



**National Dental Hygiene
Certification Board**

**BLUEPRINT FOR THE
NATIONAL DENTAL HYGIENE
CERTIFICATION EXAMINATION**

September 2011

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I. INTRODUCTION

In 1982, in response to a priority concern of its members, the Canadian Dental Hygienists Association (CDHA) decided to explore the possibility of a certification program for Canadian dental hygienists. The goals of the program were to create a nationally recognized standard, enhance the ability of dental hygienists to become licensed in all Canadian jurisdictions and ensure quality assurance in the provision of dental hygiene services in Canada. In 1984, the CDHA Board of Directors endorsed the concept of a single national dental hygiene standard for entry to practice. An Ad Hoc Committee began the investigation and development of an arm's length organization that would administer a national certification program and as a result, the National Dental Hygiene Certification Board (NDHCB) was established as a separate incorporated entity in 1995.

The NDHCB began the development work to create a national certification process. The services of testing professionals were contracted to assist in the development of the certification program and the resulting national written examination. In 1995, the first competency Blueprint was established and in 1996, the first National Dental Hygiene Certification Examination (Examination) was administered. Since then, the Examination has been administered a minimum of twice a year in both official languages to as many as 2,000 examinee per year across Canada.

Licensure/certification examinations have a well-defined purpose: to protect the public by ensuring that those who are certified possess sufficient knowledge and skills to perform important occupational activities safely and effectively (American Education Research Association et al., 1999). In the case of the NDHCB Examination, the purpose is to determine whether or not examinees are prepared to practice dental hygiene without risk to their clients. The registering/licensing authorities impose additional eligibility criteria (e.g., completion of an approved program of dental hygiene education, clinical examination, ...) that provide the added information required to decide on an individual's readiness to practice dental hygiene.

The primary function of the *Blueprint for the National Dental Hygiene Certification Examination* (Blueprint) is to describe how the Examination is to be developed. Specifically, this Blueprint provides explicit instructions and guidelines on how the competencies (e.g., knowledge, abilities, skills, attitudes, judgment) are to be expressed within the Examination in order for accurate decisions to be made on the examinees' competence in dental hygiene.

In order to obtain a valid Examination, the Blueprint must be based on the competencies that are currently required to practice dental hygiene safely and effectively in Canada. In 1995, a group of content experts reflecting regional representation, all dental hygiene practice roles and both official languages drafted the original list of competencies required of an entry-level dental hygienist. This list of competencies was further validated by over 100 dental hygienists and representatives of all provincial dental hygiene regulatory authorities. In 1999, this list was reviewed by the NDHCB Examination Committee (EC); a new list of competencies was produced and then validated by means of a nationwide survey of practising dental hygienists. In 2004, the EC again performed a thorough review of the list of competencies followed by focus group validation in Eastern (Nova Scotia), Central (Ontario) and Western (Alberta) regions. The focus group input was reviewed by the EC and integrated into a nationwide validation survey of practising dental hygienists, the results of which were used by the EC to produce the 2005 NDHCE Blueprint.

The competencies contained in the 2011 NDHCB Examination Blueprint are based on the *Entry to Practice Competencies and Standards for Canadian Dental Hygienists* document developed in 2010 through a collaborative project involving the Canadian Dental Hygienists Association (CDHA), the Federation of Dental Hygiene Regulatory Authorities (FDHRA), the Commission on Dental Accreditation of Canada (CDAC), the National Dental Hygiene Certification Board (NDHCB), and dental hygiene educators from across Canada.

The national entry-level competencies were reviewed by the NDHCB EC throughout 2010 in a process that included: 1) mapping them to the 2005 NDHCB competencies; 2) identifying and subdividing competencies for the purpose of discrete measurement; 3) identifying and collapsing overlapping competencies to minimize duplication in measurement; and 4) developing clarification statements to delineate the scope and intent of some of the competencies for item development purposes. This process involved multiple meetings held over the year. The competencies were then validated through an on-line survey that was distributed to all provincial Dental Hygiene Regulatory Authorities, all accredited dental hygiene programs, all provincial dental hygiene associations (with the exception of Quebec's); as well as the Canadian Dental Hygiene Association. Following the survey, the EC reviewed the results and made the final determination to the weightings of each competency, and the categorization of each one of them.

The current Blueprint therefore reflects the most current measurable requirements for competent and safe dental hygiene practice in Canada. It will continue to be updated on a regular cycle to ensure requirements for competent and safe dental hygiene practice remain current.

The Blueprint has two major components: 1) the national dental hygiene entry-level competencies to be measured and, 2) the explicit guidelines on how these competencies will be measured. The guidelines are expressed as structural and contextual variables. The Blueprint also includes a **summary chart** that summarizes the examination guidelines. In order to remain valid, the examination blueprint must continue to be based on the competencies that are currently required to practice safely and effectively in Canada.

Given that the primary purpose of the Blueprint is to guide test development activities, caution should be exercised when considering its use for other applications.

The National Dental Hygiene Certification Board (NDHCB) wishes to thank everyone who contributed to the creation of this Blueprint. In particular, thanks are extended to the National Dental Hygiene Certification Examination Committee and to everyone who participated in the validation survey.

II. TECHNICAL SPECIFICATIONS

A. COMPETENCY FRAMEWORK

This chapter, divided into two sections, presents the technical specifications that guide the development of the Examination. In the first section, issues related to the competencies are addressed. The second section describes the guidelines regarding the representation of the structural and contextual variables in the Examination.

