

# **Knowledge, Skills, and Abilities (KSAs) for a Beginning Dental Practitioner in Canada**

## **Revised January 29, 2024 - DRAFT**

This document was developed by a Canadian Dental Regulatory Authorities Federation (CDRAF) working group that included representatives of the National Dental Examining Board of Canada (NDEB), the Commission on Dental Accreditation of Canada (CDAC), the Association of Faculties of Dentistry (ACFD) and CDRAF. The development process involved extensive consultations and two requests for review and feedback.

The Knowledge, Skills and Abilities (KSAs) below refer to general dental practice and include the management of patients of all ages including those with special needs. It is assumed that all oral health care is provided in an ethical manner, in accordance with legal requirements at the national and provincial level.

This document lists 48 KSAs that are required for the safe and effective practice of a beginning dental practitioner in Canada. The KSAs in this document are organized into 3 Groups and 15 categories:

### **GROUP A: Multi-discipline (23 KSAs)**

These KSAs apply to more than one discipline or area of practice. The KSAs in this group are organized into two categories: *Patient Assessment and Treatment Plan* and *Management*.

### **GROUP B: Discipline-specific (14 KSAs)**

These KSAs are specific to the following areas of general dental practice: *Oral Medicine and Pathology, Radiology, Periodontics, Endodontics, Prosthodontics, Orthodontics, Operative, Oral Surgery, Pediatric, Geriatric and Special Needs Dentistry* and *Pain Management*.

### **GROUP C: General (11 KSAs)**

The KSAs are organized into four categories: *Scientific Literature, Communication, Professionalism and Practice*, and *Health Promotion*.

The sub-tables in Groups B and C identify indicators of KSAs and specify the minimum level that all graduates must obtain. The levels are: Taught and Tested, Exposure, Experience or Competence. These levels are grouped as Didactic, Preclinical (including clinical simulations) and Clinical.

This document uses the following definitions:

Indicators: Aspects of KSAs that can be measured.

It is assumed that all indicators of KSAs designated Exposure, Experience or Competence are Taught and Tested.

Taught and Tested: An indicator taught through lectures or small group sessions and tested using assignments, didactic quizzes, tests or exams for all graduates. All new graduates may not have had clinical exposure, experience or the opportunity to attain competency, but some graduates may have.

Exposure: An indicator that a new graduate has observed in the preclinic or in the clinic. All graduates have been exposed to the indicator. A new graduate may need further training and mentoring to become competent. All new graduates may not have had clinical experience or the opportunity to attain competency.

Experience: An indicator that a new graduate has performed or demonstrated in the preclinic or clinic. All new graduates have experience in the indicator. All new graduates may not be able to complete the procedure or demonstrate the behaviour independently but some graduates may have attained competency.

Competence: An indicator that a new graduate can perform or demonstrate in the preclinic or clinic independently and consistently. All new graduates have attained competency. A competent new graduate has the awareness of what constitutes an acceptable performance and is therefore safe for independent practice in the area. A new graduate may have demonstrated clinical competence through assessment or by a combination of preclinical competency testing and clinical experience.

Manage: A behaviour that includes all actions performed by a dentist that are designed to alter the course of a patient's condition. Such actions may include providing education, advice, treatment by the dentist, treatment by the dentist after consultation with another health care professional, referral of a patient to another health care professional, monitoring treatment provided, but also may include providing no treatment or observation. "Manage" assumes the use of the least invasive therapy necessary to gain a successful outcome in accordance with patient wishes.

## GROUP A: Multi-Discipline KSAs

<b>1.</b>	<b>PATIENT ASSESSMENT AND TREATMENT PLANNING</b>
<b>1.1</b>	<b>Information Collection and Examination</b>
1.1.1	Obtain the patient's chief complaint, medical, psychosocial, and dental histories.
1.1.2	Perform a clinical examination.
1.1.3	Assess specific risk factors (conduct a risk assessment) for oral disease or injury.
<b>1.2</b>	<b>Diagnosis</b>
1.2.1	Differentiate between normal and abnormal hard and soft tissues of the oral and maxillofacial complex.
1.2.2	Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests.
1.2.3	Develop a problem list and establish differential/definitive diagnoses.
<b>1.3</b>	<b>Treatment Planning</b>
1.3.1	Determine when consultation, referral, and/or further diagnostic testing are indicated.
1.3.2	Communicate relevant patient information for consultation/referral with health care professionals.
1.3.3	Develop treatment options based on the evaluation of risk assessments, diagnoses, and other factors, including, but not limited to, medical, psychosocial, and dental histories.
1.3.4	Engage the patient, parent or guardian in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options.
1.3.5	Develop a comprehensive, prioritized and sequenced treatment plan.
1.3.6	Obtain and record informed consent.

