

DEFINITION

Pediatric Urology is the area of enhanced competence within Urology and Pediatric Surgery concerned with the study, investigation, diagnosis, and medical and surgical management of genitourinary conditions in the pediatric population, spanning from the pre-natal period to young adulthood. The most common clinical problems are those congenital or acquired disorders involving the urinary tract, genitalia, and reproductive organs.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

Royal College certification, or equivalent, in Pediatric Surgery or Urology

OR

Eligibility for the Royal College certification examination in Pediatric Surgery or Urology

OR

Registration in a Royal College-accredited residency program in Pediatric Surgery or Urology

ELIGIBILITY REQUIREMENTS TO SUBMIT A ROYAL COLLEGE COMPETENCY PORTFOLIO

All trainees must be Royal College certified, or equivalent, in their entry route discipline in order to be eligible to submit a Royal College competency portfolio in Pediatric Urology.

MAJOR TASKS OF PEDIATRIC UROLOGY

The discipline of Pediatric Urology includes responsibility for

- assessment and management of fetuses, infants, children, and youth with genitourinary conditions;
- surgical care of infants, children, and youth with genitourinary conditions; and
- longitudinal care of patients with genitourinary conditions through growth and development, including transition of care to another health care setting or professional.

At the completion of training, the diplomate will have acquired the following competencies and will function effectively as a:

Medical Expert

Definition:

As *Medical Experts*, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centred care. Medical Expert is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

1. Practise medicine within their defined scope of practice and expertise

- 1.1. Demonstrate a commitment to high-quality care of patients and their families¹
- 1.2. Integrate the CanMEDS Intrinsic Roles into their practice of medicine
- 1.3. Apply knowledge of the clinical and biomedical sciences relevant to their discipline
 - 1.3.1. Age and sex-related development and anatomy of the genitourinary tract
 - 1.3.2. Renal physiology
 - 1.3.3. Neurophysiology of the urinary tract
 - 1.3.4. Genetic conditions of the genitourinary tract
 - 1.3.5. Epidemiology, classification, etiology, pathophysiology, and treatment of genitourinary conditions
 - 1.3.5.1. Congenital and developmental abnormalities
 - 1.3.5.1.1. Kidney and ureter
 - 1.3.5.1.1.1. Cystic disease of the kidney
 - 1.3.5.1.1.2. Horseshoe kidney and other renal anomalies
 - 1.3.5.1.1.3. Duplication, retrocaval ureter and other ureteric anomalies
 - 1.3.5.1.2. Bladder and urethra
 - 1.3.5.1.2.1. Vesicoureteral reflux
 - 1.3.5.1.2.2. Posterior urethral valves
 - 1.3.5.1.2.3. Epispadias and exstrophy
 - 1.3.5.1.2.4. Hypospadias and chordee
 - 1.3.5.1.2.5. Cloacal anomalies

¹ Throughout this document, references to the patient's family are intended to include all those who are personally significant to the patient and are concerned with his or her care, including, according to the patient's circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

- 1.3.5.1.3. External genitalia
 - 1.3.5.1.3.1. Disorders of sexual differentiation
 - 1.3.5.1.3.2. Undescended testis
 - 1.3.5.1.3.3. Anomalies of the external genitalia
 - 1.3.5.1.3.4. Cloacal anomalies

 - 1.3.5.1.4. Obstructive disease of the upper urinary tract
 - 1.3.5.1.4.1. Hydronephrosis and obstructive uropathy
 - 1.3.5.1.4.2. Ureteropelvic junction obstruction

 - 1.3.5.1.5. Obstructive disease of the lower urinary tract
 - 1.3.5.1.5.1. Bladder outflow obstruction
 - 1.3.5.1.5.2. Urethral strictures
 - 1.3.5.1.5.3. Obstruction secondary to neurological disorders

 - 1.3.5.2. Urinary calculus disease
 - 1.3.5.2.1. Renal and ureteral calculi
 - 1.3.5.2.2. Bladder and urethral calculi