A fundamental component of a criterion-referenced approach to testing is the comprehensive description of the content domain being measured. In the case of the Examination, the content domain of interest consists of the **competencies** of a competent practicing entry-level dental hygienist. These competencies form the basis of the Examination.

This section describes the competencies that were obtained as a result of the validation process, the way they have been grouped together, the manner in which they are to be sampled for creating versions of the Examination, and how the results will be reported to the candidates.

DEVELOPING THE NDHCB LIST OF COMPETENCIES

The 2011 NDHCB Competency profile stems from the CDHA published document named, *Entry to Practice Competencies and Standards for Canadian Dental Hygienists (Jan 2010)*. These competencies were carefully reviewed by the EC and adapted to serve the purpose of the Examination. The NDHCB Competency Profile comprises of 117 competencies classified under different domains and according to their relative order of importance.

DEFINITIONS

For the purpose of developing the NDHCB Competency profile, a number of assumptions were made and a specific definition of dental hygiene was used. Below are the definitions and the assumptions onto which the competencies are based on:

a) Definition of Dental Hygiene Practice:

Dental hygiene is a health service profession encompassing the theory and practice of preventive, therapeutic, and educational services/interventions/programs in order for clients to achieve better overall and oral health.

Dental hygiene practice is a collaborative relationship in which the dental hygienist works with the client, dental and other health care professionals and society in general to achieve and maintain optimal oral health as an integral part of well-being.

The *dental hygiene process of care* utilizes a system approach that includes the assessment and diagnosis of the clients' needs, formulation of a dental hygiene care plan, implementation of the dental hygiene services/interventions/programs outlined in the care plan and the subsequent evaluation of dental hygiene services/interventions/ programs.

The Dental Hygiene Practice Model includes six key areas. They are: clinical therapy, health promotion, education, administration, change agent, and research.

b) Definition of a Dental Hygienist:

A Dental Hygienist is a primary oral health care provider guided by the principles of social justice who specializes in services related to:

- clinical therapy;
- oral health education; and
- health promotion.

Dental Hygienists provide culturally sensitive oral health services for diverse clients throughout their life cycle. They work collaboratively with clients, guardians and other health professionals to enhance the quality of life of their clients and the public.

This definition draws attention to the legislative changes that have occurred in many jurisdictions to provide increased access to dental hygiene services for the public.

ASSUMPTIONS

An Entry-Level Dental Hygienist...

- must meet the criteria for licensure/registration within the Canadian jurisdiction in which he/she intends to practice;
- uses a dental hygiene process of care model to the delivery of safe and competent dental hygiene services;
- practises with a foundation of evidence-based knowledge and theory;
- practises collaboratively with clients, colleagues and other health care professionals;
- provides client-centered services to prevent oral disease and promote wellness;
- must be competent to practice in a variety of key responsibility areas related to dental hygiene practice (e.g. clinical, education, health promotion, administration, research, etc.); and
- is legally, ethically and professionally accountable for its practice and must be able to recognize personal limitations.

Clients of an Entry-Level Dental Hygienist:

- may be individuals or their guardians, families, groups, institutions, communities or populations;
- include all individuals across their lifespans;
- are unique and diverse in needs, demands, motivations, resources, determinants of health and definition of wellness;
- are partners or potential partners in the dental hygiene process of care;
- are consumers who expect effective dental hygiene care, but may be unable to evaluate the quality of the services provided; and
- have a right to recourse in the event of unsatisfactory dental hygiene care.

Practice Environments of an Entry-Level Dental Hygienist:

- include a variety of practice settings (e.g., general practice, community settings, teaching institutions, hospitals, etc...);
- are influenced by legislation, governments, regulatory authorities, professional associations, the public, employment philosophies and practices, research and technology;
- encompasses physical, social, economic and cultural factors that interact in predictable and unpredictable ways; and
- are dynamic.

Oral Health and Wellness Approach:

- exists on a continuum from wellness to illness;
- exists on a continuum from health to disease;
- fluctuates over time;
- is influenced by the determinants of health;
- influences and is influenced by each other; and
- is achievable.

COMPETENCY PROFILE

The NDHCB Competency Profile comprises 117 competencies under 12 different categories. The categories are as follow: responsibility, accountability, continuing competence, professional relationships, client relationships, practice management, foundational knowledge, health & safety, assessment & diagnosis, planning, implementation and evaluation. See Appendix A for the complete profile.

COMPETENCY GROUPS AND WEIGHTINGS

The survey results were used not only to validate the list of competencies but also to determine their relative importance in the Examination. Respondents to the survey were asked to classify each competency according to two parameters: degree of criticality and frequency of application of the competency in practice. Based on the ratings obtained in the survey and on the expert opinion of the Examination Committee, the competencies were placed into four groups according to their relative criticality and frequency of application (See Table 1). These groups determine the relative weights to be given to the each of the competencies in the Examination. The Examination List of Competencies (by Group) is presented in Appendix B.

TABLE 1: COMPETENCY GROUPING

	1. Very Critical	2. Less Critical
A. Higher Frequency	Group 1-A	Group 2-A
B. Lower Frequency	Group 1-B	Group 2-B

The National Dental Hygiene Certification Examination List of Competencies are grouped on the basis of the ratings obtained in the national validation survey and finalized by the Examination Committee.

