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OBJECTIVES OF TRAINING IN ADULT AND PEDIATRIC NEPHROLOGY

2009

(Please see also the “Policies and Procedures” booklet.)

DEFINITION

Nephrology is that branch of medicine concerned with the care of patients with kidney disease and disorders of fluid and electrolyte metabolism.

GOALS

Upon completion of training, a resident is expected to be a competent specialist in Nephrology capable of assuming a consultant’s role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research.

Only candidates certificated by the Royal College of Physicians and Surgeons of Canada in Internal Medicine or Pediatrics may be eligible for the Certificate of Special Competence in Nephrology.

Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to address issues of gender, age, culture, ethnicity and ethics in a professional manner.

COMPETENCIES IN NEPHROLOGY:

At the completion of training, the resident 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 attitudes in their provision of patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS framework.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical and patient-centered medical care**
 - 1.1. Effectively perform a consultation, including the presentation of well-documented assessments and recommendations in written and/or verbal form in response to a request from another health care professional
 - 1.2. Demonstrate effective use of all CanMEDS competencies relevant to Nephrology
 - 1.3. Identify and appropriately respond to relevant ethical issues arising in patient care
 - 1.4. Effectively and appropriately prioritize professional duties when faced with multiple patients and problems
 - 1.5. Demonstrate compassionate and patient-centered care
 - 1.6. Recognize and respond to the ethical dimensions in medical decision-making
 - 1.7. Demonstrate medical expertise in situations other than patient care

- 2. Establish and maintain clinical knowledge, skills and attitudes appropriate to Nephrology**
 - 2.1. Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Nephrology, including:
 - 2.1.1. The anatomy and histology of the kidney and its micro structures including the structure and function of the glomerular filtration barrier
 - 2.1.2. The physiology and pathophysiology of
 - 2.1.2.1. Renal blood flow and glomerular filtration
 - 2.1.2.2. Regulation of acid base, electrolyte and water homeostasis
 - 2.1.2.3. Mineral metabolism and its alteration in renal disease, metabolic bone disease and nephrolithiasis
 - 2.1.2.4. Hypertension
 - 2.1.3. Clinical pharmacology as it pertains to drug prescribing in renal disease and transplantation (especially with regards to immunosuppression) and the use of dialysis therapies for poisonings.
 - 2.1.4. Immunology as it pertains to mechanisms of renal injury (such as in glomerulonephritis, vasculitis, tubulointerstitial disease and renal transplant rejection) and diagnostic testing relevant to renal disease
 - 2.1.5. Microbiology as it pertains to infections of the renal system and infectious complications of renal transplantation
 - 2.1.6. Embryology, growth and development of the kidney in the normal and disordered state (i.e vesico-ureteral reflux, cystic diseases of the kidney, renal changes with ageing)
 - 2.1.7. Mechanisms of fluid delivery, machine mechanics and membrane physiology as they relate to all dialysis modalities.

- 2.1.8. Pathology of disease in the native and transplanted kidney such as glomerulonephritis, vasculitis, systemic disease (e.g. diabetes, hypertension) etc.
 - 2.1.9. Epidemiology of acute renal failure and chronic kidney disease including those diseases commonly causing end stage kidney disease such as diabetes and hypertension
 - 2.1.10. Principles of genetics as they relate to the inheritance and transmission of diseases that affect the kidney
 - 2.1.11. Psychology of chronic illness such as chronic kidney disease
 - 2.1.12. The effects of systemic diseases on the kidney as well the effect of disordered kidney function on systemic health
- 2.2. Apply the lifelong learning skills associated with the Scholar Role to implement a personal program to remain up-to-date, and enhance areas of professional competence
 - 2.3. Contribute to the enhancement of quality care and patient safety in Nephrology, integrating currently available best evidence and best practices

3. Perform a complete and appropriate assessment of a patient

- 3.1. Effectively identify and explore issues to be addressed in a patient encounter, including the patient's context and preferences
- 3.2. For the purposes of prevention and health promotion, diagnosis and or management, elicit a history that is relevant, concise and accurate to context and preferences
- 3.3. For the purposes of prevention and health promotion, diagnosis and/or management, perform a focused physical examination that is relevant and accurate
- 3.4. Select medically appropriate investigative methods in a resource-effective and ethical manner
- 3.5. Interpret the results of the following investigations in the context of the patient
 - 3.5.1. Measures of renal function
 - 3.5.2. Serology
 - 3.5.3. Urine microscopy
 - 3.5.4. Other urine tests (e.g. electrolytes)
 - 3.5.5. Blood pressure data (e.g. ambulatory monitoring, home, office, manual and automated)
 - 3.5.6. Renal imaging
 - 3.5.7. Renal histology
- 3.6. Demonstrate effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans of the following presentations and their associated complications as appropriate in Adult or Pediatric Nephrology