<b>2.</b>	<b>MANAGEMENT</b>
<b>2.1</b>	<b>Prevention</b>
2.1.1	Promote measures to prevent systemic and oral disease/injury in response to identified risks.
2.1.2	Provide therapies for the prevention of systemic and oral disease/injury.
2.1.3	Implement measures to prevent medical emergencies from occurring in dental practice.
2.1.4	Implement measures to prevent the transmission of infectious diseases.
<b>2.2</b>	<b>Treatment</b>
2.2.1	Manage the anxious or fearful patient.
2.2.2	Manage dental emergencies.
2.2.3	Manage medical emergencies that occur in dental practice.
2.2.4	Manage trauma to the orofacial complex.
2.2.5	Manage occlusal function.
2.2.6	Prescribe and administer pharmacotherapeutic agents used in dentistry.
2.2.7	Manage complications, outcomes and continuity of care.

## GROUP B: Discipline-Specific KSAs

3.	ORAL MEDICINE AND PATHOLOGY			
3.1	Manage oral mucosal and osseous diseases.			
	Indicators of KSAs	Didactic	Preclinical	Clinical
	Formulate a differential diagnosis for a detected abnormality.			Exposure
	Prescribe and interpret diagnostic tests for the detection of oral mucosal and osseous abnormalities based on clinical assessment.	Taught and tested		
	Perform a soft tissue biopsy.	Taught and Tested		
	Recognize and communicate to other health care professionals' features that suggest greater urgency for immediate consultation/referrals.	Taught and Tested		
	Communicate to patients the reason for the referral/consultation.	Taught and Tested		
	Interpret a biopsy/consultation report and correlate the findings with the clinical presentation and communicate the interpretation to the patient.	Taught and Tested		

4.	RADIOLOGY																												
4.1	<div>Prescribe, make and interpret radiographs.</div> <table><tr><th>Indicators of KSAs</th><th>Didactic</th><th>Preclinical</th><th>Clinical</th></tr><tr><td>Prescribe bitewing, periapical and panoramic radiographs.</td><td></td><td></td><td>Competence</td></tr><tr><td>Prescribe CBCT imaging.</td><td>Taught and Tested</td><td></td><td></td></tr><tr><td>Acquire bitewing and periapical radiographs.</td><td></td><td></td><td>Competence</td></tr><tr><td>Acquire panoramic radiographs.</td><td></td><td></td><td>Exposure</td></tr><tr><td>Interpret intraoral and panoramic radiographs for common diseases and abnormalities and complete a radiographic report.</td><td></td><td></td><td>Competence</td></tr><tr><td>Recognize radiographic features that suggest significant abnormalities.</td><td>Taught and Tested</td><td></td><td></td></tr></table>	Indicators of KSAs	Didactic	Preclinical	Clinical	Prescribe bitewing, periapical and panoramic radiographs.			Competence	Prescribe CBCT imaging.	Taught and Tested			Acquire bitewing and periapical radiographs.			Competence	Acquire panoramic radiographs.			Exposure	Interpret intraoral and panoramic radiographs for common diseases and abnormalities and complete a radiographic report.			Competence	Recognize radiographic features that suggest significant abnormalities.	Taught and Tested		
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5.	PERIODONTICS			
5.1	Manage conditions and diseases of the periodontium.			
	Indicators of KSAs	Didactic	Preclinical	Clinical
	Perform mechanical plaque removal; Perform scaling/root planing.			Competence
	Re-evaluate the response to periodontal treatment.			Competence
	Perform periodontal and implant placement surgery.	Taught and Tested		
	Perform periodontal maintenance therapy.			Competence
	Manage peri-implant diseases.	Taught and Tested		
6.	ENDODONTICS			
6.1	Manage diseases and injury of the pulp and periapical tissues.			
	Indicators of KSAs	Didactic	Preclinical	Clinical
	Perform a pulpotomy or a pulpectomy.			Competence
	Perform uncomplicated non-surgical root canal therapy.			Competence
	Perform complicated non-surgical root canal therapy.		Experience	
	Perform surgical root canal therapy.	Taught and Tested		

7.	PROSTHODONTICS			
7.1	Manage partially and completely edentulous patients.			
	<b>Indicators of KSAs</b>	<b>Didactic</b>	<b>Preclinical</b>	<b>Clinical</b>
	Provide a fully edentulous patient with complete dentures.			Competence
	Provide a partially edentulous patient with a removable partial denture.			Competence
	Provide a partially edentulous patient with a fixed partial denture.		Competence	
	Manage a partially edentulous patient with an implant supported restoration.			Exposure
8.	ORTHODONTICS			
8.1	Manage abnormalities of orofacial growth and development.			
	<b>Indicators of KSAs</b>	<b>Didactic</b>	<b>Preclinical</b>	<b>Clinical</b>
	Perform preventive and interceptive orthodontics.		Experience	
	Perform comprehensive orthodontics (brackets/aligners).		Exposure	
	Perform orthodontic treatment involving surgery or multidisciplinary approaches.	Taught and Tested		