COMPETENCY SAMPLING

Based on the criticality and frequency data, and with the guideline that each version of the Examination will consist of a pool of 245 items from which 180 items will be randomly selected for each examinee (see "Examination Length and Format" section), the sampling scheme presented in Table 2 was developed. The distribution of weights in this sampling scheme was selected to provide differentiation on the rating variables (criticality and frequency); and to conform with the Examination length requirement.

TABLE 2: COMPETENCY SAMPLING (N=245 items)

Group 1-A: 30 competencies	35-45% of the Examination (i.e., approximately 3.3 items per competency)
Group 1-B: 28 competencies	25-35% of the Examination (i.e., approximately 2.6 items per competency)
Group 2-A: 30 competencies	15-25% of the Examination (i.e., approximately 1.6 item per competency)
Group 2-B: 29 competencies	5-15% of the Examination (i.e., approximately 0.8 item per competency)

The above competency sampling is based on the expected values for each version of the Examination. Where random selection is indicated in the sampling scheme (i.e., Group 2-B), efforts will be made to achieve maximum coverage by selecting different competencies from across all categories, for each Examination, and for multiple versions of the Examination within the constraints of the overall NDHCE item bank and the judgment of the EC.

B. EXAMINATION DEVELOPMENT GUIDELINES

In addition to the specifications related to the competencies, other variables are considered during the development of the Examination. This section presents the guidelines for the following two types of variables:

Structural Variables: Structural variables include those characteristics that determine the general appearance and design of the Examination. They define the length of the Examination, the format/presentation of the examination items (e.g., multiple-choice format, item presentation), and special functions of examination items (e.g., to measure a competency within the cognitive domain).

Contextual Variables: Contextual variables qualify the content domain by specifying the contexts in which the examination items will be set (i.e., age and gender of the client, client culture, and health care environment).

STRUCTURAL VARIABLES

Examination Length and Format:

The Examination is a fully computer-based examination and is administered over a period of 4 hours. The Examination consists of a total of 200 multiple choice items from which 180 items are scored and count towards the candidate results and the remaining 20 items are experimental questions scored for statistical gathering purposes only and will not count towards the candidate overall results.

Item Presentation:

The multiple choice items are presented in one of two formats; case-based or independent items. Case-based items are a set of approximately five to six items associated with a brief case scenario (e.g., a description of the client's age, gender, general and oral health issues, etc,...).

The approved Examination of 245 items represents 70-80% of independent items and 20-30% of case-based items.

Cognitive Domains:

To ensure that competencies are measured at different levels of cognitive ability, each item on the Examination is classified into one of three levels: Knowledge/Comprehension; Application;

or Critical Thinking. These cognitive domains are adapted from the *Taxonomy of Educational Objectives, the classification of educational goals – Handbook I: Cognitive Domains* from B.S. Bloom et al (1956).

1) *Knowledge/Comprehension*

This domain combines the ability to recall previously learned material and to understand its meaning. It includes such mental abilities as knowing and understanding definitions, facts, and principles.

2) *Application*

This domain refers to the ability to apply knowledge and learning to new or practical situations. It includes applying rules, methods, principles, and dental hygiene theories in providing care to clients.

3) *Critical Thinking*

This domain deals with higher-level thinking processes. It includes the ability to judge the relevance of data, to analyse and synthesize information and to solve problems (e.g., identifying priorities of care, evaluating the effectiveness of interventions provided). The dental hygienist should be able to identify cause-and-effect relationships, distinguish between relevant and irrelevant data, formulate valid conclusions, and make judgments concerning the needs of clients. (See Table 3 for the distribution of items for each cognitive domain)

TABLE 3: TARGET PERCENTAGES OF ITEMS FOR EACH COGNITIVE LEVEL

Cognitive Domains	Percentage of Items
Knowledge/Comprehension	20-30%
Application	45-55%
Critical Thinking	20-30%

CONTEXTUAL VARIABLES

a) Client Age and Gender:

Two of the contextual variables specified for the Examination are the **age** and **gender** of the clients. Providing specifications for the use of these variables ensures that the clients described in the Examination reflect the demographic characteristics of the population encountered by the dental hygienist. These specifications, listed in Table 4 as percentage ranges, serve as guidelines for test development.

TABLE 4: TARGET PERCENTAGES FOR CLIENT AGE AND GENDER

Age Group	Target Percentage of Items in each age group	Target Percentage for each gender: Males and Females
Child & Adolescent (0-18 years)	20-40%	10-20%
Adult (19-64 years)	30-50%	15-25%
Older Adult (65+ years)	20-40%	10-20%

b) Client Culture:

The Examination is designed to include items representing the variety of cultural backgrounds encountered while providing dental hygiene care in Canada. While the Examination does not test candidates' **knowledge** of specific values, beliefs, and practices linked to individual cultures, it is intended to measure awareness, sensitivity, and respect for diverse cultural

values, beliefs, and practices. Cultural issues are integrated within the Examination without introducing cultural stereotypes or biases.

The National Dental Hygiene Certification Examination represents the demographic and cultural realities of the Canadian population that requires dental hygiene care.

c) Health Care Environment:

Since the profession of dental hygiene can be practiced in a variety of settings and most of the competencies are not setting dependent, the health care environment is only specified when required.