 - 1.3.5.3. Urinary fistulae

 - 1.3.5.4. Urinary and genital infections
 - 1.3.5.4.1. Cystitis and urethritis
 - 1.3.5.4.1.1. Bacterial, complicated and uncomplicated
 - 1.3.5.4.1.2. Non-bacterial

 - 1.3.5.4.2. Pyelonephritis, xanthogranulomatous pyelonephritis, and other renal infections

 - 1.3.5.4.3. Renal abscess

 - 1.3.5.5. Surgically correctable hypertension, including adrenal and renal causes

 - 1.3.5.6. Voiding disorders including relevant neurourology
 - 1.3.5.6.1. Urinary incontinence
 - 1.3.5.6.2. Nocturnal enuresis
 - 1.3.5.6.3. Functional
 - 1.3.5.6.4. Dysfunction due to neurological disease
 - 1.3.5.6.5. Spina Bifida and spinal cord injury
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- 1.3.5.7. Disorders of the external genitalia
 - 1.3.5.7.1. Hydrocele, varicocele, spermatocele and cysts
 - 1.3.5.7.2. Torsion of the testis, cord and appendages
 - 1.3.5.7.3. Inguinal hernia
 - 1.3.5.7.4. Urethral prolapse
 - 1.3.5.7.5. Labial adhesion
 - 1.3.5.7.6. Introital mass
 - 1.3.5.7.7. Imperforate hymen
 - 1.3.5.7.8. Clitoromegaly
 - 1.3.5.7.9. Hydrometrocolpos

- 1.3.5.8. Urological manifestations of systemic diseases
 - 1.3.5.8.1. Connective tissue diseases
 - 1.3.5.8.2. Diabetes mellitus

- 1.3.5.9. Trauma, including multi-system trauma
 - 1.3.5.9.1. Kidney
 - 1.3.5.9.2. Ureter
 - 1.3.5.9.3. Bladder
 - 1.3.5.9.4. Urethra
 - 1.3.5.9.5. External genitalia

- 1.3.6. Urological oncology, including benign and malignant tumours of the kidney, adrenal gland, bladder, prostate, and testis
 - 1.3.6.1. Investigative and diagnostic techniques
 - 1.3.6.2. Staging and grading systems
 - 1.3.6.3. Principles of cancer treatment, including the role of surgery, radiotherapy, chemotherapy, and immunotherapy
 - 1.3.6.4. Role and indications of percutaneous and angiographic techniques
 - 1.3.6.5. Principles of cancer palliation

- 1.3.7. Renal transplantation
 - 1.3.7.1. Recipient selection and preparation
 - 1.3.7.2. Management of surgical complications of renal transplantation
 - 1.3.7.3. Renal transplant and transplant nephrectomy procedures

- 1.3.8. Evidence-based best practices for the clinical assessment and management of pediatric patients with genitourinary conditions, including the Canadian Urological Association guidelines
- 1.3.9. ALARA (As Low As Reasonably Achievable) principles to minimize radiation exposure
- 1.3.10. Jurisdictional guidelines for substitute decision-making in the pediatric population
- 1.4. Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner
- 1.5. Carry out professional duties in the face of multiple competing demands
- 1.6. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice

2. Perform a patient-centred clinical assessment and establish a management plan

- 2.1. Prioritize issues to be addressed in a patient encounter
- 2.2. Elicit a history considering the varying contributions of the patient and family based on the patient's age, cognitive capacity and right to self-determination, perform a focused physical exam, select appropriate investigations, and interpret the results for the purpose of diagnosis and management, disease prevention, and health promotion
 - 2.2.1. Elicit a urological history and the genitourinary developmental status
 - 2.2.2. Select investigative methods, taking into account potential risks for harmful incidents, and interpret the results
 - 2.2.2.1. Urine tests
 - 2.2.2.1.1. Routine urinalysis
 - 2.2.2.1.2. Urine culture techniques
 - 2.2.2.1.3. Metabolic studies
 - 2.2.2.2. Biochemical serum studies
 - 2.2.2.2.1. Renal function tests
 - 2.2.2.2.2. Adrenal function tests
 - 2.2.2.2.3. Tumour markers
 - 2.2.2.3. Antegrade and retrograde urethrography, cystography, and pyelography
 - 2.2.2.4. Voiding cystourethrography and genitography
 - 2.2.2.5. Ultrasonography
 - 2.2.2.5.1. Kidney

