceuticals and Specialties\*](#) (CPS). Ottawa, ON: Canadian Pharmacists Association.

- **A drug information handbook:**

Jeske, A.H. (2014). [\*Mosby's Dental Drug Reference\*](#) (11<sup>th</sup> ed.). St-Louis, Missouri: Mosby Elsevier.

OR

Wynn, R. L., Meilleur T. F. & Crossley, H.L. (2014) *Drug Information Handbook for Dentistry* (20<sup>th</sup> ed.). Hudson, Ohio: Lexi-Comp.

- **Registrants' Handbook:**

[CDHO Registrants' Handbook](http://www.cdho.org). (2019). College of Dental Hygienists of Ontario. [www.cdho.org](http://www.cdho.org).

- **Current textbooks:**

Malamed, S.F. (2015). [\*Medical Emergencies in the Dental Office\*](#) (7<sup>th</sup> ed.). St-Louis, Missouri: Mosby Elsevier.

AND

Bablenis Haveles, E. (2016). [\*Applied Pharmacology for the Dental Hygienist\*](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier.

OR

Pickett, R. A. & Terezhalmay, G. T. (2010). [\*Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications\*](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins.

## **Table of Contents**

### **Unit 1 – Responsibilities of Prescribing and Dispensing**

Section 1.1	Professional accountability .....	Unit 1 – 3
Section 1.2	Collaboration and communication.....	Unit 1 – 4
Section 1.3	Jurisprudence .....	Unit 1 – 5
Section 1.4	Continuing competency .....	Unit 1 – 6

### **Unit 2 – Decision-Making Related to the Use of Drugs in Dental Hygiene Care**

Section 2.1	Dental Hygiene Process of Care.....	Unit 2 – 4
Section 2.2	Record keeping requirements.....	Unit 2 – 6

### **Unit 3 – Pharmacodynamics and Pharmacokinetics**

Section 3.1	Pharmacodynamics – How drugs affect the body.....	Unit 3 – 4
Section 3.2	Pharmacokinetics – How the body handles drugs .....	Unit 3 – 5
Section 3.3	Adverse reactions .....	Unit 3 – 10
Section 3.4	Special considerations for subgroups of the population .....	Unit 3 – 14

### **Unit 4 – Drugs Used In and Affecting Dental Hygiene Care**

Section 4.1	Classification of drugs and drug scheduling .....	Unit 4 – 3
Section 4.2	Drugs prescribed by dental hygienists .....	Unit 4 – 6
Section 4.3	Drugs used during dental hygiene appointments.....	Unit 4 – 9
a.	Antibiotics in dental hygiene .....	Unit 4 – 10
i.	Subgingival (Atridox®, Arestin®).....	Unit 4 – 10
ii.	Prophylactic .....	Unit 4 – 10
b.	Use of fluoride in dental hygiene .....	Unit 4 – 12
c.	The use of anaesthetics in dental hygiene .....	Unit 4 – 14
i.	Topical.....	Unit 4 – 14
ii.	Local .....	Unit 4 – 14
iii.	Conscious sedation – oral or nitrous oxide/oxygen (Referral required).....	Unit 4 – 14
Section 4.4	Over-the-counter (OTC) drugs and nutritional or herbal supplements.....	Unit 4 – 15
Section 4.5	Drugs used during medical emergencies.....	Unit 4 – 16

**Unit 5 – Issuing Prescriptions and Dispensing Drugs**

Section 5.1	Principles of prescribing .....	Unit 5 – 4
a.	Requirements for providing accurate and legal prescriptions .....	Unit 5 – 4
b.	Sample prescriptions .....	Unit 5 – 6
c.	Risk management strategies and methods for preventing and reducing medication errors .....	Unit 5 – 6
Section 5.2	Principles of dispensing .....	Unit 5 – 9
a.	Storage requirements for prescription and non-prescription drugs.....	Unit 5 – 9
b.	Disposal requirements for prescription and non-prescription drugs.....	Unit 5 – 10
c.	Labelling requirements for in-office and home use.....	Unit 5 – 11
Section 5.3	Drug interactions.....	Unit 5 – 13

Information about icons used throughout this course:



### **Background information**

These sections provide you with basic information about the topic. Further, more comprehensive information may be obtained by following the links provided and by research performed while completing the activities.



### **Required readings**

Completing these readings is critical in contributing to your understanding of the contents of each unit.



### **Activity**

The activities will help to reinforce the key concepts and learning from the units. These will not be graded but will assist you in preparation to complete the **Drugs in Dental Hygiene Practice Examination**.



### **Did you know?**

Contains items of interest related to the use of drugs in dental hygiene.



### **Practice tip**

Throughout the unit we have included key pointers to assist you in your everyday practice.



### **Website search**

You will find valuable resources, informative articles and links to important documents and legislation that will assist you in your understanding of the unit. Many of the links lead to tools that will help to guide you in your daily practice.

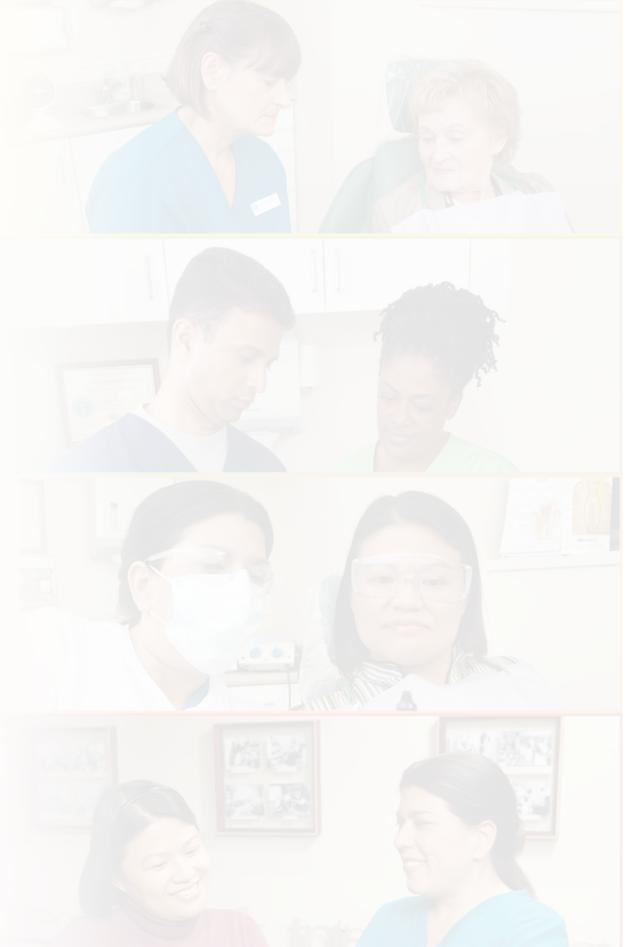
### **Exam information**

Information about the **Drugs in Dental Hygiene Practice Examination** can be found here:

[Drugs in Dental Hygiene Practice Examination](#).

# Drugs in Dental Hygiene Practice: A Refresher Course

## Unit 1



## Unit 1 — Responsibilities of Prescribing and Dispensing



- Section 1.1 Professional accountability
- Section 1.2 Collaboration and communication
- Section 1.3 Jurisprudence
- Section 1.4 Continuing competency

### Learning outcomes

Upon the completion of this unit, the dental hygienist will be able to:

- ✓ Recognize that they are accountable to their clients, regulatory authority and the public.
- ✓ Identify the importance of referring to, or consulting with, other health care professionals.
- ✓ Describe the role of the dental hygienist in implementing strategies for effective collaboration and communication with the client and other health professionals.
- ✓ Specify how to locate the relevant standards of practice as well as the provincial and federal legislation.
- ✓ To recognize gaps in current knowledge related to drugs in dental hygiene practice.



### Required readings

The goal of the reading is to refresh your knowledge about professionalism.

[Chapter 1: CDHO Registrants' Handbook](#). (2019). Retrieved from [www.cdho.org](http://www.cdho.org).



### Section 1.1 Professional accountability

Regardless of practice setting or employment arrangement, dental hygienists are expected to use their knowledge, skills and judgment to determine which treatment, product, drug, referral or combination of, is in the client's best interest.

- ✓ Only recommend, prescribe, dispense, sell and/or use drugs appropriate for dental hygiene purposes.
- ✓ Recognize signs of substance abuse in clients and precautions needed to ensure that any treatment is appropriate to the client's oral condition and specific situation.
- ✓ Maintain clear, legible and transparent records in all aspects of the process of care including details about recommending, prescribing, dispensing, selling and/or using drugs.
- ✓ Ensure client privacy and confidentiality is maintained at all times.



### Website search

The goal of this website search is to refresh your knowledge about accountability for dental hygienists who practise in Ontario.

Review Section 2 of the [CDHO Standards of Practice](#).



### Activity 1.1 Accountability and professionalism

Complete the case studies and questions found in your self-build study guide.



### Required readings

The goal of the reading is to refresh your knowledge about effective communication.

[Chapter 9: CDHO Registrants' Handbook](#). (2019). Retrieved from [www.cdho.org](http://www.cdho.org).



### Section 1.2 Collaboration and communication

It is a standard of practice that dental hygienists develop and maintain professional relationships with colleagues, other health professionals, employers, and the CDHO to ensure optimal client care, safety, mutual respect and trust. Dental hygienists are expected to ensure client-centered care by establishing and maintaining positive, professional relationships with clients, families and significant others that are focused on client needs and based on respect, empathy and trust.

- ✓ Be active partners in a Client's Circle of Care along with other health care professionals when determining the best course of treatment.
- ✓ Collaborate and consult with appropriate health care professionals to ensure that any drugs recommended are suitable and safe to use.
- ✓ Ensure that effective communication techniques are used and clients are able to fully understand and appreciate the how, why, when and potential risks of drugs recommended, prescribed, dispensed, sold and used.
- ✓ Obtain and document informed consent.



### Website search

The goal of this website search is to refresh your knowledge about interprofessional collaboration.

Review Section 5 of the [CDHO Standards of Practice](#).

Review the [Position Statement: Interprofessional Collaboration](#) from the Canadian Nurses Association.



### Activity 1.2 Effective communication

Complete the questions in your self-build study guide.



### Required readings

The goal of the reading is to refresh your knowledge about jurisprudence and your obligations under the current legislation governing dental hygienists in Ontario.

[Chapter 2: CDHO Registrants' Handbook](#). (2019). Retrieved from [www.cdho.org](http://www.cdho.org).



### Section 1.3 Jurisprudence

The authority to prescribe, dispense and/or sell anticariogenics and antimicrobials is found in the Designated Drugs Regulation of the *Dental Hygiene Act, 1991*. The regulation describes the conditions that must be met in conjunction with prescribing, dispensing and/or selling drugs.

- ✓ Successfully complete the CDHO **Drugs in Dental Hygiene Practice Examination**.
- ✓ Do not delegate prescribing to another person.
- ✓ Do not recommend, prescribe, dispense, sell and/or use a drug that results, directly or indirectly, in a personal or financial benefit.
- ✓ Only recommend, prescribe, dispense, sell, and/or use a drug that is in compliance with all applicable federal and provincial laws and is approved for use in Canada.
- ✓ Do not recommend, prescribe, dispense, sell and/or use drugs for off-label use.
- ✓ Do not prescribe drugs for personal use.
- ✓ Only prescribe, dispense, and/or sell drugs to family members if they are clients of record and they are required to help treat an oral condition.