PERFORMANCE PROFILE FEEDBACK CATEGORIES

After writing the NDHCB Examination, candidates who fail the exam will automatically receive feedback on their performance. The NDHCB Performance Profile provides feedback on the five (5) content categories (in upper case). See Table 5 for the content category breakdown including the number of competencies that fall under each category and its relative percentage:

TABLE 5: CONTENT CATEGORIES FOR THE DEVELOPMENT OF THE PERFORMANCE PROFILE

CATEGORIES	Total Number of Competencies	Relative % Versus Complete Profile
PROFESSIONALISM - 1. Responsibility - 2. Accountability - 3. Continuing Competence - 4. Professional Relationships - 5. Client Relationships - 6. Practice Management	28	24%
FOUNDATIONS - 7. Foundational Knowledge - 8. Health & Safety	24	20.5%
ASSESSMENT AND DIAGNOSIS	28	24%
IMPLEMENTATION	20	17%
PLANNING & EVALUATION	17	14.5%

III. CONCLUSION

The *Blueprint for the National Dental Hygiene Certification Board Examination (2011)* is the outcome of the combined efforts of a number of individuals and organizations. The compilation and validation of the competencies required of a practicing dental hygienist in Canada and the production of guidelines for the measurement of these competencies were made possible through a collaborative process.

It is recognized that the dental hygiene profession will continue to evolve. As this occurs, the Blueprint (i.e., the competencies and the test development guidelines) may require revision so that it accurately continues to reflect the most current scope of practice, roles, and responsibilities of the practising entry-level dental hygienist in Canada.

IV. SUMMARY CHART

NATIONAL DENTAL HYGIENE CERTIFICATION EXAMINATION DEVELOPMENT GUIDELINES

COMPETENCIES															
Group 1-A: 35-45% of items	Group 1-B: 25-35% of items	Group 2-A: 15-25% of items	Group 2-B: 5-15% of items												
STRUCTURAL VARIABLES															
Examination Length and Format	It is a computer-administered examination. The examinee will have 4 hours to complete the examination. The examination consists of a pool of 245 operational and scored items, from which 180 objective items (i.e., multiple choice question) will be selected and scored for each examinee. <i>In addition</i> , another 20 experimental items will be tested for statistics gathering only (these items will not count towards the final score). The examination consists of 200 items in total.														
Item Presentation	70-80% independent items 20-30% case-based items														
Cognitive Ability Levels	Knowledge/Comprehension: 20-30% of items Application: 45-55% of items Critical Thinking: 20-30% of items														
Competency Categories	Responsibility Accountability Continuing Competence Professional Relationships Client Relationships Practice Management	Foundation Knowledge Health and Safety Assessment and Diagnosis Implementation Planning Evaluation													
CONTEXTUAL VARIABLES															
Client Age and Gender	<table><thead><tr><th></th><th>Male</th><th>Female</th></tr></thead><tbody><tr><td>0 to 18 years</td><td>10-20%</td><td>10-20%</td></tr><tr><td>19 to 64 years</td><td>15-25%</td><td>15-25%</td></tr><tr><td>65+ years</td><td>10-20%</td><td>10-20%</td></tr></tbody></table>				Male	Female	0 to 18 years	10-20%	10-20%	19 to 64 years	15-25%	15-25%	65+ years	10-20%	10-20%
	Male	Female													
0 to 18 years	10-20%	10-20%													
19 to 64 years	15-25%	15-25%													
65+ years	10-20%	10-20%													
Client Culture	Items are included that measure awareness, sensitivity, and respect for different cultural values, beliefs, and practices, without introducing stereotypes or biases.														
Health Care Environment	Since dental hygiene can be practiced in a variety of settings and most of the competencies are not setting dependent, the health care environment is only specified when required.														

APPENDIX A

THE NATIONAL DENTAL HYGIENE CERTIFICATION EXAMINATION LIST OF COMPETENCIES (BY CATEGORY)

1. RESPONSIBILITY

The Dental Hygienist:

- 1.1 Uses evidence-based decision making approaches.
- 1.2 Uses a client-centered approach.
- 1.3 Adheres to current national jurisprudence requirements and recognizes the need to adhere to provincial/territorial jurisprudence requirements.
- 1.4 Acts as a knowledge source for clients, professionals and the public seeking information about oral health or access to oral health care.
- 1.5 Contributes to actions that will facilitate access to care, particularly for vulnerable populations.
- 1.6 Advocates for oral health programs and policies.
- 1.7 Promotes healthy behaviours of self, colleagues, clients and the public.
- 1.8 Critiques literature findings to determine their potential value to client care.
- 1.9 Integrates new knowledge into practice environments.

2. ACCOUNTABILITY

The Dental Hygienist:

- 2.1 Applies ethical principles in all endeavours.
- 2.2 Facilitates privacy and confidentiality in accordance with applicable legislation and ethical principles.
- 2.3 Facilitates informed choice in accordance with applicable legislation and ethical principles.
- 2.4 Practises within personal limitations.
- 2.5 Maintains documentation and records consistent with practice standards and applicable legislation.
- 2.6 Reports unethical, unsafe or incompetent services to the appropriate regulatory organizations.

3. CONTINUING COMPETENCE

The Dental Hygienist:

- 3.1 Self-assesses professional performance in relation to standards of practice.
- 3.2 Creates personal plans for continuing competence and professional development.
- 3.3 Initiates required changes in own practice based on supporting literature and practice standards.

