Graduate Orthodontic Program
Department of Preventive Dental Science
College of Dentistry
Faculty of Health Sciences
University of Manitoba

Essential Skills & Abilities for the Graduate Orthodontics Program:

Preamble:

The Graduate Orthodontic Program is accredited every seven years by the Commission on Dental Accreditation of Canada (CDAC) every seven years and via reciprocity, with the Commission on Dental Accreditation in the USA (CODA).

Graduates of our CDAC and CODA accredited orthodontic specialty program are permitted to challenge the Royal College of Dentists of Canada (RCDC) exams, and if successful, may register with all the Dental Regulatory Authorities (DRAs) in all Canada's provinces and territories.

In addition, our graduates are eligible to practice the orthodontic specialty in the USA, if satisfying the various State Licensing Board requirements.

Essential Skills and Abilities required by a Student in the Orthodontic Specialty Program:

Following graduation from the 36- month full-time specialty program, the graduate must be able to practise independently as a Specialist Orthodontist, with the ability to diagnose and treat all forms of skeletal, dental and dento-alveolar malocclusion.

The following is a general list of the required skills and abilities:

1. Communicate effectively and in an ethical and respectful manner with patients, parents and staff members in the orthodontic office, referring doctors and dentists, other specialists in medicine and dentistry, laboratory technicians, insurance carriers, etc.
2. Take a comprehensive medical and dental history and identify any possible problems associated therewith, requiring further investigation or action.
3. Take and comprehensively evaluate pre-treatment orthodontic records (study casts, radiographs, photographs)
4. Undertake and evaluate cephalometrics as part of patients being comprehensively treatment planned
5. Make a comprehensive diagnosis of all aspects of a patient's malocclusion
6. Generate a comprehensive treatment plan with possible alternatives, to correct the malocclusion, including the need for extraction therapy, growth modification, interceptive orthodontics and orthognathic surgical orthodontics. Treatment plans must be evidence-based, patient-centered and ethically responsible.
7. Be able to accurately manipulate orthodontic wire, both intra-orally and extra-orally, as required for orthodontic treatment.
8. Understand and be able to apply the bio-mechanic principles of orthodontic appliance therapies, be able to manipulate the appliances in accordance with the particular biomaterials being used and the particular biomechanics principles involved, as well as recognizing and correcting side effects by correct manipulation of the appliance.
9. Place and remove fixed appliances as well as removable appliances and retainers.
10. Successfully undertake intra-oral adjustments of all appliances
11. Successfully undertake adjustments of extra-oral appliances (headgears, facemasks, active and passive retainers)

12. Make adjustments to retention appliances as required in the patient's retention phase of treatment.
13. Students must undertake a research project as part of the MSc (Orthodontics) graduate orthodontic program requirements and produce a published thesis, in addition to a successful thesis defense, as determined by the assigned examining committee. It is also required that a scientific article be submitted to a related specialty journal for peer-review.

This general matching list of "skills and abilities" listed above, provides a *precis*, of the Accreditation requirements of the Commission on Dental Accreditation of Canada (CDAC) listed below, from their document, as amended and updated by CDAC on November 30th , 2011, which is followed by the Graduate Orthodontic Program at the University of Manitoba:

Respectfully submitted to the Faculty of Graduate Studies,

Dr. William A. Wiltshire, BChD, BChD (HONS), MDent, MChD(Orth), DSc, FRCD (Orth) (Canada), FPFA, FACD, FWFO.
Professor, Head of Orthodontics and Program Director: Graduate Orthodontic Program

30th May 2018
Revised 10th July 2018
Revised 15th August 2019

Reference:
Commission on Dental Accreditation of Canada: https://www.cda-adc.ca/cdacweb/en/accreditation_requirements/

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Graduate Pediatric Dentistry Program
Department of Preventive Dental Science
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University of Manitoba

Essential Skills and Abilities for the Graduate Pediatric Dentistry Program:

Preamble: *The Graduate Pediatric Dentistry Program is accredited by the Commission on Dental Accreditation of Canada (CDAC) every 7 years and via reciprocity, with the Commission on Dental Accreditation (CODA) in the United States.*
Graduates of our CDAC and CODA accredited Pediatric Dentistry Program are permitted to challenge the Royal College of Dentists of Canada (RCDC) exams, and if successful, may register with all the Dental Regulatory Authorities (DRAs) in Canada's provinces and territories.
In addition, our graduates are eligible to practice the Pediatric Dentistry Speciality in the USA, if satisfactorily meeting the various State licensing board requirements.

Following graduation from the 36-month full time speciality program, the graduate must be able to practise independently as a Pediatric Dentistry specialist.