9.	OPERATIVE			
9.1	Restore carious lesions and manage other defects in teeth.			
	Indicators of KSAs	Didactic	Preclinical	Clinical
	Provide a direct restoration.			Competence
	Provide a crown.			Competence
	Perform a CAD-CAM procedure.		Experience	
	Provide a post and core.			Competence
	Provide inlay, onlay and veneer restorations.		Exposure	
10.	ORAL SURGERY			
10.1	Manage surgical procedures related to oral soft and hard tissues.			
	Indicators of KSAs	Didactic	Preclinical	Clinical
	Perform an uncomplicated extraction.			Competence
	Perform a complicated extraction of an erupted tooth.			Competence
	Perform adjunctive hard and soft tissue procedures (tooth exposure, alveoplasty).	Taught and Tested		
	Perform an incision and drainage.	Taught and Tested		
	Perform orthognathic surgery.	Taught and Tested		

<b>11.</b>	<b>PEDIATRIC, GERIATRIC AND SPECIAL NEEDS DENTISTRY</b>
11.1	Manage pediatric patients.
11.2	Manage geriatric patients.
11.3	Manage and accommodate patients of all ages with special needs.
<b>12.</b>	<b>PAIN MANAGEMENT</b>
12.1	Achieve local anesthesia for dental procedures.
12.2	Manage odontogenic pain.
12.3	Manage non-odontogenic pain.

## GROUP C: General KSAs

13.	SCIENTIFIC LITERATURE											
13.1	Justify management recommendations based on a critical evaluation of the scientific literature.											
14.	COMMUNICATION											
14.1	Communicate effectively, using a patient-centred approach, with patients, parents, guardians, staff, peers, other health professionals, social-service professions and the public.											
14.2	Ensure that all communications with patients, including advertising and social media use are honest, accurate and comply with legal and professional obligations.											
15.	PROFESSIONALISM AND PRACTICE											
15.1	<div>Adhere to ethical and legal obligations (confidentiality requirements, task delegation, commitment to continued professional development, patient-centred care).</div> <table><tr><td>Maintain personal health care information confidentially and securely in accordance with privacy legislation.</td></tr><tr><td>Collaborate with other dentists and other healthcare providers.</td></tr><tr><td>Determine the level of expertise required for treatment and demonstrate self-awareness on ability, including the need for referral.</td></tr><tr><td>Foster a respectful and inclusive/anti-oppressive environment.</td></tr><tr><td>Maintain appropriate boundaries.</td></tr><tr><td>Accommodate for disability.</td></tr><tr><td>Demonstrate a mindful and reflective approach to practice.</td></tr><tr><td>Demonstrate a commitment to continuous learning, continuous quality improvement and continuing education.</td></tr><tr><td>Maintain one’s own health and well-being in order to serve others.</td></tr><tr><td>Work with patients and colleagues to advocate for the health care needs of individual patients.</td></tr><tr><td>Demonstrate critical thinking and problem-solving skills.</td></tr></table>	Maintain personal health care information confidentially and securely in accordance with privacy legislation.	Collaborate with other dentists and other healthcare providers.	Determine the level of expertise required for treatment and demonstrate self-awareness on ability, including the need for referral.	Foster a respectful and inclusive/anti-oppressive environment.	Maintain appropriate boundaries.	Accommodate for disability.	Demonstrate a mindful and reflective approach to practice.	Demonstrate a commitment to continuous learning, continuous quality improvement and continuing education.	Maintain one’s own health and well-being in order to serve others.	Work with patients and colleagues to advocate for the health care needs of individual patients.	Demonstrate critical thinking and problem-solving skills.
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15.2	Maintain accurate and complete patient records.
15.3	Manage occupational hazards related to the practice of dentistry.
15.4	Take appropriate action when signs of abuse (physical, psychological, and substance abuse) and/or neglect are identified.
15.5	Apply principles of practice administration, financial and personnel management.
<b>16.</b>	<b>HEALTH PROMOTION</b>
16.1	Recognize the social determinants of oral health.
16.2	Promote oral health within communities.

Approved by CDRAF Board: \_\_\_\_\_

Approved by ACFD Board: \_\_\_\_\_

Approved by NDEB Board: \_\_\_\_\_

The following references were used in the preparation of this document. Some wording has been reproduced directly from the references:<sup>1</sup>

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- <sup>1</sup> ACFD Educational Framework for the Development of Competency in Dental Programs. Association of Canadian Faculties of Dentistry. 2016  
chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://acfd.ca/wp-content/uploads/ACFD-Educational-Framework-for-the-Development-of-Competency-in-Dental-Programs\_2016.pdf
  - NDEB Knowledge Skills and Abilities. 2015  
chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ndeb-bned.ca/wp-content/uploads/2022/11/NDEB-KSAs.pdf
  - Gerrow JD Murphy HJ Boyd MA. Review and Revision of the Competencies for a beginning Dental Practitioner in Canada. J Can Dent Assoc 73(2):157, 2007
  - Chambers DW, Gerrow JD. Manual for Developing and Formatting Competency Statements. J Dent Educ, 58(5): 361, May 1994
  - Frank JR, Snell L, Sherbino J, editors. Can Meds 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.