### Did you know?

You cannot sell prescription drugs if the selling provides a profit or a financial benefit.



### Website search

The goal of this website search is to become familiar with the contents of the Designated Drugs Regulation and the Guidelines *Recommending, Prescribing, Dispensing, Selling and Using Drugs in Practice*, and potential conflicts of interest related to drugs in practice.

Review the [Designated Drugs Regulation](#) and the Guidelines [Recommending, Prescribing, Dispensing, Selling and Using Drugs in Practice](#).

Review the [Conflict of Interest Regulation](#).

Review the [Professional Misconduct Regulation](#).



### Activity 1.3 Requirements for dental hygienists under the *RHPA, 1991* and other statutes

Complete the questions in your self-build study guide.



### Required readings

The goal of the reading is to refresh your knowledge of the CDHO Quality Assurance Program.

Read the [Quality Assurance Package](#) (effective January 2015) on the CDHO website.



### Section 1.4 Continuing competency

As a standard of practice, dental hygienists acknowledge that continual inquiry and learning is paramount to professional practice and client-centered care. During their professional career, dental hygienists maintain continuous competency by participating in the Quality Assurance Program that continually verifies the individual dental hygienist's ability to perform and apply knowledge, skills, judgments and attitudes that contribute to the safety and quality of client outcomes and the evidence base for dental hygiene practice.

- ✓ Ensure and enhance competency by researching current knowledge related to drugs and drug therapies used in dental hygiene practice.
- ✓ Ensure that any drug therapy recommended is based on evidence-informed research.
- ✓ Ensure that all drug reference materials are current and up to date.



### **Did you know?**

The CDHO Knowledge Network at [www.cdho.org](http://www.cdho.org) is an invaluable resource to research medical conditions including drugs used in treating the conditions.



### **Website search**

The goal of this website search is to understand the expectations for continuing competence for dental hygienists.

Review the [Quality Assurance Regulation](#).

Review Section 4 of the [CDHO Standards of Practice](#).



### **Activity 1.4 Self-assessment of competency related to drugs in practice**

In your self-build study guide, complete the self-assessment related to drugs in your dental hygiene practice. You will be asked to complete this again at the end of the course. You may wish to consider your self-assessment answers to determine if you require additional education on the topic of Pharmacology.

# Drugs in Dental Hygiene Practice: A Refresher Course

## Unit 2



## Unit 2 — Decision-Making Related to the Use of Drugs in Dental Hygiene Care



Section 2.1 Dental Hygiene Process of Care  
Section 2.2 Record keeping requirements

### Learning outcomes

Upon the completion of this unit, the dental hygienist will be able to:

- ✓ Discuss the significance of effectively conducting a review of a client's comprehensive medical and dental history within the Dental Hygiene Process of Care Model and describe how this review supports safe and effective dental hygiene treatment.
- ✓ Describe and discuss the decision-making skills and deductive reasoning needed to determine the appropriate drug therapies and recommendations through all stages of the Dental Hygiene Process of Care.

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### Learning outcomes (cont'd)

- ✓ Assess the risks associated with treating clients taking medications and with incorporating drugs into the dental hygiene care plan.
- ✓ Describe the current recommended regimens for antibiotic prophylaxis for dental hygiene treatment and the conditions for which it is recommended.
- ✓ Incorporate the relevant CDHO Standards of Practice, Regulations and Guidelines along with the applicable legislation as they apply to recommending, prescribing, dispensing, selling and/or using drugs into their practice.
- ✓ Describe the decision-making process as it applies to the CDHO Contraindications Regulation and know how to research drugs that contraindicate dental hygiene treatment.



### Required readings

The goals of the readings are to:

- ✓ Review the Process of Care.
- ✓ Understand the significance of a comprehensive health and pharmacological history and its relationship to drugs in practice.
- ✓ Prepare you for the learning in Unit 3.

Darby, M.L. & Walsh, M. (2015). [\*Dental Hygiene Theory and Practice\*](#) (5<sup>th</sup> ed.). St-Louis, Missouri: Saunders Elsevier. Chapter 1: The Dental Hygiene Profession, Chapter 5: Changing Behaviours, Chapter 14: Pharmacologic History.

OR

Wilkins, E.M. (2016). [\*Clinical Practice of the Dental Hygienist\*](#) (12<sup>th</sup> ed.). Philadelphia, Pennsylvania: Lippincott, Williams & Wilkins. Chapter 1: The Professional Dental Hygienist, Chapter 3: Effective Health Communication, Chapter 10: Personal, Dental and Medical Histories.

## **Section 2.1 The Dental Hygiene Process of Care**

Best practice indicates that the *Dental Hygiene Process of Care* (ADPIE) is the framework within which all dental hygiene therapy should be conducted. The framework contains five key steps, each building upon the other and designed to provide the client with optimal and comprehensive dental hygiene care.

### **Assessment:**

A thorough, detailed medical and dental history must be taken and discussed with the client or the client's substitute decision maker. Registrants may choose to develop their own charting system or to evaluate an existing system against the Medical/Dental History Guide available on the CDHO website. As described in the CDHO Contraindications Regulation and if warranted, further discussion with the appropriate health care professional to receive a medical clearance should occur after client consent has been obtained. Ideally, the clearance will be provided in writing either by fax or e-mail and included in the client's chart. If the information is obtained over the telephone, the registrant should clearly document the substance, time and date of the conversation. A complete clinical assessment follows the detailed dental/medical history. This involves collecting comprehensive data by means of physical and oral examinations.

### **Dental hygiene diagnosis:**

The dental hygiene diagnosis links the data collected in the assessment phase to the proposed dental hygiene treatment. After all the necessary assessment data has been collected, a dental hygiene diagnosis is formulated to provide the rationale on which the dental hygiene treatment plan will be designed, implemented, and evaluated.

### **Planning:**

The registrant is responsible for developing an individual treatment plan for each client prior to initiating dental hygiene therapies. The dental hygiene treatment plan for each client includes:

1. client-centred goals/objectives.
2. planned sequence of activities.
3. client participation.

The client's informed consent for treatment must be obtained and documented. Consent to treatment is informed if, before giving it, the client received the necessary information about the nature, expected benefits, material risks and effects of the treatment, alternative courses of action and the likely consequences of not having the treatment.

### **Implementation:**

The registrant is responsible for ensuring that the dental hygiene treatment is individualized in accordance with the treatment plan presented to, and agreed to, by the client. In addition, all treatment activities, including the time spent on the procedure, must be documented in accordance with the CDHO Records Regulation. Financial records must correlate with the actual time and procedure documented on the client's chart. The registrant should ensure that the client receives appropriate post-appointment instructions and recommendations for pain management.

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## Section 2.1 (cont'd)

Individualized instructions in oral self-care should be based on the assessment and treatment plan.

### **Evaluation:**

Clinical evaluation of the client's oral health progress should be done at intervals appropriate to the client and must not be dependent on third-party payment schedules or those of other health care providers. A clinical re-assessment is performed, the dental hygiene treatment plan is reviewed and discussed with the client and modified as required.

## Website search

Review the following documents. The information presented in these documents is **critical** to successful completion of the Drugs in Dental Hygiene Practice Examination and to safe, effective practice.

The goals of the website search are:

- ✓ To link the Process of Care to drugs in practice.
- ✓ To be familiar with CDHO Standards, Regulations and practice guidelines that are related to drugs found and used in practice.
- ✓ To stress the importance of understanding contraindications to treatment related to drugs.

Section 8 of the CDHO [Standards of Practice](#)

[Contraindications Regulation](#)

[Records Regulation](#)

[Medical/Dental History Guide](#)

[Recommended Antibiotic Prophylaxis Regimens for the Prevention of Infective Endocarditis and Hematogenous Joint Infection](#)

For further information regarding antibiotic prophylaxis:

View the *American Academy of Orthopaedic Surgeons Guideline on Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures* at <http://www.ada.org/~media/ADA/Member%20Center/Files/dentalexecsumm.ashx>.

And

To access the online version of the 2007 AHA Guidelines *Prevention of Infective Endocarditis* along with updated information and services, visit <https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.106.183095>.





### Activity 2.1 Drugs and the Dental Hygiene Process of Care

In your self-build study guide, give an example that demonstrates how drugs may affect client care and/or dental hygiene treatment for **each** stage in the *Dental Hygiene Process of Care*.



### Did you know?

Clearance to treat a client should be obtained from the professional who knows the most about that condition.



### Section 2.2 Record keeping requirements

The Records Regulation requires that all stages of the Process of Care be recorded in the client record. Specifically, full details of the following must be described:

- ✓ An appropriate medical and dental history of the client; this includes all drugs being taken by the client including the condition being treated, the name of the drug and the dosage information.
- ✓ Any dental hygiene treatment plan. The treatment plan must take into consideration all drugs being taken. When planning to use or recommend drugs to a client, consideration must be given to any known drug interactions.
- ✓ Each treatment or procedure performed for each intervention. Consideration must also be taken in regards to any drugs used during treatment to minimize risk to the client.
- ✓ Full details about drugs taken by the client as a precondition to treatment or examination by the member for each intervention, including the name of the medication, the time it was taken, and if the medication was not administered to the client by the client, the name of the person who administered it to the client.
- ✓ Any advice given by the member including any pre-treatment or post-treatment instruction given by the member to the client or the client's substitute decision-maker. This would include advice such as recommendations for over-the-counter drugs, fluoride supplements or chlorhexidine rinses.
- ✓ Each examination, clinical finding and assessment relating to the client. An evaluation of efficacy of drugs recommended before, during and after treatment must be completed to ensure that the use of the drug is having its desired effect on client outcomes.

When making chart entries, care must be taken to ensure that all relevant information is recorded about all drugs; this includes those prescribed by other professionals, drugs used during treatment, drugs recommended for at-home use including supplements and herbal remedies and any over-the-counter medications the client is taking.

### **Activity 2.2 Record keeping**



In your self-build study guide, write sample chart entries for each of the following:

- ✓ Client who has taken a drug for the purposes of antibiotic prophylaxis.
- ✓ Client for whom you have used topical anaesthetic.
- ✓ Client for whom you have recommended the use of an analgesic for discomfort after scaling.

### **Activity 2.3 Exploring unfamiliar drugs**



Mrs. Smith reports during the review of her medical/dental history that she is taking a medication that you are not familiar with. In your self-build study guide, describe the steps you would take to determine if it is safe to treat Mrs. Smith.

### **Did you know?**



There is an increased risk of infection in clients using immunosuppressants.

It is important to ensure that you have thoroughly researched all drugs, herbal products and supplements taken by your clients prior to providing their treatment. At a minimum, you should determine the name of the product, the dosage and the reason for its use. In all cases, you should refer to current sources of information to assess typical action of the product as well as possible side effects, contraindications and/or potential adverse reactions and take these into consideration in the development of your treatment plans for your clients.



It is equally important that you ensure that full details of all drugs used by your client, used by you during treatment and recommended for home use be recorded in your client records.

### **Practice tip**



If clearance to treat is obtained by telephone, full details of the conversation should be recorded in the client record. If in writing, a copy should be enclosed in the chart.

### Website search

The goals of the website search are:

- ✓ To familiarize yourself with the navigation and contents of the CDHO Knowledge Network.

Explore the [CDHO Knowledge Network](#). Look up at least one fact sheet and one advisory on different medical conditions and explore what information is available about that condition in the two sources of information.