4. PROFESSIONAL RELATIONSHIPS

The Dental Hygienist:

- 4.1 Uses effective verbal, non-verbal, visual, written and electronic communication.
- 4.2 Collaborates with communities, health care professionals and other partners in providing, maintaining, and advocating for oral health care programs.
- 4.3 Functions effectively within oral health and interprofessional teams and settings.

5. CLIENT RELATIONSHIPS

The Dental Hygienist:

- 5.1 Demonstrates respect for diversity (e.g., culture, language, disability, religion, creed, lifestyle, etc.).
- 5.2 Respects the autonomy of clients as full partners in decision-making.
- 5.3 Selects communication approaches based on clients' characteristics, needs, and linguistic and health literacy.
- 5.4 Supports clients in using community resources when needed.

6. PRACTICE MANAGEMENT

The Dental Hygienist:

- 6.1 Uses electronic information systems for the collection, retrieval, and use of data within dental hygiene practice.
- 6.2 Manages dental hygiene services individually and as part of a team.
- 6.3 Works with budgets related to dental hygiene practice settings.

7. FOUNDATIONAL KNOWLEDGE

The Dental Hygienist:

- 7.1 Uses knowledge of the behavioural sciences (e.g., psychology, sociology, etc.) in dental hygiene practice.

Uses knowledge of the general biological sciences in dental hygiene practice, including:

- 7.2 anatomy, biology, histology, pathology, and physiology;
- 7.3 biochemistry and nutrition;
- 7.4 immunology and microbiology; and
- 7.5 pharmacology.

Uses knowledge of the oral health sciences in dental hygiene practice, including:

- 7.6 periodontology;
- 7.7 head/neck anatomy and physiology;
- 7.8 oral/dental anatomy and physiology;
- 7.9 oral/dental embryology and histology;
- 7.10 oral pathology;
- 7.11 dental radiography;
- 7.12 orthodontics;
- 7.13 pedodontics;
- 7.14 gerodontics;
- 7.15 endodontics, prosthodontics, and oral surgery; and
- 7.16 restorative dentistry.

8. HEALTH AND SAFETY

The Dental Hygienist:

- 8.1 Applies current knowledge regarding infection prevention and control.
- 8.2 Applies principles of risk reduction for client, colleague and practitioner safety, health and well-being.
- 8.3 Applies quality assurance standards and protocols to support a safe and effective working environment.
- 8.4 Integrates principles of ergonomics to support the practitioner's health.
- 8.5 Takes responsibility for the use and maintenance of equipment and materials involved in the delivery of dental hygiene care.

- 8.6 Uses consumables and disposes of waste products, including biohazardous wastes, in an environmentally responsible manner.
- 8.7 Responds to medical emergencies.
- 8.8 Assists in the prevention or management of large scale outbreaks and emergencies.

9. ASSESSMENT AND DIAGNOSIS

The Dental Hygienist:

Assesses the general, oral, and psychosocial health status of clients (individuals, families, groups, communities or populations) including:

- 9.1 demographic data;
 - 9.2 epidemiological data;
 - 9.3 the determinants of health;
 - 9.4 health history including the use of pharmaceuticals (prescribed and non-prescribed);
 - 9.5 vital signs;
 - 9.6 dental/oral health histories;
 - 9.7 the head & neck region;
 - 9.8 the periodontium;
 - 9.9 the intraoral soft tissues other than the periodontium;
 - 9.10 the intraoral hard tissues;
 - 9.11 the hard and soft deposits;
 - 9.12 the oral self-care of clients;
 - 9.13 the need for radiographs;
 - 9.14 the radiographs including interpretation of radiographs;
 - 9.15 the need for photographs, dental impressions, pulpal testing, microbiological testing, caries screening, etc.;
 - 9.16 the risk factors for diseases including dental, oral and periodontal pathologies;
 - 9.17 the dietary practices; and
 - 9.18 the need for referrals to other healthcare professionals (including dental specialists).
-
- 9.19 Uses oral health indices.
 - 9.20 Assesses the need for consultation with other health professionals.
 - 9.21 Identifies clients at risk for medical emergencies.
 - 9.22 Identifies clients for whom the initiation or continuation of treatment is contraindicated based on the interpretation of health history and clinical data.
 - 9.23 Assesses clients' perceived barriers to, and support for, learning.
 - 9.24 Assesses the clients' oral health knowledge, beliefs, attitudes, motivation, and skills as part of the educational process.
 - 9.25 Identifies clients' health education needs.
 - 9.26 Identifies barriers to accessing oral health care.
 - 9.27 Identifies health issues in need of advocacy.
 - 9.28 Formulates a dental hygiene diagnosis using problem solving and decision-making skills.

10. PLANNING

The Dental Hygienist:

- 10.1 Prioritizes clients' needs through a collaborative process involving clients and others as needed.
- 10.2 Establishes dental hygiene care plans based on assessment data and a client-centered approach.
- 10.3 Establishes dental hygiene programs based on assessment data and a client-centered approach.
- 10.4 Identifies strategies to minimize the risk of a medical emergency.
- 10.5 Negotiates mutually acceptable individual or program learning plans with clients and others as needed.

- 10.6 Uses behavioural change theories and principles of change in planning.
- 10.7 Selects, modifies, or develops educational interventions/materials to meet clients' learning needs.
- 10.8 Selects appropriate health promotion strategies and interventions.
- 10.9 Considers the roles of governments and community partners in relation to oral health.