- 2.2.2.5.2. Bladder
- 2.2.2.5.3. Prostate
- 2.2.2.5.4. Scrotal contents
- 2.2.2.5.5. Doppler studies of renal, gonadal and penile vasculature
- 2.2.2.5.6. Prenatal imaging

- 2.2.2.6. Radioisotope studies
 - 2.2.2.6.1. Renal scans
 - 2.2.2.6.2. Voiding cystograms
 - 2.2.2.6.3. Scans for localization of inflammatory lesions

- 2.2.2.7. Computerized tomography (CT)
 - 2.2.2.7.1. Abdomen and pelvis, including CT urogram

- 2.2.2.8. Magnetic resonance imaging (MRI) of the urinary tract
- 2.2.2.9. Angiography of the renal vasculature
- 2.2.2.10. Urodynamic studies
 - 2.2.2.10.1. Cystometrogram
 - 2.2.2.10.2. Uroflowmetry
 - 2.2.2.10.3. Voiding pressure studies
 - 2.2.2.10.4. Pelvic floor electromyography
 - 2.2.2.10.5. Videourodynamic studies

- 2.2.2.11. Anatomical pathology studies
 - 2.2.2.11.1. Cytopathology
 - 2.2.2.11.2. Histopathology

- 2.3. Establish goals of care in collaboration with patients, their families, and consulting health care professionals, which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation

- 2.4. Establish a patient and family-centred management plan for the genitourinary condition
 - 2.4.1. Prenatal genitourinary anomalies
 - 2.4.2. Congenital and developmental genitourinary anomalies
 - 2.4.3. Voiding disorders
 - 2.4.4. Urinary tract infections
 - 2.4.5. Disorders of the male external genitalia

- 2.4.6. Genitourinary trauma
- 2.4.7. Suitability for, and complications of, renal transplantation
- 2.4.8. Genitourinary tumours

3. Plan and perform procedures and therapies for the purpose of assessment and/or management of genitourinary conditions

- 3.1. Determine the most appropriate procedures or therapies, incorporating the results of psychosocial evaluations and consultations with other health care professionals
- 3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy
 - 3.2.1. Describe expected long-term outcomes of surgical interventions and possible complications
- 3.3. Prioritize a procedure or therapy, taking into account clinical urgency and available resources
- 3.4. Perform a procedure in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances
 - 3.4.1. Endoscopic and percutaneous procedures:
 - 3.4.1.1. Cystoscopy and urethroscopy, ureteric catheterization including ureteric stent insertion and removal, and retrograde pyelography
 - 3.4.1.2. Urethral dilatation and visual internal urethrotomy
 - 3.4.1.3. Transurethral biopsy of bladder and prostate
 - 3.4.1.4. Transurethral resection of bladder tumours
 - 3.4.1.5. Transurethral resection or incision of ureterocele
 - 3.4.1.6. Manipulation of bladder calculi including litholapaxy
 - 3.4.1.7. Ureteroscopy, lithotripsy and basket extraction of ureteric calculi
 - 3.4.1.8. Endoscopic injection for vesico-ureteric reflux
 - 3.4.1.9. Suprapubic catheter insertion
 - 3.4.1.10. Resection of posterior urethral valves
 - 3.4.1.11. Insertion, removal and revision of peritoneal dialysis catheter
 - 3.4.2. Open surgical procedures:
 - 3.4.2.1. Circumcision
 - 3.4.2.2. Urethral meatotomy, meatoplasty
 - 3.4.2.3. Scrotal surgery: hydrocele, simple orchidectomy, testicular biopsy
 - 3.4.2.4. Varicocele repair
 - 3.4.2.5. Indirect hernia repair