### Activity 2.4 Using the CDHO Knowledge Network

A client presents with rheumatoid arthritis and says he is taking some medications but is not sure what they are. Using the CDHO Knowledge Network, identify common drugs used for this condition and discuss the considerations in treating a client with this condition.



# Drugs in Dental Hygiene Practice: A Refresher Course

## Unit 3



## Unit 3 — Pharmacodynamics and Pharmacokinetics



- Section 3.1 Pharmacodynamics — How drugs affect the body
- Section 3.2 Pharmacokinetics — How the body handles drugs
- Section 3.3 Adverse reactions
- Section 3.4 Special considerations for subgroups of the population

### Learning outcomes

Upon the completion of this unit, the dental hygienist will be able to:

- ✓ Demonstrate a foundational understanding of basic pharmacology principles, mechanisms of drug action and effects of drugs upon body systems.
- ✓ Describe the basic principles of pharmacodynamics including:
  - Mechanisms of drug action.
  - Receptors and drug binding.
  - Efficacy, potency and toxicity.

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### Learning outcomes (cont'd)

- ✓ Describe the basic principles of pharmacokinetics including:
  - Routes of drug administration.
  - Dosage forms.
  - Factors that influence drug transport.
- ✓ Describe concepts of therapeutic effect and index.
- ✓ Describe adverse reaction experienced with medication use.
- ✓ Describe the legal requirements for reporting adverse reactions to drugs.
- ✓ Describe the consideration for using drugs in practice for pregnant and breastfeeding women, children and older adults.



### Required readings

The goal of this reading is to refresh your knowledge about:

- ✓ What drugs do to the body.
- ✓ What the body does to drugs.
- ✓ Side effects and adverse drug reactions.
- ✓ Concerns regarding drug use in special groups.

Bablenis Haveles, E. (2016). [\*Applied Pharmacology for the Dental Hygienist\*](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Chapter 2.

OR

Pickett, R. A. & Terezhalmay, G. T. (2010). [\*Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications\*](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins. Chapter 2.

### **Section 3.1 Pharmacodynamics — How drugs affect the body**

Pharmacodynamics is the study of the interactions between drugs and body cells, organs and systems. In order for a drug to exert its effect, a drug molecule must first bind to a cellular component, which is known as a receptor. Receptor sites may be located on the outer surface of the cell or may exist within the cell. Each cell may possess multiple receptors and each drug may have the ability to bind to several different types of receptors. In order for binding to occur, the drug and receptor must have complementary “lock and key” structures. In other words, a drug that is not structurally compatible with a receptor site will not bind to that site.

You may have noticed in your readings that several terms are used to describe the binding of drugs to receptors. Drugs and receptors may have electrochemical forces that help to attract them to one another. This property is known as affinity. When studying drug binding it is important to note that some drugs may have a higher affinity, which allow them to bind more easily than others. Clearly, this will have an effect where two drugs are competing for the same binding site and help to explain the effects of some drug interactions.

You may also hear of two drugs being compared in terms of their potency. The description of a drug’s potency is related to the ability of a drug to produce an expected result. When a lower dose of a drug is needed to produce a similar effect to another drug, it is said to be more potent.



Yet another term used to describe the binding qualities of drugs is efficacy. This term refers to the ability of the drug-receptor complex to create the desired response. The following example demonstrates the relationship between the terms: Drug A has a greater affinity than Drug B. Drug A requires 100 mg to exert its effect while Drug B requires 400 mg. Once the drug-receptor complex has formed, both drugs easily create the desired therapeutic response. Drug A would be considered more potent as less was needed for the same effect; however, Drug A and Drug B would be described as having the same efficacy as they both created an equal therapeutic response.

The pharmacodynamic effect of a drug can be affected by a client’s general condition, age, and drug history or by the presence of disorders. Each of these may have an effect on binding at the receptor site or on the presence of necessary components that facilitate drug binding. In some cases, these effects can be toxic or lethal. You will see this later in the unit; for example, when you learn about the relationship between drug metabolism and age.

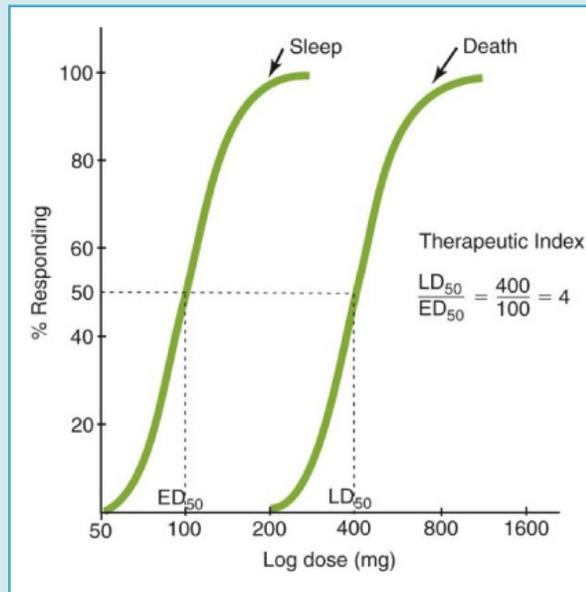
Animal testing and/or clinical trials are generally used to determine the toxicological effect of drugs. The parameter used to make this determination is called the therapeutic index. It is calculated by determining the difference between a dose that is effective and the dose that causes death.

*...cont’d on next page*

### Section 3.1 (cont'd)

The two parameters used to calculate the therapeutic index are the ED<sub>50</sub> (the dose that produces a specified response in half the subjects) and the LD<sub>50</sub> (the dose that kills half the subjects). The ratio of the two (LD<sub>50</sub>/ED<sub>50</sub>) is known as the therapeutic index (TI) of a drug. Drugs with a small TI are more likely to create a toxic reaction. A TI of greater than 10 is usually needed to produce a drug that is clinically useful. In Figure 1 below 100 mg of the drug was needed to produce the desired effect (sleep) in half the subjects, while 400 mg resulted in the death of half the subjects. The therapeutic index was calculated to be 4 indicating that this would likely not be used clinically as the therapeutic index is small (below 10).<sup>1</sup>

Figure 1



1. Pickett, R. A. & Terezhalmay, G. T. (2010). [Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins. Chapters

#### Did you know?

Salivary testing can be used for drug screening as the concentration of drug found in the saliva closely parallels the quantity of drug present in the blood plasma.

#### Activity 3.1 Calculating and interpreting the therapeutic index

Drug A has an LD<sub>50</sub> of 1200 and an ED<sub>50</sub> of 100. In your self-build study guide, calculate the therapeutic index of Drug A. Is this drug likely to cause a toxic reaction? Is it clinically useful? Why or why not?

## **Section 3.2 Pharmacokinetics — How the body handles drugs**

Pharmacokinetics refers to the mechanism of drug transport throughout the body via the following four steps: absorption, distribution, metabolism and excretion. The way that the drugs move through the body will determine the characteristics of the drug's effects including the onset, duration and intensity. This transport is also dependent on client-related factors (e.g. renal function, age, weight, gender) as well as the chemical properties of the drug.

For example, the time it takes for a drug to be cleared from the body may be significantly longer in seniors as compared to a younger adult. The half-life of a drug is a property that is defined as the amount of time it takes for half of the drug to be cleared from the body. Due to the physiologic changes that happen with aging, the half-life may be longer in a senior. Therefore, in terms of prescribing, pharmacokinetic principles suggest that the dosage may need to be adjusted to prevent undesired effects and/or adverse reactions.

### **Absorption**

The speed and efficiency by which drug absorption occurs is determined by several factors including the route of administration, properties of the drugs, and the dosage form used.

### **Routes of administration**

Drugs may be given to the client by various routes including enteral routes (placed directly in the GI tract) or parenteral routes (bypass the GI tract). Typically, drugs that are administered parenterally can be delivered in more accurate doses and will result in more rapid absorption.

Enteral routes include:

- ✓ Oral
- ✓ Sublingual (sometimes classified as parenteral)
- ✓ Buccal (sometimes classified as parenteral)
- ✓ Rectal

Parenteral routes include:

- ✓ Subgingival
- ✓ Inhalation
- ✓ Topical
- ✓ Intradermal (e.g. TB test)
- ✓ Transdermal (e.g. Nitro patch)
- ✓ Subcutaneous
- ✓ Intravenous
- ✓ Intramuscular (e.g. Hepatitis B vaccination)

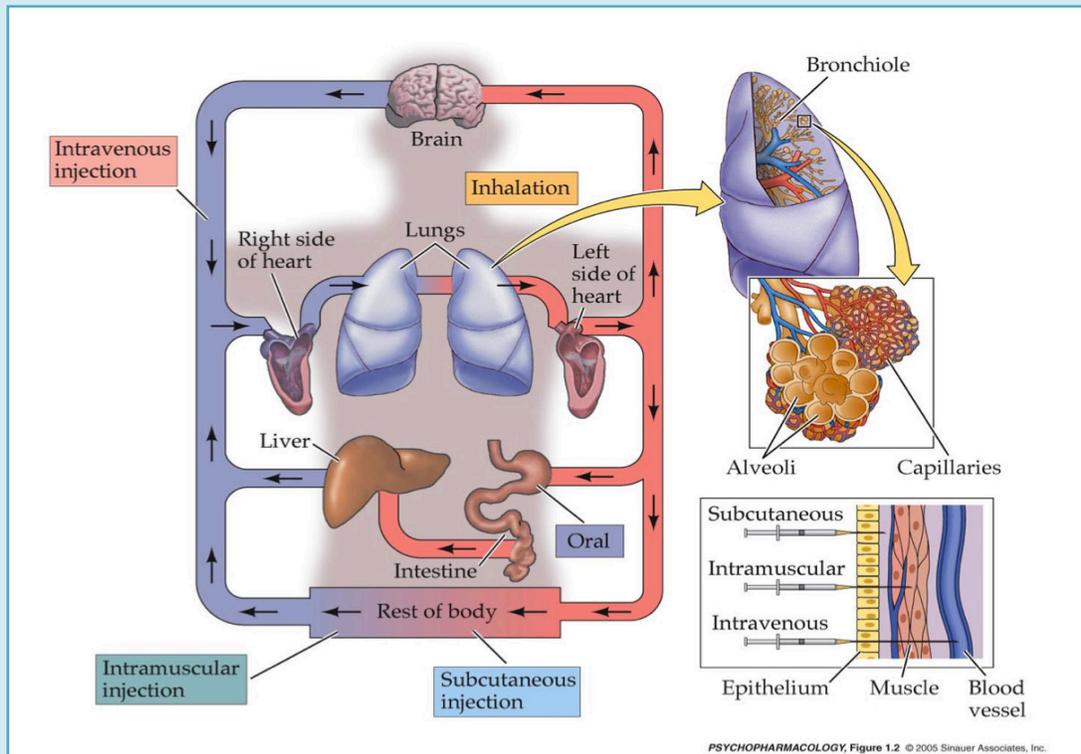
*...cont'd on next page*



**Section 3.2 (cont'd)**

Figure 2 below shows the routes of administration and the methods by which delivery to the systemic circulation is accomplished.<sup>2</sup>

**Figure 2**



2. <https://image3.slideserve.com/6530973/routes-of-drug-administration-getting-the-drugs-in-n.jpg>

**Dosage forms**

Regardless of the route of administration, drugs must be in solution to be absorbed. Solid forms of drugs such as tablets must be able to disintegrate and dissolve.