11. IMPLEMENTATION

The Dental Hygienist:

Provides dental hygiene services that contribute to oral and general health for individuals, families, groups, communities or populations. The dental hygienist...

- 11.1 applies principles of instrumentation;
- 11.2 provides non-surgical periodontal therapy using hand instrumentation;
- 11.3 provides non-surgical periodontal therapy using powered instrumentation;
- 11.4 adapts interventions for clients with diverse needs;
- 11.5 counsels clients regarding tobacco cessation strategies;
- 11.6 teaches clients oral self-assessment techniques;
- 11.7 provides coaching/advice to clients when teaching oral self-care;
- 11.8 provides clients with information regarding dietary practices;
- 11.9 implements strategies to manage client pain, anxiety and discomfort;
- 11.10 applies appropriate chemotherapeutics/pharmacotherapeutics excluding fluoride;
- 11.11 applies anticariogenic agents;
- 11.12 provides tooth whitening services;
- 11.13 applies and removes periodontal dressings and removes sutures;
- 11.14 takes impressions and fabricates study models, tooth whitening trays, and sportsguards;
- 11.15 exposes and processes intraoral and extraoral radiographs (conventional/digital); and
- 11.16 produces intraoral and extraoral photographs.
- 11.17 Applies educational theories, theoretical frameworks, and psychosocial principles to the educational process.
- 11.18 Applies appropriate theories to initiate client change (individuals, families, groups, communities or populations).
- 11.19 Includes family and care providers as appropriate in the client's educational interventions.
- 11.20 Creates an environment in which effective learning can take place.

12. EVALUATION

The Dental Hygienist:

- 12.1 Uses measurable criteria to evaluate outcomes.
- 12.2 Evaluates the effectiveness of dental hygiene services.
- 12.3 Evaluates the effectiveness of educational activities.
- 12.4 Communicates evaluation outcomes to clients, stakeholders and the public as appropriate.
- 12.5 Provides recommendations to clients regarding their ongoing care.
- 12.6 Revises dental hygiene care plans/programs as necessary in partnership with clients, and others as needed.
- 12.7 Evaluates clients' health and oral health status to make appropriate referrals to other health care professionals.
- 12.8 Obtains feedback from the client and other stakeholders.

APPENDIX B

COMPETENCIES - BY LEVEL OF CRITICALITY & FREQUENCY

GROUP 1A

35-45% of the Examination

The Dental Hygienist:

- 1.2 Uses a client-centered approach.
- 1.3 Adheres to current national jurisprudence requirements and recognizes the need to adhere to provincial/territorial jurisprudence requirements.
- 2.1 Applies ethical principles in all endeavours.
- 2.2 Facilitates privacy and confidentiality in accordance with applicable legislation and ethical principles.
- 2.3 Facilitates informed choice in accordance with applicable legislation and ethical principles.
- 2.5 Maintains documentation and records consistent with practice standards and applicable legislation.
- 5.1 Demonstrates respect for diversity (e.g., culture, language, disability, religion, creed, lifestyle, etc.).
- 5.2 Respects the autonomy of clients as full partners in decision-making.
- 5.3 Selects communication approaches based on clients' characteristics, needs, and linguistic and health literacy.
- 8.1 Applies current knowledge regarding infection prevention and control.
- 8.3 Applies quality assurance standards and protocols to support a safe and effective working environment.
- 8.4 Integrates principles of ergonomics to support the practitioner's health.
- 9.4 Assesses health history including the use of pharmaceuticals (prescribed and non-prescribed).
- 9.6 Assesses dental/oral health histories.
- 9.8 Assesses the periodontium.
- 9.9 Assesses the intraoral soft tissues other than the periodontium.
- 9.10 Assesses intraoral hard tissues.
- 9.11 Assesses hard and soft deposits.
- 9.12 Assesses oral self-care.
- 9.13 Assesses the need for radiographs.
- 9.21 Identifies clients at risk for medical emergencies.
- 9.25 Identifies clients' health education needs.
- 9.28 Formulates a dental hygiene diagnosis using problem solving and decision-making skills.
- 10.2 Establishes dental hygiene care plans based on assessment data and a client-centered approach.
- 11.1 Applies principles of instrumentation.
- 11.2 Provides non-surgical periodontal therapy using hand instrumentation.
- 11.3 Provides non-surgical periodontal therapy using powered instrumentation.
- 11.15 Exposes and processes intraoral and extraoral radiographs (conventional/digital).
- 12.2 Evaluates the effectiveness of dental hygiene services.
- 12.5 Provides recommendations to clients regarding their ongoing care.