- 3.4.2.6. Orchidopexy for inguinal or intra-abdominal testis
- 3.4.2.7. Radical orchidectomy
- 3.4.2.8. Repair of testicular torsion
- 3.4.2.9. Repair of urinary fistulae - involving urethra, bladder, ureter, or kidney
- 3.4.2.10. Procedures for ureteral and bladder trauma repair
- 3.4.2.11. Pyeloplasty for ureteropelvic junction obstruction
- 3.4.2.12. Nephrectomy: simple and radical
- 3.4.2.13. Partial nephrectomy
- 3.4.2.14. Nephroureterectomy
- 3.4.2.15. Uretero-ureterostomy
- 3.4.2.16. Ureteroneocystostomy – ureteral reimplantation
- 3.4.2.17. Cutaneous ureterostomy or pyelostomy
- 3.4.2.18. Vesicostomy
- 3.4.2.19. Procedures for correction of penile curvature and hypospadias: mild, moderate, severe
- 3.4.2.20. Augmentation cystoplasty
- 3.4.2.21. Insertion of testicular prosthesis
- 3.4.3. Laparoscopic procedures:
 - 3.4.3.1. Nephrectomy: partial, simple and radical
 - 3.4.3.2. Orchidopexy or orchidectomy for abdominal testis
 - 3.4.3.3. Pyeloplasty
 - 3.4.3.4. Varicoceletomy
- 3.5. Provide surgical assistance for complex genitourinary conditions, including:
 - 3.5.1. Percutaneous nephrolithotripsy
 - 3.5.2. Bladder exstrophy and epispadias
 - 3.5.3. Cloacal anomalies
 - 3.5.4. Laparoscopic-assisted bladder and bowel surgeries

4. Establish plans for ongoing care and, when appropriate, timely consultation

- 4.1. Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation
 - 4.1.1. Identify cases in which further interventions may be necessary
 - 4.1.2. Design a follow-up plan with the family that incorporates contingency plans for potential complications
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5. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

- 5.1. Recognize and respond to harm from health care delivery, including patient safety incidents
- 5.2. Adopt strategies that promote patient safety and address human and system factors

Communicator

Definition:

As *Communicators*, physicians form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

1. Establish professional therapeutic relationships with patients and their families

- 1.1. Communicate using a patient and family-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion
- 1.2. Optimize the physical environment for patient and family comfort, dignity, privacy, engagement, and safety
- 1.3. Recognize when the perspectives, values, or biases of patients, families, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly
- 1.4. Respond to a patient's and family's non-verbal behaviours to enhance communication
- 1.5. Manage disagreements and emotionally charged conversations
 - 1.5.1. Consider the impact of diseases on patients and families
 - 1.5.2. Recognize case-specific emotional stressors for the patient and family
 - 1.5.3. Apply strategies to address and deal with emotions, such as anxiety, frustration and anger
 - 1.5.4. Support the emotional needs of patients and families
- 1.6. Adapt to the unique needs and preferences of each patient and their family and to his or her clinical condition and circumstances
 - 1.6.1. Use developmentally-informed language for the given audience

- 2. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families**
 - 2.1. Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information
 - 2.2. Provide a clear structure for and manage the flow of an entire patient encounter
 - 2.3. Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent

- 3. Share health care information and plans with patients and their families**
 - 3.1. Share information and explanations that are clear, accurate, and timely, while checking for patient and family understanding
 - 3.2. Disclose harmful patient safety incidents to patients and their families accurately and appropriately

- 4. Engage patients and their families in developing plans that reflect the patient's health care needs and goals**
 - 4.1. Facilitate discussions with patients and their families in a way that is respectful, non-judgmental, and culturally safe