Drugs are available in many forms:

- ✓ Tablets and capsules (drugs in gelatin shells)
- ✓ Injections
- ✓ Patches
- ✓ Suppositories
- ✓ Candy or gum
- ✓ Implants
- ✓ Gas
- ✓ Creams, ointments and gels
- ✓ Suspensions, solutions and emulsions

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## Section 3.2 (cont'd)

### Distribution

Following absorption, drugs must be carried to the target site(s). The speed and ease with which drugs are distributed is dependent on a variety of factors as discussed in your readings. Among others, factors could include:

- ✓ Route of administration
- ✓ Solubility of the drug
- ✓ Target area to be reached
- ✓ Permeability and ease of transport through the cell membranes
- ✓ Chemical structure of the drug
- ✓ Rate of blood flow
- ✓ Elimination processes



### Metabolism

Drug molecules must interact with the target sites to exert their effects. The principal site is in the liver where drugs are metabolized by various methods with the ultimate goal being making the drug easier to excrete. Processes by which this occurs include oxidation, reduction, hydrolysis, hydration, conjugation, condensation or isomerization.

An individual client's metabolism may be affected by many factors including genetic, coexisting disorders and/or drug interactions. In some, the metabolism could be so slow that a usual dose becomes toxic. Other clients may metabolize drugs so quickly that they do not reach effective blood and tissue concentrations of the drug.

### Excretion

Excretion of drugs is principally accomplished by inactivation by enzymes in the liver and excreted in feces or urine. Clients with liver or kidney disorders may have difficulty ridding their body of the drugs and may be at risk for toxicity due to a drug build-up.

In most cases, excretion through saliva, sweat, breast milk and/or the lungs is minimal but should be a consideration when applicable.



### Did you know?

Opioids are one of the most commonly abused prescription drugs.

### Website search

The goal of this website search is to provide additional detailed information about the mechanisms of drug transport throughout the body.

Review the following links from the Merck Manuals:

[Overview of pharmacokinetics](#)

[Absorption](#)

[Distribution](#)

[Metabolism](#)

[Excretion](#)



### Did you know?

Approximately 90% of chlorhexidine is excreted in the feces through the liver.



### Required readings

The goal of this reading is to refresh your knowledge about adverse reactions.

Bablenis Haveles, E. (2016). [Applied Pharmacology for the Dental Hygienist](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Chapter 3.

OR

Pickett, R. A. & Terezhalmay, G. T. (2010). [Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins. Chapter 5.



### Section 3.3 Adverse reactions

Drugs can act on organs or tissues not targeted by the initial therapy. Adverse reactions can be described as those that have a noxious and unintended effect on the client. They can happen despite having received an accurate and appropriate prescription. The intent of prescribing or using a drug is to accomplish a specific therapeutic effect.

Dental hygienists have an obligation to report any adverse reactions or undesirable effects experienced by their clients. As discussed earlier in the course, the importance of an accurate and thorough health history that includes previous reactions to drugs is critical. Knowledge of the terms used to describe these effects is useful when in discussion with other health care professionals.

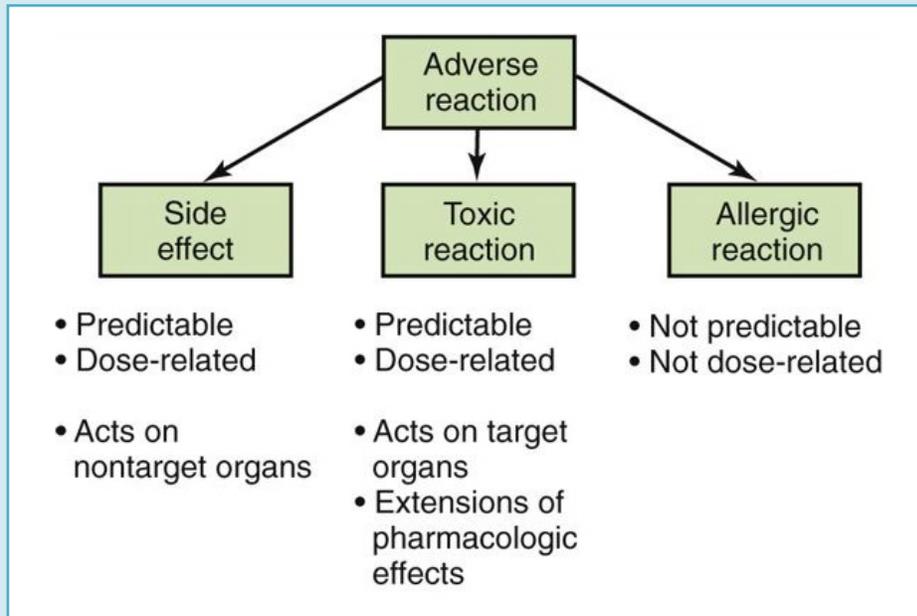
The following definitions and examples are as described by Haveles (2011):

- ✓ *Toxic reaction: A toxic reaction is an extension of the pharmacologic effect resulting from a drug's effect on the target organs. In this instance, the amount of the desired effect is excessive.*
- ✓ *Side effect: A side effect is a dose-related reaction that is not part of the desired therapeutic outcome. It occurs when a drug acts on nontarget organs to produce undesirable effects. The terms side effect and adverse reaction often are used interchangeably. The upset stomach produced by ibuprofen is an adverse reaction when ibuprofen is given to manage pain.*
- ✓ *Drug allergy: A drug allergy is an immunologic response to a drug resulting in a reaction such as a rash or anaphylaxis. This response accounts for less than 5% of all adverse reactions. Unlike other adverse reactions, allergic reactions are neither predictable nor dose related.*
- ✓ *The importance of distinguishing between different types of adverse effects can be seen using aspirin as an example. Aspirin can produce adverse reactions such as gastric upset or pain. At higher doses, aspirin can predictably produce toxicity such as tinnitus and hyperthermia (elevated temperature). Another type of reaction to aspirin is allergic, often involving a rash or difficulty in breathing (asthma-like reaction). Clients who experience allergic reactions to a medication should not receive that medication or similar medications. Side effects such as gastrointestinal upset, although bothersome, are not reasons to avoid prescribing a medication. It can be given. However, if the gastrointestinal upset is too much for the client, another drug should be considered. It is important to describe in the client's chart the client's "problem" in enough detail so that side effects can be separated from allergic reactions.*

...cont'd on next page



Section 3.3 (cont'd)



**Source:** Bablenis Haveles, E. (2016). *Applied Pharmacology for the Dental Hygienist* (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Chapter 2.

In some cases, a second drug may be given to help manage side effects from a drug that is critically needed to manage a condition.

**Clinical manifestations of adverse reactions**

A risk-to-benefit assessment should be completed prior to prescribing or using a drug in practice. The potential for adverse reactions must be considered along with the potential beneficial effects. If the risks outweigh the benefits, an alternative should be considered.

Adverse reactions can take one or more of the following forms:

- ✓ **Exaggerated effect on target tissues** – this type of reaction can occur in a sensitive client or from using a dose that is too large and is an extension of the therapeutic effect of the drug. For example, this reaction could be caused by interference with the drug transport mechanism due to liver or kidney disease that prevents or interferes with metabolism or excretion resulting in prolonged drug action.
- ✓ **Effect on nontarget tissues** – this type of reaction is typically caused by a nontherapeutic action of the drug and can affect many parts of the body. For example, at normal doses, aspirin may cause gastric upset but at higher doses, tinnitus, disturbances in the acid-base balance of the body and confusion can result.

*...cont'd on next page*

### Section 3.3 (cont'd)

- ✓ **Local effect** – local reactions are characterized by local tissue irritation. For example, injectable drugs can produce redness, irritation, pain and/or necrosis at the injection site.
- ✓ **Drug interactions** – these occur when the effect of one drug is altered by another drug. You will learn more about these interactions in Unit 5.
- ✓ **Idiosyncratic reactions** – these are reactions that are neither side effects nor allergic reactions and may be genetically related or result from immunologic mechanisms.
- ✓ **Interference with natural defense mechanisms** – adverse reactions may occur due to the body's decreased resistance caused by use of a drug. An example is the development of a *Candida albicans* infection following the use of antibiotics to treat an infection.



### Practice tip

1. Know the difference between a side effect, toxic effect and allergic reaction.
2. Always ask the client to explain what happened if they have stated that they had an allergic reaction to a medication.
3. Remember that an allergic reaction to a medication usually means that the client should not receive that medication or any other medication in the same chemical class.
4. Side effects, although bothersome, usually do not prevent the client from taking the medication. The medication may have to be given with food or milk or taken at bedtime. If they cannot tolerate the side effect, then switch the client to another drug.
5. Make sure that the client understands how to take the medication in order to avoid toxic reactions.
6. Always explain what adverse effects the client can experience and what they should do if they experience them.
7. Always ask female clients from puberty to menopause if there is a possibility that they may be pregnant. This is to avoid exposing the developing fetus to medications.

**Source:** Bablenis Haveles, E. (2016). [\*Applied Pharmacology for the Dental Hygienist\*](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Chapter 2.





### Website search

The goal of this website search is to introduce you to a tool where you can research and report on adverse reactions or side effects to health products including prescription and non-prescription medication and natural health products.

Review the [MedEffect™ Canada](#) website and the [Canada Vigilance Side Effect Reporting Form](#).



### Practice tip

You can subscribe to MedEffects™ e-notices to receive email to help you stay informed about advisories and recalls.



### Activity 3.2 Reporting adverse drug reactions

In your self-build study guide, complete the [Canada Vigilance Side Effect Reporting Form](#) for the following client:

**Client:** Male, 48 years old, 85 kg, 6'1", Chart ID # 123456

**Health History:** Allergy to sulfa drugs, no medical conditions or disorders

**Reaction:** Client given 1.23% APF fluoride treatment in Foamy brand trays. Client developed a rash and swelling in the lip area immediately after tray was inserted. Trays removed and client rinsed with water and expectorated remaining fluoride. No change in vital signs from assessment 30 minutes earlier. Client back to normal in 10 minutes. Vital signs normal. EMS **not** activated.

## **Section 3.4 Special considerations for subgroups of the population**

### **Pregnancy**

Dental hygiene treatment of the pregnant woman is always of particular importance as there is often the need for additional treatment during their pregnancies. Treatment must always be carefully planned and special consideration must be given before any drug is prescribed, dispensed or used. If a drug is to be administered, a risk-to-benefit assessment must be made. A comprehensive health history must include inquiring as to whether a woman might be pregnant. If a pregnancy is confirmed, close collaboration with her obstetric health care provider is critical, particularly when questions about the use of drugs related to her treatment arise. Drugs that can potentially affect the pregnancy should be avoided as early as possible.

Two main concerns must be addressed when considering whether to give a drug to a pregnant woman, as many drugs may be teratogenic, meaning that they can have an effect on fetal development. The second concern is that the drug can affect the near-term fetus, resulting in an adverse reaction at birth, such as respiratory depression or jaundice. Drugs should only ever be administered during pregnancy if there is a clear need and there is no alternative.

In order to address concerns about the knowledge of drugs as they relate to pregnancy, product monographs provide guidance about the potential for a systemically absorbed drug to cause birth defects. You will have the chance to explore this in the website search below.