GROUP 1B

25-35% of the Examination

The Dental Hygienist:

- 1.1 Uses evidence-based decision making approaches.
- 1.4 Acts as a knowledge source for clients, professionals and the public seeking information about oral health or access to oral health care.
- 2.4 Practises within personal limitations.
- 2.6 Reports unethical, unsafe or incompetent services to the appropriate regulatory organizations.
- 3.1 Self-assesses professional performance in relation to standards of practice.
- 3.3 Initiates required changes in own practice based on supporting literature and practice standards.
- 7.5 Uses knowledge of pharmacology.
- 7.6 Uses knowledge of periodontology.
- 7.10 Uses knowledge of oral pathology.
- 8.2 Applies principles of risk reduction for client, colleague and practitioner safety, health and well-being.
- 8.7 Responds to medical emergencies.
- 9.5 Assesses vital signs.
- 9.7 Assesses the head & neck region.
- 9.14 Assesses and interprets radiographs.
- 9.16 Assesses risk factors for diseases including dental, oral and periodontal pathologies.
- 9.18 Assesses the need for referrals to other healthcare professionals (including dental specialists).
- 9.20 Assesses the need for consultation with other health professionals.
- 9.22 Identifies clients for whom the initiation or continuation of treatment is contraindicated based on the interpretation of health history and clinical data.
- 10.1 Prioritizes clients' needs through a collaborative process involving clients and others as needed.
- 10.3 Establishes dental hygiene programs based on assessment data and a client-centered approach.
- 10.4 Identifies strategies to minimize the risk of a medical emergency.
- 11.6 Teaches clients' oral self-assessment techniques.
- 11.9 Implements strategies to manage client pain, anxiety and discomfort.
- 11.11 Applies anticariogenic agents.
- 12.1 Uses measurable criteria to evaluate outcomes.
- 12.4 Communicates evaluation outcomes to clients, stakeholders and the public as appropriate.
- 12.6 Revises dental hygiene care plans/programs as necessary in partnership with clients, and others as needed.
- 12.7 Evaluates clients health and oral health status to make appropriate referrals to other health care professionals.

GROUP 2A

15-25% of the Examination

The Dental Hygienist:

- 1.7 Promotes healthy behaviours of self, colleagues, clients and the public.
- 4.1 Uses effective verbal, non-verbal, visual, written and electronic communication.
- 4.3 Functions effectively within oral health and interprofessional teams and settings.
- 6.2 Manages dental hygiene services individually and as part of a team.
- 7.1 Uses knowledge of the behavioural sciences (e.g., psychology, sociology, etc.) in dental hygiene practice.
- 7.2 Uses knowledge of anatomy, biology, histology, pathology, and physiology.
- 7.3 Uses knowledge of biochemistry and nutrition.
- 7.4 Uses knowledge of immunology and microbiology.
- 7.7 Uses knowledge of head/neck anatomy and physiology.
- 7.8 Uses knowledge of oral/dental anatomy and physiology.
- 7.11 Uses knowledge of dental radiography.
- 7.14 Uses knowledge of gerodontology.
- 7.16 Uses knowledge of restorative dentistry.
- 8.5 Takes responsibility for the use and maintenance of equipment and materials involved in the delivery of dental hygiene care.
- 9.3 Assesses the determinants of health.
- 9.19 Uses oral health indices.
- 9.23 Assesses clients' perceived barriers to, and support for, learning.
- 9.24 Assesses the clients' oral health knowledge, beliefs, attitudes, motivation, and skills as part of the educational process.
- 10.5 Negotiates mutually acceptable individual or program learning plans with clients and others as needed.
- 10.6 Uses behavioural change theories and principles of change in planning.
- 10.7 Selects, modifies, or develops educational interventions/materials to meet clients' learning needs.
- 10.8 Selects appropriate health promotion strategies and interventions.
- 11.7 Provides coaching/advice to clients when teaching oral self-care.
- 11.8 Provides clients with information regarding dietary practices.
- 11.10 Applies appropriate chemotherapeutics/pharmacotherapeutics excluding fluoride.
- 11.17 Applies educational theories, theoretical frameworks, and psychosocial principles to the educational process.
- 11.18 Applies appropriate theories to initiate client change (individuals, families, groups, communities or populations).
- 11.20 Creates an environment in which effective learning can take place.
- 12.3 Evaluates the effectiveness of educational activities.
- 12.8 Obtains feedback from the client and other stakeholders.

GROUP 2B

5-15% of the Examination

The Dental Hygienist:

- 1.5 Contributes to actions that will facilitate access to care, particularly for vulnerable populations.
- 1.6 Advocates for oral health programs and policies.
- 1.8 Critiques literature findings to determine their potential value to client care.
- 1.9 Integrates new knowledge into practice environments.
- 3.2 Creates personal plans for continuing competence and professional development.
- 4.2 Collaborates with communities, health care professionals and other partners in providing, maintaining, and advocating for oral health care programs.
- 5.4 Supports clients in using community resources when needed.
- 6.1 Uses electronic information systems for the collection, retrieval, and use of data within dental hygiene practice.
- 6.3 Works with budgets related to dental hygiene practice settings.
- 7.9 Uses knowledge of oral/dental embryology and histology.
- 7.12 Uses knowledge of orthodontics.
- 7.13 Uses knowledge of pedodontics.
- 7.15 Uses knowledge of endodontics, prosthodontics, and oral surgery.
- 8.6 Uses consumables and disposes of waste products, including biohazardous wastes, in an environmentally responsible manner.
- 8.8 Assists in the prevention or management of large scale outbreaks and emergencies.
- 9.1 Assesses demographic data.
- 9.2 Assesses epidemiological data.
- 9.15 Assesses the need for photographs, dental impressions, pulpal testing, microbiological testing, caries screening, etc.
- 9.17 Assesses dietary practices.
- 9.26 Identifies barriers to accessing oral health care.
- 9.27 Identifies health issues in need of advocacy.
- 10.9 Considers the roles of governments and community partners in relation to oral health.
- 11.4 Adapts interventions for clients with diverse needs.
- 11.5 Counsels clients regarding tobacco cessation strategies.
- 11.12 Provides tooth whitening services.
- 11.13 Applies and removes periodontal dressings and removes sutures.
- 11.14 Takes impressions and fabricates study models, tooth whitening trays, and sportsguards.
- 11.16 Produces intraoral and extraoral photographs.
- 11.19 Includes family and care providers as appropriate in the client's educational interventions.