- 5. Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy**
 - 5.1. Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements
 - 5.2. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Collaborator

Definition:

As *Collaborators*, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

- 1. Work effectively with physicians and other colleagues in the health care professions**
 - 1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care

- 1.2. Negotiate overlapping and shared responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care
 - 1.2.1. Address the referring physician's reason for consultation
 - 1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions
 - 1.3.1. Collaborate in multidisciplinary teams for the integrated care of patients with genitourinary conditions
- 2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts**
- 3. Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care**
- 3.1. Determine when care should be transferred to another physician or health care professional
 - 3.2. Demonstrate safe handover of care, using both oral and written communication, during a patient transition to a different health care professional, setting, or stage of care
 - 3.2.1. Facilitate transfer of care to a primary care physician or specialist
 - 3.2.2. Facilitate transfer of care from the pediatric to adult health care setting

Leader

Definition:

As *Leaders*, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

- 1. Contribute to the improvement of health care delivery in teams, organizations, and systems**
- 2. Engage in the stewardship of health care resources**
- 3. Demonstrate leadership in health care systems**
- 4. Manage career planning, finances, and health human resources in personal practice(s)**

Health Advocate

Definition:

As *Health Advocates*, physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

1. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment

- 1.1. Work with patients to address determinants of health that affect them and their access to needed health services or resources
- 1.2. Work with patients and their families to increase opportunities to adopt healthy behaviours
- 1.3. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients
 - 1.3.1. Counsel patients and families regarding lifestyle changes that impact the health of children and youth with urological anomalies

2. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

- 2.1. Work with a community or population to identify the determinants of health that affect them
- 2.2. Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities
- 2.3. Contribute to a process to improve health in the community or population

Scholar

Definition:

As *Scholars*, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

1. Engage in the continuous enhancement of their professional activities through ongoing learning

2. Teach students, residents, the public, and other health care professionals

- 3. Integrate best available evidence into practice**
- 4. Contribute to the creation and dissemination of knowledge and practices applicable to health**

Professional

Definition:

As *Professionals*, physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.

Key and Enabling Competencies: Pediatric Urology diplomates are able to...

- 1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards**
- 2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care**
- 3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation**
 - 3.1. Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice
 - 3.1.1. Adhere to jurisdictional guidelines for substitute decision-making for prenatal and pediatric patients
- 4. Demonstrate a commitment to physician health and well-being to foster optimal patient care**

REQUIRED TRAINING EXPERIENCES

1. Provide consultation and ongoing care to pediatric patients with genitourinary conditions in medical wards, intensive care units, outpatient clinics, and emergency department.
2. Perform surgical procedures in pediatric patients with genitourinary conditions, including endoscopic, percutaneous, open and laparoscopic techniques.
3. Participate in interprofessional and multidisciplinary clinical rounds, including multidisciplinary cancer conferences, and others as available including end-stage renal disease meetings and disorders of sex development/gender identity issues.
4. Assist in surgical procedures of complex genitourinary conditions.
5. Provide consultation and ongoing care to pediatric patients with end-stage renal disease before and after renal transplantation.
6. Lead case discussions at quality improvement rounds.
7. Participate in academic activities pertaining to pediatric urology practice.

RECOMMENDED TRAINING EXPERIENCES

The AFC trainee in Pediatric Urology should

1. Collaborate or conduct quality improvement or research projects that improve delivery of care and outcome of pediatric patients with genitourinary conditions.
2. Disseminate new knowledge in the field of Pediatric Urology through publications and presentations at meetings.
3. Participate in hospital, provincial, and national committees related to Pediatric Urology practice and education.
4. Participate in the care of pediatric patients undergoing image guided urologic interventions.

This document is to be reviewed by the AFC Sub/committee in Pediatric Urology by December 2022.

APPROVED – Specialty Standards Review Committee – October 2019