### **Breastfeeding**

Similar to considerations during pregnancy, the risk-to-benefit ratio must be carefully considered before drugs are given to the nursing mother. Drugs have the potential to pass into breast milk in varying concentrations resulting in possible effects to the infant. The amount of drug that will actually enter the milk is dependent on factors such as the plasma concentration of the drug, lipid solubility, degree of ionization, and binding to plasma proteins.

In cases where drugs must be given, consult with the appropriate health care professional for advice. Generally, breast-feeding should be discontinued and the milk expressed and discarded until the drug is discontinued. For drugs that are not contraindicated, the timing of nursing can further reduce the dose to which an infant is exposed.





### Practice tip

- ✓ Avoid elective dental treatment except in the second trimester.
- ✓ Avoid any unnecessary drugs, especially during the first trimester.
- ✓ If drugs are needed, check the FDA categories to choose the safest.
- ✓ Minimize periodontal problems; monitor for periodontal conditions.
- ✓ Avoid radiographs unless absolutely necessary; use lead apron.
- ✓ Pay particular attention to periodontal disease because it has been associated with low-birth-weight newborns.
- ✓ Position client in recumbent position in last trimester with right hip elevated (not Trendelenburg).
- ✓ If morning sickness is a problem, schedule an afternoon appointment.
- ✓ Give frequent breaks for urination, especially during the first trimester.



### Website search

The goal for this website search is to become familiar with resources available to assist in decisions related to the care of pregnant or breastfeeding clients.

[Review Pregnancy Risk Information](#)



### Did you know?

Some drugs may be safe during pregnancy but not during breastfeeding while others may be safe during breastfeeding and not during pregnancy.

### Activity 3.3 Determining pregnancy risk

In the table in your self-build study guide and using all available resources, record a summary of the pregnancy risk and/or whether the following drugs are safe for use during pregnancy and/or breastfeeding:

- ✓ ASA
- ✓ Diazepam
- ✓ Benadryl®
- ✓ Hydrochlorothiazide
- ✓ Flu vaccine
- ✓ Marijuana
- ✓ Metformin
- ✓ Coumadin®



### Did you know?

You can find advisories, warnings or recalls about drugs on the MedEffect™ website.



### Children

Special considerations are required when using drugs to treat children, primarily due to the immaturity of the organs and their ability to metabolize the drugs.

Absorption may be reduced due to a reduction in many of the GI functions including gastric acid secretion, bile salt formation, gastric emptying time, intestinal motility, bowel length, absorptive surface availability and composition of microbial flora. The absorption of injected drugs may also be affected due to variability in muscle mass or illness and particular attention must be paid when performing intramuscular injections due to the potential for pain and risk of tissue damage. Transdermal absorption may be enhanced due to a greater ratio of surface area to weight and transrectal drug therapy is generally appropriate only for emergencies.

The volume of distribution of drugs also differs in children depending upon their body composition at different ages. Because younger children have a higher percentage of body weight as water, higher doses of some drugs (e.g. water-soluble drugs) may be necessary.

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### **Children (cont'd)**



An immature liver is responsible for a decreased production of proteins. When using drugs that bind to proteins, the result may be increased drug concentrations with the potential for higher frequency of adverse reactions. Maturation of liver enzymes is also delayed, which may result in increased metabolism and the need for higher doses. Drugs are eliminated primarily due to the action of the liver or kidneys. In young clients, the immaturity of these organs means that they are not yet working at optimal levels and drug dosages may need to be adjusted.

Determining the correct dosage for children is a function of age, weight or both; however, due to the wide variations possible and maturational differences, dose adjustments must be carefully determined. Due to research in recent years, many drugs now have pediatric dosing information listed. Most drug reference manuals will contain children's drug dosages when they are available.

If you are considering using drugs in the care plan of a child, awareness of the differences between children and adults is critical to providing safe care, and consultation may be necessary.

### **Activity 3.4 Dosage differences for children and adults**



In your self-build study guide, complete the chart for the listed drugs indicating the adult dosage and child dosage and the route of administration for the drug.

### **Seniors**



Drug-related problems are common in the elderly. Drug ineffectiveness is often seen due to under prescribing or poor adherence. Many factors can contribute to these problems but often they result from an increased concern about adverse reactions on the part of the clinician or because of financial or cognitive limitations of the client.

Adverse reactions are particularly significant in this population due to specific characteristics that may make them more susceptible. Some seniors take a large number of drugs (polypharmacy) due to chronic disorders or conditions. There are also numerous changes due to aging in the way drugs are handled by the body that may contribute to a higher incidence of adverse reactions. In particular, all stages of the mechanism of drug transport may be altered.

The importance of taking a comprehensive health history and collaborating with other health care professionals involved in the client's care cannot be overemphasized.



**Did you know?**

Drugs taken together may have a synergistic effect (effect is greater than the sum of the two drugs taken individually).



**Website search**

The goal of this website search is to provide information about drugs taken by senior clients and steps to ensure safe treatment.

Review the following articles: [Polypharmacy: A Global Risk Factor for Elderly People](#) and review the following website regarding [Drug Therapy in the Elderly](#) and [Drug-Related Problems in the Elderly](#).



**Did you know?**

The most common side effect experienced when using nitroglycerin is a severe headache.



**Activity 3.5 Preventable causes of drug-related problems**

In your self-build study guide, match the definition to the proper category.

# Drugs in Dental Hygiene Practice: A Refresher Course



## Unit 4

## Unit 4 — Drugs Used In and Affecting Dental Hygiene Care



- Section 4.1 Classification of drugs and drug scheduling
- Section 4.2 Drugs prescribed by dental hygienists
- Section 4.3 Drugs used during dental hygiene appointments
  - a. Antibiotics in dental hygiene
    - i. Subgingival (Atridox®, Arestin®)
    - ii. Prophylactic
  - b. Use of fluoride in dental hygiene
  - c. The use of anaesthetics in dental hygiene
    - i. Topical
    - ii. Local
    - iii. Conscious sedation – oral or nitrous oxide/oxygen (Referral required)
- Section 4.4 Over-the-counter (OTC) drugs and nutritional or herbal supplements
- Section 4.5 Drugs used during medical emergencies

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## **Learning outcomes**

Upon the completion of this unit, the dental hygienist will be able to:

- ✓ Differentiate between the four categories of drugs in the federal drug schedules and demonstrate how to locate information on all categories.
- ✓ Discuss the difference between a generic and a brand name.
- ✓ Locate resources for obtaining information on over-the-counter and prescription drugs.
- ✓ Describe the legislation related to drugs in dental hygiene practice including recommending, prescribing, using, and dispensing.
- ✓ Demonstrate how to create a drug summary for any drug related to your practice or for any new or unfamiliar agents pertinent to managing a client's care using current, reliable sources.
- ✓ Research and describe the types of drugs used in practice in conjunction with dental hygiene treatment.
- ✓ Discuss the importance of collaboration with other health care professionals when the client's drug history may include contraindications to dental hygiene care.
- ✓ Describe appropriate chemotherapeutic strategies to prevent and manage caries.
- ✓ Describe appropriate therapeutic strategies to provide effective pain management for the client including the use of topical, local, and conscious sedation and the responsibilities of dental hygienists related to their use.
- ✓ Discuss drugs that may be used during office emergencies and potential emergencies that can occur as a result of a drug reaction or interaction.



### **Section 4.1 Classification of drugs and drug scheduling**

A drug schedule is a method of classification that places drugs in certain categories according to various characteristics. Ontario adopts the National Drug Scheduling System model developed by the National Association of Pharmacy Regulatory Authorities (NAPRA) as the provincial model ("scheduling by reference"). The schedules below describe the three schedules or four categories of drugs that Ontario uses.

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## **Section 4.1 (cont'd)**

**Schedule 1 Drugs:** These drugs require a prescription. In Ontario, chlorhexidine gluconate is the only schedule 1 drug that dental hygienists are able to prescribe, dispense or sell. However, dental hygienists may buy and use other schedule 1 drugs while providing therapeutic services to clients. For example, minocycline hydrochloride (Arestin®), and doxycycline hyclate gel (Atridox®) are schedule 1 drugs typically used by dental hygienists in conjunction with scaling and root planing to treat chronic periodontitis.

**Schedule 2 Drugs:** These drugs do not require a prescription. However, they do require professional intervention with an appropriately qualified health care professional. These items must be sold from an area where the public cannot access them and there is no opportunity for client self-selection. An example of a schedule 2 drug that is purchased in dental hygiene practice is nitroglycerin (typically found in the medical emergency kit).

**Schedule 3 Drugs:** These drugs are suitable for client self-selection, but may pose risks for certain groups of people and should be sold where an appropriately qualified health care professional is available to provide advice when required. For example, fluorides used for the prevention of dental caries, contain 1 mg or less of the fluoride ion per dosage unit and therefore do not require a prescription, but clients can only buy them from pharmacies.

**Unscheduled Drugs:** These drugs can be sold without professional intervention. The labelling of these drugs is considered to be sufficient enough to ensure that the client will make a safe and effective choice and will use the drug according to its directions. These drugs are not included in schedules 1, 2 or 3 and may be sold from any retail outlet. Examples of unscheduled drugs recommended by dental hygienists are acetaminophen, ibuprofen, and aspirin.

### **Generic vs. brand name of drugs**

Every drug has an approved name called the generic name. The same drug may be manufactured by different companies and be offered for use under different brand or trade names. For example, chlorhexidine gluconate (the generic name) is sold in Canada as Peridex®. When using your drug references, keep in mind that drugs may be listed only under their generic name. Most references will have a section where you can look up the brand name of a drug to find the generic name.



## Website search

The goal of this website search is to allow you to get familiar with important websites that will be invaluable to you when researching drugs in your practice and for the completion of this unit.

✓ **Health Canada's Drugs and Health Products**

<http://hc-sc.gc.ca/dhp-mps/index-eng.php>

This site provides up-to-date information on current developments and issues pertaining to prescription and non-prescription drugs as well as natural health products in Canada.

✓ **Health Canada's Drug Product Database (DPD)**

<http://hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/index-eng.php>

The DPD contains product-specific information on drugs approved for use in Canada. The database is managed by Health Canada and includes human pharmaceutical and biological drugs, veterinary drugs and disinfectant products. It contains approximately 15,000 products which companies have notified Health Canada as being marketed. Information regarding if a drug has been discontinued can be found here. A product's Drug Identification Number (DIN) can also be found here.

✓ **Health Canada's Licensed Natural Health Products Database (LNHPD)**

<http://hc-sc.gc.ca/dhp-mps/prodnatur/applications/licen-prod/lnhpd-bdpsnh-eng.php>

The LNHPD contains information about natural health products that have been issued a product licence by Health Canada. Products with a licence have been assessed by Health Canada and found to be safe, effective and of high quality under their recommended conditions of use. Licensed natural health products can be recognized by looking for the eight-digit Natural Product Number (NPN) or Homeopathic Medicine Number (DIN-HM) on the label.



### Activity 4.1 Using drug databases

Look up the following drugs, supplements and natural remedies in the three resources from your previous website search and complete the information in the table in your self-build study guide:



- ✓ St. John's wort
- ✓ Advil®
- ✓ Warfarin
- ✓ Peridex®
- ✓ Methotrexate
- ✓ Echinacea
- ✓ Pilocarpine
- ✓ Lipitor®
- ✓ Plavix®
- ✓ Salbutamol

### Required reading

The goals of the readings are to:

- ✓ Refresh your knowledge of the link between pharmacology and oral health.
- ✓ Familiarize yourself with the naming of drugs (generic and brand).