The following is a list of the required skills and abilities (as adapted from the Canadian Dental Accreditation Commission):

I. The graduating Pediatric Dentistry student must have an understanding level[1] of knowledge in the following biomedical sciences:
   a. Biostatistics and Clinical Epidemiology - including probability theory, descriptive statistics, hypothesis testing, inferential statistics, principles of clinical epidemiology and research design.
   b. Pharmacology - including pharmacokinetics, interaction, and oral manifestations of chemotherapeutic regimens, pain and anxiety control, and drug dependency.
   c. Microbiology - including virology, immunology, and cariology.
   d. Embryology - including principles of embryology with a focus on the developing head and neck, and craniofacial anomalies.
   e. Genetics - including human chromosomes, Mendelian and polygenic patterns of inheritance, expressivity, basis for genetic disease, pedigree construction, physical examination and laboratory evaluation methods, genetic factors in craniofacial disease and formation and management of genetic diseases.
   f. Anatomy - including a review of general anatomy and head and neck anatomy with an emphasis on the growing child.
   g. Oral Pathology - including a review of the epidemiology, pathogenesis, clinical characteristics, diagnostic methods, formulation of a differential diagnoses and management

of oral and perioral lesions and anomalies with emphasis on the infant, child, and adolescent.

II. The graduating Pediatric Dentistry student must have an in-depth[2] level of knowledge in:

a. Physical, psychological, and social development. This includes the basic principles and theories of child development and the age appropriate behaviour responses in the dental setting.
b. Behaviour Management
    1. Child behaviour management in the dental setting and the objectives of various management methods, including consultations with other experts as needed to ensure optimal patient management.
    2. Principles of communication techniques, including the descriptions of and recommendations for the use of specific techniques.
c. The principles of informed consent relative to behaviour management and treatment options.
d. The principles and objectives of conscious sedation, deep sedation, and general anesthesia as behaviour management techniques, including indications, contraindications and monitoring.
e. The epidemiology of oral diseases encountered in pediatric patients, including those pediatric patients with special health care needs.
f. The oral diseases encountered in pediatric patients, including those pediatric patients with special health care needs.
g. The diagnosis of oral and perioral lesions and anomalies in infants, children, and adolescents; treat common oral diseases; perform uncomplicated biopsies and adjunctive diagnostic tests; order necessary laboratory tests; and refer persistent lesions and/or extensive surgical management cases to appropriate specialists: adjunctive diagnostic tests would include, but are not limited to, exfoliative cytology, microbial cultures, and other commercially available tests, such as the herpes simplex antigen test.
h. Pediatric oral and maxillofacial radiology and appropriate procedures of radiation hygiene.
i. The scientific basis for the prevention and treatment of dental caries, periodontal and pulpal diseases, traumatic injuries, and developmental anomalies, especially in the following areas:
    1. Infant oral health care.
    2. The effects of proper nutrition, fluoride therapy and sealants in the prevention of oral disease.
    3. Restorative and prosthetic techniques and materials for the primary, mixed and permanent dentitions.
    4. The prevalence and severity of gingival, periodontal and other mucosal disorders in children and adolescents.
    5. Pulp histology and pathology of primary and young permanent teeth, including indications and rationale for various types of indirect and direct pulp therapy.
j. The prevention and management of medical emergencies in the dental setting.
k. Medical conditions and the alternatives in the delivery of dental care that those conditions might require.
l. Craniofacial growth and development to enable the residents to diagnose, consult with and/or refer to other specialists, problems affecting orofacial esthetics, form or function. This includes, but is not limited to:
    1. Theories of growth mechanisms.
    2. Principles of comprehensive diagnosis and treatment planning to identify normal and abnormal dentofacial growth and development.
    3. The indications and contraindications for extraction and non-extraction therapy, growth modification, dental compensation for skeletal problems, growth prediction, and treatment modalities.

m. Recognition, referral and treatment of child abuse and neglect.
n. Formulation of treatment plans for patients with special health care needs.

III. The graduating Pediatric Dentistry student must have an understanding level[1] of knowledge in:
a. Fundamentals of pediatric medicine including those related to pediatric patients with special health care needs.
b. Normal language development and the recognition of language delays/disorders; the anatomy and physiology of articulation and normal articulation development; causes of defective articulation with emphasis on oral anomalies, craniofacial anomalies, dental or occlusal abnormalities, velopharyngeal insufficiency (VPI), history of cleft lip/palate and normal velopharyngeal function and the effect of VPI on resonance.
c. The design, implementation, and management of a contemporary practice of pediatric dentistry, emphasizing business skills for proper and efficient practice.
d. Jurisprudence and risk management.
e. Use of computers in didactic, clinical and research endeavours, as well as in practice management.
f. Biomedical ethics.
g. Appropriate diagnostic imaging techniques and interpretation. This includes the necessary referral for specialized investigations normally only available in institutions.