APPENDIX C

GLOSSARY

Change Theory

Theory related to the process of transforming, alternating or modifying behaviours.

Client

A client is an individual, family, group, organization or community accessing the professional services of a dental hygienist.

Client Advocate

One who supports a client by respecting and promoting the rights of the client in health care and other issues.

Client Centered Care

A service approach from the perspective that the client is the main focus of attention, interest, and activity; the clients' values, beliefs and needs are of utmost importance in the selection and provision of services.

Continuing Competence

The dental hygienist maintains and improves professional competence over time through a variety of activities; for example, self-evaluation, continuing education courses, participation in professional associations, reading scientific literature, etc...

Demographic Data

Information related to the statistics of groups of people, their environment and geographic distribution, e.g., age, gender, births, deaths and diseases.

Dental Hygiene Care Plan

A written blueprint that directs the dental hygienist to implement the dental hygiene services/interventions required and agreed by the client in order to achieve better overall and optimal oral health.

Dental Hygiene Diagnosis

With the use of critical thinking and decision-making skills, the dental hygienist reaches conclusions about the client's dental hygiene needs based on all available assessment data.

Dental Hygiene Practice

A collaborative relationship in which the dental hygienist works with the client, dental and other health care professionals and society in general to achieve and maintain optimal oral health as an integral part of well-being. In accordance with the Canadian Dental Hygienists Association's *Dental Hygiene: Definition, Scope and Practice Standards* (May 7, 2002), there are six dental hygiene practice key responsibility areas:

Administration: Refers to management processes and policy and protocol development.

Change Agent: Refers to taking a leadership role in managing the process of change. This can involve getting things started (catalyst); offering ideas for solving a problem (solution giver); helping individuals find and make the best use of resources (resource link); and understanding the change process (process helper). Acting as a change agent may also involve advocacy-promoting and supporting clients' rights and well-being.

Clinical Therapy: Refers to the primary interceptive, therapeutic, preventive, and ongoing care procedures that help to enable people to achieve optimal oral health and that contribute to overall health.

Education: Refers to the application of teaching and learning principles to facilitate the development of specific attitudes, knowledge, skills and behaviours.

Health Promotion: Refers to the process of enabling individuals and communities to improve their health through the development of awareness, self-responsibility and control over internal and external factors.

Research (scientific inquiry): Refers to the strategies for systematic inquiry and reporting that supplements, revises and validates dental hygiene practice and may contribute to the knowledge base of other disciplines.

Dental Hygiene Process of Care

Also referred to as 'Dental Hygiene Process'. It is the foundation of professional practice and it provides a model for organizing and providing dental hygiene interventions/services/programs in a variety of settings. The system approach includes the assessment and diagnosis of the clients' needs, formulation of a dental hygiene care plan, implementation of the dental hygiene services/interventions/programs outlined in the care plan and the subsequent evaluation of dental hygiene services/interventions/ programs.

Dental Hygiene Services/Interventions

All therapeutic, preventive and educational actions that a dental hygienist, by law, can provide to a client to assist them in achieving optimal health, oral health and well being.

Dental Hygiene Standards of Practice

Standards published by the regulatory authorities and the Canadian Dental Hygienists Association to clarify the roles/responsibilities of the dental hygienist and to provide a framework for measuring the quality of dental hygiene interventions/services/programs.

Determinants of Health

Refers to an element or group of elements that identify the boundaries/limits of health, and influence optimal well being.

Documentation Audit

A formal verification of client records and/or charts to ensure compliance with legal and regulatory requirements.

Epidemiological Data

Information related to specific causes of occurrences of health problems or diseases in a locality.

Evidence Based Practice or Evidence Supported Practice

Dental hygiene practice supported by a scientific body of knowledge that facilitates clinical decision making and evaluation of dental hygiene interventions/services/programs using objective outcome measures. Research evidence provides a framework for making decisions, solving problems, explaining phenomena, and predicting outcomes that enables the practitioner to continually re-evaluate and advance service to society.

Health Public Policies

Policies instituted by municipal, provincial or federal governments that will contribute to the health and well-being of the public.

Risk Assessment

The assessment and analysis of risk factors provide information about a client's susceptibility to certain conditions beyond traditional clinical assessment parameters. (CaMBRA, periodontal risk assessment,...)

Risk Factors

Those attributes or exposures that have been shown to have a cause and effect relationship with a disease or condition. Example: Causal relationship between smoking and periodontal disease.

Risk Markers

Those attributes or exposures associated with the increased probability of the occurrence of disease or conditions, and which can be used as an indicator of the disease or condition. Example: Clinical attachment loss (CAL) as a risk marker for periodontal disease.

Scientific Method

Refers to the systematic, orderly procedures that, while not infallible, seek to limit the possibility for error and minimize the likelihood that any bias or opinion by the researcher might influence the results.

Theory of Dental Hygiene Practice

A set of concepts, definitions and propositions that helps to provide knowledge to improve dental hygiene practice by describing, explaining, predicting, and controlling phenomena. Theory guides the practice, education and research functions of a profession.