Bablenis Haveles, E. (2016). [\*Applied Pharmacology for the Dental Hygienist\*](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Pages 2–9.

OR

Pickett, R. A. & Terezhalmay, G. T. (2010). [\*Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications\*](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins. Chapter 1.

### Section 4.2 Drugs prescribed by dental hygienists



Once the Drug Regulation has passed, dental hygienists in Ontario may prescribe upon successful completion of the CDHO **Drugs in Dental Hygiene Practice Examination**. Prescriptions may be written for drugs listed in Schedule 1 (note that this is different than the NAPRA scheduling) of the Designated Drugs Regulation; at the present time, dental hygienists have the ability to prescribe chlorhexidine and its salts.



### Website search

The goal of this website search is to allow you to familiarize yourself and understand the contents of the [Designated Drugs Regulation](#) and the Guideline [Recommending, Prescribing, Dispensing, Selling and Using Drugs in Practice](#).



It is important to understand the section of Schedule 1 of the above regulation which states the following:

*“Fluoride and its salts, except that the following are not to be considered drugs:*

- A. Sodium fluoride in dentifrices in concentrations of not more than 0.25 per cent; and*
- B. Stannous fluoride in dentifrices in concentrations of not more than 0.4 per cent.*

In simple terms the two compounds referred to above, toothpastes with 0.25% sodium fluoride or less and toothpastes with 0.4% stannous fluoride or less are not considered drugs and therefore do not fall under the provincial legislation. This means that they are equivalent to an unscheduled drug and can be recommended, used, dispensed or sold by anyone without restriction. For dental hygienists, the rules that apply to other fluorides and chlorhexidine do not apply to the two toothpastes listed above.

On the other hand, the types of fluoride typically used in dental hygiene practice fall under the legislation. Although a prescription is not necessary, full consideration must be given to all sections of the legislation including dispensing and selling.



### Activity 4.2 Designated Drugs Regulation

In your own words, describe the relevance of this legislation to dental hygienists. What drugs does this legislation apply to?



Below you will find a full drug profile for Chlorhexidine Gluconate 0.12%. As a prescriber, you should be aware of the meaning and significance of all properties for all drugs you prescribe, use in practice as well as for those over-the-counter (OTC) drugs used by your clients. You should also be aware of reliable sources you can use to look up this information. Information must **always** be obtained from a current, reliable and trusted source.

<b>DRUG SUMMARY:</b> <b>Generic: Chlorhexidine Gluconate 0.12%</b> (Brand names: Peridex® Oral Rinse, Oro-cleanse®, Hibidil® 1:2000)	
Indications	Antibacterial dental rinse, active against Gram-positive and Gram-negative organisms, facultative anaerobes, aerobes and yeast.
Contraindications and cautions	Hypersensitivity to any component of the formulation. No precautions needed re: local anesthetic or vasoconstrictors. No precautions re: effects on bleeding.
Mechanism of action	Binds to cell walls and alters bacterial cell osmotic equilibrium and leakage of potassium and phosphorous resulting in a bacteriostatic effect. At high concentrations of chlorhexidine, cytoplasmic contents of the bacterial cell will precipitate and result in cell death.
Time to peak	30% of active ingredient retained in oral cavity after rinsing.
Metabolism	Unknown; poorly absorbed from GI tract.
Excretion	Primarily excreted in feces.
Half-life elimination	Unknown; detectable levels not present after 12 hours.
Drug scheduling	Schedule 1.
Adverse or side effects including systemic and oral	Increase in calculus. Changes in taste. Staining of oral surfaces (mucosa, teeth, tongue).
Pregnancy risk	Unknown
Drug interactions	No known interactions.



### Practice tip

It is important to keep a current source of drug information handy to fully research unfamiliar drugs reported in your client's medical history to ensure there are no contraindications to treatment.



### Did you know?

Substantivity is the ability of a substance to bind and be released over a period of time aiding in its efficacy. Chlorhexidine has a high substantivity making it ideal for controlling plaque and gingivitis.



### Activity 4.3 Using current sources for drug information

Look in your CPS or eCPS, drug information handbook/reference and textbooks to find listings for chlorhexidine. A single source may not have all of the information recorded in the table above. Complete the table in your self-build study guide indicating the source(s) you used to find the information about each property.



### Section 4.3 Drugs used during dental hygiene appointments

Dental hygienists are legally able to purchase and use any drug that may be used providing treatment that is within their scope of practice. The ability to do so is conferred by the *Drug and Pharmacies Regulation Act*. Note specifically Section 118 (3) which states “*Nothing in this Act prevents any person from selling, to a member of the College of Chiropodists of Ontario, the College of Dental Hygienists of Ontario, the College of Midwives of Ontario or the College of Optometrists of Ontario, a drug that the member may use in the course of engaging in the practice of his or her profession.*”



### Website search

The goal of this website search is to familiarize yourself with the legislation that permits you to use and buy drugs for in-office use.

[Drug and Pharmacies Regulation Act](#)



#### Activity 4.4 Legislation related to dental hygienists

In your self-build study guide, describe the relevance of the [Drug and Pharmacies Regulation Act](#) to dental hygienists. What drugs does this legislation apply to?



#### Required readings

The goal of the readings is to:

- ✓ Refresh your knowledge of the drugs used to treat periodontal conditions.

Darby, M.L. & Walsh, M. (2015). [Dental Hygiene Theory and Practice](#) (5<sup>th</sup> ed.). St-Louis, Missouri: Saunders Elsevier. Chapter 31: Chemotherapy for the Control of Periodontal Disease.

OR

Wilkins, E.M. (2016). [Clinical Practice of the Dental Hygienist](#) (12<sup>th</sup> ed.). Philadelphia, Pennsylvania: Lippincott, Williams & Wilkins. Chapter 41: Nonsurgical Periodontal Therapy: Supplemental Care Procedures.



#### a. Antibiotics in dental hygiene

##### i. Subgingival (Atridox<sup>®</sup>, Arestin<sup>®</sup>)

Dental hygienists may use controlled local delivery of antibiotics into the gingival sulcus in conjunction with the debridement of pockets. Local delivery means that these drugs are delivered to and concentrated at the site of infection. Drugs such as minocycline HCL (Arestin<sup>®</sup>) or doxycycline hyclate (Atridox<sup>®</sup>) are currently available for this purpose. Improvements in probing depths, clinical attachment levels, bleeding on probing and reduction of sites with periodontal pathogenic microorganisms may be seen following treatment. Dental hygienists considering the use of these drugs should research their application thoroughly by using current sources of information such as peer-reviewed journals, current textbooks, a drug information handbook or reference and the CPS.

##### ii. Prophylactic

Dental hygienists also frequently see clients who have been prescribed prophylactic antibiotics by another health care professional. This may be due to a joint replacement or various other medical conditions. Dental hygienists must be very aware of the contraindications to treatment as discussed in Unit 2. They must also ensure that prescribed systemic antibiotics have been taken as directed prior to delivering treatment to a client. Additionally, they are required to accurately record the details of any medications taken by the client as a precondition to treatment in the client record.



### Did you know?

A client taking an antibiotic for an infection who normally requires prophylactic antibiotics may need a 2<sup>nd</sup> antibiotic from another family to achieve prophylaxis. The medical professional who knows the most about the condition should be consulted.



### Activity 4.5 Drug summaries for antibiotics

In your self-build study guide, complete a drug summary using current resources for all local and systemic antibiotics you typically encounter in your dental hygiene practice.



### Required readings

The goals of the readings are to:

- ✓ Refresh your knowledge of the types of fluoride.
- ✓ Refresh your knowledge on the modes of delivery of fluoride.
- ✓ Refresh your knowledge of how fluoride is used in caries prevention and management.
- ✓ Review information about fluoride toxicity.

Darby, M.L. & Walsh, M. (2015). [\*Dental Hygiene Theory and Practice\*](#) (5<sup>th</sup> ed.). St-Louis, Missouri: Saunders Elsevier. Chapter 18: Dental Caries Management by Risk Assessment, pages 303–307 and Chapter 33: Caries management: Fluoride and Non-fluoride Caries-Preventive Agents.

OR

Wilkins, E.M. (2016). [\*Clinical Practice of the Dental Hygienist\*](#) (12<sup>th</sup> ed.). Philadelphia, Pennsylvania: Lippincott, Williams & Wilkins. Chapter 36: Fluorides.



### Did you know?

Fluoride supplements should not be taken with milk.

**b. Use of fluoride in dental hygiene**

Fluoride has been used in dental hygiene practices for many years and is recognized as being the most effective method for dental caries prevention and control as well as contributing to optimum oral health. Fluoride is delivered to the tooth surface by two means:

- ✓ Systemically, meaning that it reaches the tooth surfaces by way of the circulation.
- ✓ Topically, meaning that it comes in direct contact with the exposed surfaces of erupted teeth.



While the beneficial effects of fluoride are attributed primarily to its topical effect after the teeth have erupted into the oral cavity, current evidence shows that the maximum caries inhibiting effect occurs with systemic exposure both before eruption and through frequent exposure throughout life. When delivered at the correct concentrations, fluoride delivered to the plaque biofilm and the tooth surface can have a significant preventive and reparative effect in the development of caries.

A full assessment of a client's caries risk must be completed prior to a decision to incorporate fluoride therapy, either topical or systemic, into a client's treatment plan. Regardless of the type of fluoride you may be recommending, educating clients about the caries process is an essential component in helping to reduce the risk of caries.

**Did you know?**

Fluoride supplements should not be given to children whose drinking water has a fluoride concentration above 0.6 ppm due to the risk of fluorosis or bone changes.



---

Absorbed fluoride is retained in calcified tissues such as bones and teeth and most fluoride is excreted in urine.

**Website search**

The goal of this website search is to review current evidence and recommendations about the use of fluoride in caries prevention.

<https://www.cdha.ca/pdfs/Profession/Resources/ProbeFluoride.pdf>

Review the Canadian Dental Hygienists Association paper [The Fluoride Dialogue: CDHA Position Statements](#) and the Canadian Dental Association paper titled [The Use of Fluorides in Caries Prevention](#). Take particular note of the recommendations regarding fluoride supplements.





### Did you know?

Fluoride supplements should not be given to children living in fluoridated communities.

---

Posterior teeth receive the most benefit from fluoride due to the increased number of pits and fissures and surface area.



### Activity 4.6 Fluoride toxicity

In your self-build study guide, describe the dangers associated with acute and chronic fluoride toxicity. Include reference to the safely tolerated dose (STD) and certainly lethal dose (CLD).



### Did you know?

The most common symptom of fluoride toxicity is gastrointestinal distress.



### Required readings

The goals of the readings are to:

- ✓ Refresh your knowledge of the types of anaesthetics.
- ✓ Refresh your knowledge on the modes of delivery of anaesthetics.
- ✓ Recognize the importance of pain control before, during and after dental hygiene treatment.
- ✓ Refresh your knowledge on the indications and contraindications for various forms of anaesthesia.

Darby, M.L. & Walsh, M. (2015). [\*Dental Hygiene Theory and Practice\*](#) (5<sup>th</sup> ed.). St-Louis, Missouri: Saunders Elsevier. Chapter 40: Local Anesthesia.