IV. The graduating Pediatric Dentistry student must achieve competency in:
a. Working cooperatively with consultants and clinicians in other dental specialties and health fields.
b. Pediatric patient management using non-pharmacological and pharmacological approaches consistent with approved guidelines for care.
c. Application of preventive practices including:
    1. Scientific principles, techniques and treatment planning for the prevention of oral diseases.
    2. Dental health education programs, materials and personnel to assist in the delivery of preventive care.
d. Management of comprehensive restorative and prosthetic care for pediatric patients.
e. Management of orofacial injuries as follows. The residents diagnoses and treats traumatic injuries of the oral and perioral structures including:
    1. Evaluation and treatment of trauma to the primary, mixed and permanent dentitions, such as repositioning, replantation and stabilization of intruded, extruded, luxated, and avulsed teeth.
    2. Evaluation, diagnosis, and management of the pulpal, periodontal and associated soft tissues following traumatic injury.
    3. Recognition of injuries including fractures of the maxilla and mandible and referral for treatment by the appropriate specialist.
    4. Recognition and reporting child abuse and neglect and non-accidental trauma.
f. Ability to diagnose the various periodontal diseases of childhood and adolescence, treat and/or refer cases of periodontal diseases to the appropriate specialist.
g. Management of pulpal and periradicular tissues in the primary and developing permanent dentition.
h. Management of the oral health of patients with special healthcare needs, including, but not limited to:
    1. Medically-compromised.
    2. Physically-compromised or disabled.

3. Diagnosed to have developmental disabilities, psychiatric disorders or psychological disorders.

i. Management of interceptive orthodontic care for the pediatric patient.

j. Diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures

V. The graduating Pediatric Dentistry student must perform and acquire exposure to provide services in various settings, including, but not limited to:

a. Hospital & Adjunctive Experiences

i. Students must acquire knowledge and skills to function as health care providers within the hospital setting. Residents must develop the expertise in the management of medically compromised and disabled persons with oral diseases or conditions. The specialist in pediatric dentistry must have sufficient hospital experience to acquire adequate knowledge and skills to function as a health care provider within the hospital setting. This would include the care of ambulatory care patients, inpatients and the treatment of patients in a hospital operating room.

b. Emergency Care

i. Students must acquire knowledge and skills to achieve competence in assessment and management of orofacial trauma, dental pain, and infections.

c. Anesthesiology

i. Students must acquire knowledge and experience during an anesthesiology rotation to manage children and adolescents undergoing general anesthesia. The anesthesia rotation is scheduled to provide experiences such as preoperative evaluation, risk assessment, assessing the effects of pharmacologic agents, venipuncture techniques, airway management, general anesthetic induction, and intubation, administration of anesthetic agents, patient monitoring, prevention and management of anesthetic emergencies, recovery room management, postoperative appraisal and follow up.

d. Pediatric Medicine

i. Students must show knowledge and experience in obtaining and evaluating complete medical histories, parental interviews, system oriented physical examinations, clinical assessments of healthy and ill patients, selection of laboratory tests and evaluation of data, evaluation of physical, motor and sensory development, genetic implications of childhood diseases, the use of drug therapy in the management of diseases, and communication with parents/legal guardian/care giver through discussions and explanation.

e. Pediatric Patients with Special Health Care Needs

i. Students must show knowledge and experience to broaden their overall knowledge and skills in the evaluation and management of pediatric patients with special health care needs. Resident involvement in multidisciplinary team service including participation in the oral assessment, and discussion of the management and delivery of necessary dental procedures for pediatric patients with special health care needs is encouraged.

f. Teaching Experience

i. Participation in teaching is a learning experience for the student as it enhances the ability to organize and evaluate material and communicate information to others. The student must be assigned to teach in the institution's programs and encouraged to participate in table clinics, seminars, demonstrations, or lectures. Participation as both clinician and student in the institution's continuing dental education program is

also recommended. However, this participation must not interfere with the core graduate/postgraduate program.

VI. Other Academic Requirements

a. Students must successfully undertake a research project as part of the M.Dent. (Pediatric Dentistry) graduate Pediatric Dentistry Program requirements, and successfully defend a thesis as determined by the assigned examining committee.
    i. Student participation in a research experience related to the specialty of pediatric dentistry either in a clinical or laboratory research topic as both an investigator and author.
b. The student is able to write a scholarly paper to a standard for publication in a referred journal.
c. Students must PASS all didactic and clinical examinations required by the Program.

Notes

[1] Understanding: Adequate knowledge with the ability to apply.

[2] A thorough knowledge of concepts and theories for the purpose of critical analysis and the synthesis of more complete understanding.

Respectfully submitted to the Faculty of Graduate Studies,

Dr Bradley Klus
Acting Program Director; Pediatric Dentistry Graduate Program
College of Dentistry
Faculty of Health Sciences
University of Manitoba

31st May 2018.
Revised 18th August 2019