OR

Wilkins, E.M. (2016). [\*Clinical Practice of the Dental Hygienist\*](#) (12<sup>th</sup> ed.). Philadelphia, Pennsylvania: Lippincott, Williams & Wilkins. Chapter 38: Anxiety and Pain Control.

**c. The use of anaesthetics in dental hygiene**

Pain control plays an important role in dental hygiene. Many clients book dental appointments when they are in pain. This is typically not the case with dental hygiene appointments. However, there is a public perception that dental hygiene visits can be painful and this may contribute to the avoidance of dental hygiene care. With this in mind, dental hygienists should discuss pain management options with their clients. Determining the need for pain control starts with a thorough understanding of the client's knowledge of, and sensitivity to, dental hygiene interventions.

There are various methods which a dental hygienist can recommend to control client pain. Some may require a referral to an appropriately trained health professional. Others may be administered by the dental hygienist. These include:

i. Topical

Administration of topical anaesthetics including those delivered subgingivally (Oraqix®).

ii. Local

Administration of local anaesthesia (Delegation required).

iii. Conscious sedation – oral or nitrous oxide/oxygen (Referral required)

Dental hygienists working on clients who are under nitrous oxide/oxygen sedation need to follow the CDHO guideline found below. A link to the RCDSO guideline for dentists is also available below and has a good description of the levels of sedation.

In all examples noted above, the dental hygienist should collaborate with the client and other health professionals to determine the pain relief method that is most appropriate while still allowing all needed services to be completed.

It is important to note that manufacturers' directions and dosages must be closely followed when applying topical anaesthetic. Possible interactions between topical anaesthetics and other drugs taken by clients must also be investigated prior to use.





### **Website search**

The goal of this website search is to review:

- ✓ Levels of conscious sedation.
- ✓ CDHO requirements for level of supervision needed for nitrous oxide/oxygen sedation.
- ✓ RCDSO requirements for dentists using nitrous oxide/oxygen sedation.

[CDHO Guideline on the Use of Nitrous Oxide and Oxygen Conscious Sedation](#)

[RCDSO Guideline on the Use of Sedation](#) Page 7



### **Activity 4.7 Drug summaries for anaesthetics**

In your self-build study guide, complete a drug summary using current resources for all anaesthetics you typically use in your dental hygiene practice.



### **Section 4.4 Over-the-counter (OTC) drugs and nutritional or herbal supplements**

The use of non-prescription medications and/or supplements is significant to dental hygiene practice. Clients will sometimes not disclose these medications as they do not consider them to be drugs. Educating your client about the fact that OTC drugs and nutritional or herbal remedies can have an effect on their dental hygiene treatment or may influence drugs that are recommended. For example, Ginkgo biloba (an herbal remedy) may have an effect on bleeding or might make bleeding disorders worse. It could also potentially interact with other medications that affect bleeding (i.e. aspirin, warfarin) and/or contribute to adverse events.

Dental hygienists may also be in the position to make recommendations or to give samples of drugs to clients to help with an oral condition. In order to make intelligent selections and recommendations, the dental hygienist must ensure that the right drug is recommended for the right condition by taking all available data into consideration. This does not include recommending drugs for off-label use or unapproved indications.



### **Did you know?**

It is recommended that you keep the phone number for the Ontario Poison Centre posted beside all phones in your office.



### Activity 4.8 Drug summaries for OTC drugs

In your self-build study guide, complete a drug summary using current resources for the following OTC drugs or supplements that may be commonly taken by clients in your dental hygiene practice:

- ✓ Ibuprofen
- ✓ Oil of oregano
- ✓ Vitamin C
- ✓ Glucosamine
- ✓ Echinacea



### Section 4.5 Drugs used during medical emergencies

It is a standard of practice for dental hygienists to be able to ensure the provision of aid in medical emergency situations. Further, it is expected that they ensure that emergency medical equipment, supplies and drugs are current, stored according to manufacturers' directions and readily accessible for use in a medical emergency.

Dental hygienists can administer drugs orally, by injection or by inhalation even though it is not within their scope of practice, in accordance with the *Regulated Health Professions Act, 1991*, in emergency situations only. Dental hygienists have a professional obligation to ensure the safety of clients in their care and this obligation is not dependent on the presence of another health professional within the facility in which the dental hygienist practises. In other words, if an employer does not have an emergency protocol, an up-to-date emergency kit or a source of oxygen, it is the responsibility of the dental hygienist to ensure that all are present or available for clients in her/his care.

The same standards of care for clinical services exist in private practice, in public health and educational facilities. At a minimum, the essential emergency drugs include epinephrine, diphenhydramine, salbutamol, nitroglycerin, and ASA tablets.



### Did you know?

Aspirin is included in emergency kits as it is the emergency treatment of choice for acute myocardial infarction.

---

There are pediatric and adult pre-filled EpiPen® for use in emergency kits. This eliminates the need for dosage to be calculated for children in emergency situations.

### Required readings

The goals of the readings are to:

- ✓ Refresh your knowledge of the types of emergencies that may be encountered in dental hygiene practice.
- ✓ Identify clients who may be at increased risk for a medical emergency.
- ✓ Prepare yourself to respond appropriately during an emergency situation.

Malamed, S.F. (2015). [\*Medical Emergencies in the Dental Office\*](#) (7<sup>th</sup> ed.). St-Louis, Missouri: Mosby Elsevier. Chapters 1–3.



### Did you know?

Anyone can deliver oxygen to a client during an emergency under the authority of the *RHPA, 1991*.



### Website search

The goal of the website search is to further investigate emergency and supplemental drugs that may be found in an office emergency kit.

Review the following articles:

[Preparing for Medical Emergencies: The Essential Drugs and Equipment for the Dental Office](#)

AND

[Management of Medical Emergencies in the Dental Office: Conditions in Each Country, the Extent of Treatment by the Dentist](#)



### Practice tip

A regular schedule should be followed to ensure all drugs in your kit are current. Some dental supply companies will provide a service where emergency drugs are sent automatically when they are due to expire.





### **Activity 4.9 Drug summaries for emergency drugs**

In your self-build study guide, complete a drug summary using current resources for all drugs in your emergency kit.



### **Did you know?**

Once opened, a vial of nitroglycerin tablets should be replaced as the remaining pills have been exposed to light and air and will begin to degrade.

# Drugs in Dental Hygiene Practice: A Refresher Course



## Unit 5

## Unit 5 — Issuing Prescriptions and Dispensing Drugs



- Section 5.1 Principles of prescribing
  - a. Requirements for providing accurate and legal prescriptions
  - b. Sample prescriptions
  - c. Risk management strategies and methods for preventing and reducing medication errors
- Section 5.2 Principles of dispensing
  - a. Storage requirements for prescription and non-prescription drugs
  - b. Disposal requirements for prescription and non-prescription drugs
  - c. Labelling requirements for in-office and home use
- Section 5.3 Drug interactions

*...cont'd on next page*

## Learning outcomes

Upon the completion of this unit, the dental hygienist will be able to:

- ✓ Describe the information required in a legal, accurate drug prescription and describe the purpose of each component.
- ✓ Describe the basic abbreviations often used in writing prescriptions and strategies aimed at preventing medication risks/errors and minimizing the occurrence of adverse events and critical incidents in practice.
- ✓ Incorporate the CDHO Standards of Practice, Drug Regulation, and/or federal legislation relevant to prescribing, dispensing, selling and compounding into dental hygiene practice.
- ✓ Describe the storage requirements for prescription and non-prescription drugs kept in your practice (both for use during treatment and for dispensing to clients).
- ✓ Describe the labelling requirements for prescription and non-prescription drugs kept in your practice (both for use during treatment and for dispensing to clients) including documentation requirements for storage and disposal.
- ✓ Incorporate the relevant CDHO Standards of Practice, provincial and federal legislation related to storage, disposal and labelling of drugs.
- ✓ Demonstrate how to research interactions between drugs, food and other health products and discuss the impact of multiple drug usage.



## Required reading

The goal of the reading is to:

- ✓ Refresh your knowledge about the parts of a prescription.
- ✓ Refresh your knowledge about abbreviations and reduction of medication errors, adverse events and critical incidents.

Read: Bablenis Haveles, E. (2016). [\*Applied Pharmacology for the Dental Hygienist\*](#) (8<sup>th</sup> ed.). Maryland Heights, Missouri: Mosby Elsevier. Pages 9–11.

OR

Pickett, R. A. & Terezhalmay, G. T. (2010). [\*Vital Source e-Book for Basic Principles of Pharmacology with Dental Hygiene Applications\*](#). Philadelphia, Pennsylvania. Lippincott, Williams & Wilkins. Pages 25–27.



## **Section 5.1 Principles of prescribing**

### **a. Requirements for providing accurate and legal prescriptions**

Dental hygienist prescribers must become familiar with the basics of prescription writing. The extra effort needed to ensure prescriptions are written clearly and correctly will ultimately not only save you time, it will also save time for the client and pharmacist and will help to reduce the incidence of and risks associated with prescription errors. It is also important that prescribers give verbal instructions to the client along with the prescription and that they be able to answer any questions the client may have regarding the drugs prescribed. These questions may include information about the following:

- ✓ The reason for taking the prescription.
- ✓ How to take the prescription (e.g. with food, at bedtime, etc.).
- ✓ How long to take the prescription.
- ✓ Any necessary precautions related to drug interactions, side effects, etc.

As discussed in Unit 2, full details of any prescription given to a client or a copy of each prescription written for the client should be kept in the client record.

Before you can legally write a prescription for a client, it is important to note that the following criteria must be met:

- ✓ You may only write a prescription for a client of record (no next-door neighbours or relatives, unless they are also seeing you as a client in your practice).
- ✓ The condition for which the drug is being prescribed must be related to the dental hygiene scope of practice.
- ✓ A full review of the client's medical history must be completed prior to prescribing any drug.
- ✓ The most appropriate and/or effective drug to treat any condition must be considered.
- ✓ Potential interactions between drugs currently being taken and the drug you are considering recommending or prescribing must be researched and considered.

The sample prescription below is intended as a guide. Adherence to the described method of writing appropriate prescriptions will ensure that the principles of prescribing contained in CDHO Guidelines are followed. Since most prescriptions will be filled outside the dental hygiene practice, it is important that dental hygienists provide clear and appropriate instructions for the pharmacist.





**Did you know?**

There is no expiry date for prescriptions. It is at the pharmacist's professional discretion whether or not to fill an old prescription.



**Practice tip**

Some drug abusers search for offices that may provide them with prescriptions for controlled substances or prescription blanks that they can use to forge prescriptions. Consider storing blank prescription pads in a secure location to prevent them from being stolen.

b. Sample prescriptions

**Required:** The member's name, address, telephone number, title and registration number issued by the College.

**Helpful hint:** Thinking of faxing a prescription? Contact the pharmacy to ask about any additional information they require to verify the validity of the prescription.

**Required:** The name and address of the person for whom the drug is prescribed.

Symbol Rx indicates take thou.

Name of the prescribed drug (always use the proper name), followed by strength (e.g. mg) and dosage form (e.g. liquid) if appropriate. If the dental hygienist wants the client to have a specific brand, it should be included as well.

**Disp:** (Dispense). Quantity of drug to be dispensed.

**Sig.:** (Signatura). Complete directions for use including route of administration and frequency if applicable. It is also advisable to include the indication for use. "As directed" is not considered an acceptable direction for use.

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**Date:** January 1, 2015

**Name:** Ms. Paula Sommers **Gender:** Female  
**Address:** 5 Main Street, Toronto, Ontario M3L 3G5  
**Date of Birth:** March 23, 1962  
**Telephone:** 647-963-3920

**Rx**

**CHLORHEXIDINE GLUCONATE 0.12 % Oral Rinse**

**Disp:** 475 mL (1 bottle)

**Sig:** Rinse with 20 mL twice daily for 30 seconds for gingivitis. Do not swallow. Do not eat or drink for 2 to 3 hours after use. Use until all medication is gone.

**Refills:** 0

**Prescriber's Signature:** *Mary Jones R.D.H.*

**Required:** The date on which the drug is prescribed. Full date is expected.

**Suggested:** Date of birth and gender as this will aid a pharmacist in confirming a client's identity.

**Required:** The name, strength (where applicable) and quantity of the drug that is prescribed.

**Required:** The directions for use.

**Required:** The number of refills (if applicable).

**Required:** The member's signature.

c. Risk management strategies and methods for preventing and reducing medication errors



Abbreviations are used in prescription writing to save time and may also make alteration of a prescription form more difficult. Sometimes they are used to allow a practitioner to get all the required information into the space available on the prescription form. If used, abbreviations must be clearly written to avoid misinterpretation. Where possible, you should write out the prescription in full as demonstrated above to avoid the risk of medication errors and adverse reactions due to errors.



### Practice tip

Where possible, prescriptions should be written without using abbreviations.



### Website search

The goal of this website search is:

- ✓ To demonstrate abbreviations that are acceptable to use (if absolutely necessary).
- ✓ To demonstrate unacceptable abbreviations that may lead to error.

<http://stedmansonline.com/webFiles/Dict-Stedmans28/APP0708.pdf>



### Did you know?

Printing or typing prescriptions is the most effective way to reduce errors in prescription writing.



### Activity 5.1 Writing a prescription

Imagine your employer (dentist) has asked you to fill in a prescription form for your client for premedication due to a hip replacement. In your self-build study guide and using all available resources, write a prescription for antibiotic prophylaxis for Mr. Smith.

Sam Smith  
123 Toronto Rd  
Scarborough, ON A1A 1A1  
Birthdate: July 30, 1952  
Telephone: 416-555-5555  
No known allergies or contraindications to any antibiotics



### **Website search**

The goal of this website search is to demonstrate how errors can occur when writing a prescription.

Review the following article about prescription errors from the Institute for Safe Medication Practices (ISMP) Canada: [Prescription for Safety](#).



### **Required readings**

The goal of these readings is to discuss and illustrate common drug errors and strategies to prevent these in dental hygiene practice.

Read the following articles:

[\*The "Top 10" Drug Errors and How to Prevent Them\*](#)

[\*Medication Error Prevention for Healthcare Providers\*](#)



### **Activity 5.2 Risk management strategies**

In your self-build study guide, devise a policy for your practice that includes risk management strategies and methods to reduce the risk of medication errors.



### **Did you know?**

A drug discrepancy is the term used to describe an error related to a prescription that is caught before the client takes the drug.

## Section 5.2 Principles of dispensing

### a. Storage requirements for prescription and non-prescription drugs

All drugs stored in-office must be kept in accordance with the manufacturer's instructions and in consideration of local, provincial and federal requirements. The dangers of storing and disposing drugs improperly can vary from drug instability, abuse or overdose (depending on the drug) to having a negative environmental impact.

To ensure that drugs maintain their efficacy and to prevent accidental exposure or ingestion, dental hygienists should consider stability, security, and safety and should always reference drug product monographs and MSD sheets.

#### **Stability**

- ✓ Store medications in their original container.
- ✓ Avoid leaving medications in heat and sunlight for a prolonged period of time.
- ✓ Avoid bathrooms, sterilization areas and compressor rooms because heat and humidity can damage medications.
- ✓ Know which medications need to be refrigerated or kept at room temperature.
- ✓ Make sure medications kept in the refrigerator do not freeze.
- ✓ Discard outdated or expired medications.

#### **Security**

- ✓ Store all medications in the same secured location, preferably out of sight.
- ✓ Ensure that drugs labelled with client personal information are stored in a private area where the public does not have access.

#### **Safety**

- ✓ Ensure that all expired or unusable medications are marked "For Disposal" and stored in a separate area until they can be properly disposed.
- ✓ Ensure the Ontario Poison Control contact number is in an easily accessible location (e.g. posted by all phones in the office). This information can be found on the Relevant Links and Telephone Numbers section of the Guidelines [Recommending, Prescribing, Dispensing, Selling and Using Drugs in Practice](#).
- ✓ Retain toxicology information for stored drugs including protocols for overdose, accidental exposure and adverse effects.
- ✓ Ensure all office staff is aware of location of stored drugs and protocols for overdose, accidental exposure and adverse effects.
- ✓ Ensure medical emergency kit and oxygen supply is easily accessible and location is known to all office workers.

Keep in mind that in addition to listings in the CPS or drug databases, some drugs may also be considered under the Workplace Hazardous Materials Information Systems and have a Safety Data Sheet.





### Did you know?

WHMIS legislation serves two purposes regarding hazardous materials: To require the suppliers to provide health and safety information about their products and to require employers to obtain health and safety information about hazardous materials in the workplace and to pass this information on to workers. Adherence to WHMIS legislation is a Standard of Practice.



### Website search

The goal of this website search is to familiarize yourself with the provincial and federal requirements related to WHMIS.

Review the Ontario Ministry of Labour site and documents regarding [WHMIS legislation](#).



### Activity 5.3 Product monographs and Safety Data Sheet

Review the [SDS for Peridex®](#). What precautions must be taken when transporting or storing this product?



#### b. Disposal requirements for prescription and non-prescription drugs

All expired, unused drugs must be disposed of in consideration of local, provincial and federal requirements and CDHO Guidelines. All Ontario pharmacies will accept drugs turned in for disposal. By ensuring the safe disposal of unused or expired drugs in your practice, you are ensuring that they will not play a part in contributing to environmental pollution.

Most drugs have an expiry date that usually indicates the time frame that the drug will be fully effective/active and safe to use.

- ✓ Check all drug labels to see if there are specific disposal instructions.
- ✓ Drugs should never be flushed down the toilet or poured down the sink unless specifically stated on the drug's label.
- ✓ Ensure that all expired or unusable medications are marked "For Disposal" and stored in a separate area until they can be properly disposed.
- ✓ Before disposing of a drug's container, ensure that all client information (if applicable) on the label has been removed or scratched off and is no longer visible.



### Website search

The goal of this website search is to familiarize yourself with the various programs in place to ensure safe disposal of drugs.

Review Healthy Canadians information about [safe disposal of drugs, take back programs and disposal of drugs in the garbage](#).

Review information about [collecting expired and used medications](#) under the *Ontario Medications Return Program and the Ontario Sharps Collection Program*.



### c. Labelling requirements for in-office and home use

The labelling requirements in the Designated Drug Regulation require that dental hygienists ensure that the container in which a drug is dispensed to a client for use at home includes:

- ✓ A DIN (drug identification number) where applicable.
- ✓ The dental hygienist's name and designation (e.g. RDH).
- ✓ The name, address and telephone number of the place from which the drug is dispensed (e.g. clinic address and telephone number).
- ✓ The name, strength, where applicable, and, if available, its manufacturer.
- ✓ The quantity of the drug dispensed.
- ✓ The date the drug is dispensed.
- ✓ The expiry date of the drug, if applicable.
- ✓ The name of the client for whom the drug is dispensed.
- ✓ The directions for use.

Keep in mind that verbal instructions to your clients will reinforce the written information and help to prevent misuse. Consideration should also be given to possible accommodations needed by individual clients (e.g., larger print for those visually impaired).

**Required:** The dental hygienist's name and designation. The name, address and telephone number of the place from which the drug is dispensed.

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 416-123-4567

**Required:** The name of the client for whom the drug is dispensed.

**Required:** The date the drug is dispensed.

**For:** Ms. Paula Sommers

**Date:** November 15, 2014

**Required:** The name, strength, (where applicable) quantity, and manufacturer (if available).

**Required:** The directions for use.

**PERIDEX**

**CHLORHEXIDINE GLUCONATE 0.12 % Oral Rinse** 475 mL

**Directions:** Rinse with 20 mL twice daily for 30 seconds.  
 Do not swallow. Do not eat or drink for 2 to 3 hours after use.  
 Use until all medication is gone.

**If applicable:** Expiry date of the drug.

**If applicable:** DIN (drug identification number).

**Expiry Date:** December 2016

**DIN:** 02237452

If it is not practical to place the label directly onto the drug package, attach the complete label to an outer container. The inside drug package must still have another label that has the client's name, drug name, and strength. Remember, these two packages will likely get separated causing potential confusion about the drug within the container. Without that inner label, an adverse drug event may occur.



**Non-Prescription Drugs re-packaged and sold in-office:** If you are re-packaging and providing non-prescription drugs to your clients, ensure that you meet Health Canada's applicable labelling standard. The labelling standard you must meet depends on the product you are re-packaging.

**Labelling Standards for Non-Prescription Oral Care Products:** For most of the dental/oral care products you will provide to your clients, the appropriate labelling information comes directly from the manufacturer. No additional labelling will have to be incorporated before you give these products to the client provided that the manufacturer meets the labelling requirements. Health Canada develops standards that the manufacturer must meet before providing these products to the consumer of health professionals. These standards vary depending on whether the non-prescription product is categorized by Health Canada as a drug or a natural health product.



### Website search

The goal of this website search is to provide you with a site to research the latest information about labelling non-prescription drugs.

[Nonprescription Drugs: Labelling Standards](#)



### Activity 5.4 Drug labelling of over-the-counter (OTC) drugs

Complete a drug label for 4 tablets of Ibuprofen (400 mg) taken from a bottle of 100 and given to a client following a scaling appointment for pain.



### Section 5.3 Drug interactions

It is important to keep in mind that drugs recommended, prescribed, dispensed or used in your practice may have an effect or interaction with another drug, food or natural product that the client is taking, consuming or using. It is critical that dental hygienists be aware of these potential interactions.

Reference texts and handbooks will set out potential interactions with a listed drug. There are also several handy resources online that may assist in determining what, if any, interactions may occur between these different substances. Generally, these resources explain the mechanism of the interaction and the levels of significance.



### Did you know?

Drugs taken together may have an additive effect (effect is equal to the sum of the effect of each drug taken individually).



### Website search

The goal of this website review is to provide you with a tool to use in practice to easily check potential drug interactions.

Review the [Drug Interactions Checker](#) website at [www.drugs.com](http://www.drugs.com).

### **Activity 5.5    Drug interactions**

Using the interactions checker, consider the following clients and determine what considerations should be taken:

- i. When you complete Mr. Jones' medical history, you discover that he is taking warfarin and Ginkgo biloba. Are there interactions between these drugs?
- ii. You want to recommend that Mrs. Smith take regular acetaminophen for pain following her scaling appointment. Her medical history reveals that she is taking Lipitor® for high cholesterol. What concerns would you have regarding the interactions between these drugs?
- iii. You are considering taking over-the-counter Advil Cold and Sinus®. Enter this drug along with any current medications, supplements or herbal remedies that you are taking including alcoholic beverages. Are there any potential interactions of concern?