- 3.6.1. Acute renal failure
- 3.6.2. Chronic kidney disease of all stages including transplantation
- 3.6.3. Proteinuria
- 3.6.4. Hematuria
- 3.6.5. Nephrolithiasis
- 3.6.6. Hypertension
- 3.6.7. Genetic renal disorders (cystic, metabolic, tubular, nephritis)
- 3.6.8. Pyuria
- 3.6.9. Disorders of fluids, electrolyte and acid-base

4. Use preventive and therapeutic interventions effectively

- 4.1. Implement an effective management plan in collaboration with a patient and their family
- 4.2. Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions relevant to Nephrology
 - 4.2.1. Strategies for renal protection (e.g. control of blood pressure, minimization of proteinuria, prevention of contrast nephrotoxicity)
 - 4.2.2. Immunosuppression in patients with renal disease and management of its' complications
 - 4.2.3. Plasmapheresis in patients with renal disease
 - 4.2.4. Hemodialysis
 - 4.2.5. Peritoneal dialysis
 - 4.2.6. Renal transplantation
 - 4.2.7. Strategies for management of complications of kidney disease (e.g. bone disease, anemia, growth delay, malnutrition)
- 4.3. Ensure appropriate informed consent is obtained for therapies
- 4.4. Ensure patients receive appropriate end-of-life care

5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic

- 5.1. Demonstrate appropriate performance of urine microscopy
- 5.2. Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to Nephrology
 - 5.2.1. Insertion of central venous access (Adult Nephrology only)
 - 5.2.2. Prescription, monitoring and adjustment of dialysis for renal replacement as well as in the treatment of poisonings and metabolic disorders
- 5.3. Ensure appropriate informed consent is obtained for procedures

- 5.4. For the procedures not necessarily performed by Nephrologists, describe the risks and benefits and appropriately recommend
 - 5.4.1 Renal biopsy
 - 5.4.2 Obtaining and maintaining access for dialysis (central venous catheter, arterial venous fistula, arterial venous grafts and peritoneal dialysis catheter)
 - 5.4.3 Plasmapheresis
 - 5.4.4 Renal artery revascularization
 - 5.4.5 Renal transplantation surgery
 - 5.4.6 Living kidney donation (Adult Nephrology only)
 - 5.4.7 Renal replacement therapy in critically ill patients
- 5.1 Appropriately document and disseminate information related to procedures performed and their outcomes
- 5.1 Ensure adequate follow-up is arranged for procedures performed
- 6. Recognizing the scope of their expertise, Nephrologists seek appropriate consultation from other healthcare professionals and;**
 - 6.1. Demonstrate insight into their own limitations of expertise via self-assessment
 - 6.2. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care
 - 6.3. Arrange appropriate follow-up care services for a patient and their family

Communicator

Definition:

As *Communicators*, physicians effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Develop rapport, trust, and ethical therapeutic relationships with patients, families and caregivers**
 - 1.1. Recognize that being a good communicator is a core clinical skill for physicians, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes
 - 1.2. Establish positive therapeutic relationships with patients and their families and caregivers that are characterized by understanding, trust, respect, honesty and empathy
 - 1.3. Respect patient confidentiality, privacy and autonomy

- 1.4. Listen effectively
 - 1.5. Be aware and responsive to nonverbal cues
 - 1.6. Effectively facilitate a structured clinical encounter

 - 2. Accurately elicit and synthesize relevant information and perspectives of patients and families, caregivers, colleagues, and other professionals**
 - 2.1. Gather information about a disease, but also about a patient's beliefs, concerns, expectations and illness experience
 - 2.2. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals

 - 3. Accurately convey relevant information and explanations to patients and families, caregivers, colleagues and other professionals**
 - 3.1. Deliver information to a patient and family, caregivers, colleagues and other professionals in a compassionate manner and in such a way that it is understandable, encourages discussion and participation in decision-making

 - 4. Develop a common understanding on issues, problems and plans with patients, families, caregivers and other professionals to develop a shared plan of care**
 - 4.1. Effectively identify and explore problems to be addressed from a patient encounter, including the patient's context, responses, concerns, and preferences
 - 4.2. Respect diversity and difference, including but not limited to the impact of age, level of functioning, gender, religion and cultural beliefs on decision-making
 - 4.3. Encourage discussion, questions, and interaction in the encounter
 - 4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care
 - 4.5. Effectively address challenging communication issues such as
 - 4.5.1. Obtaining informed consent
 - 4.5.2. Delivering bad news
 - 4.5.3. Addressing anger, confusion and misunderstanding
 - 4.5.4. Initiating and withdrawing of dialysis
 - 4.5.5. Appropriateness and choice of renal replacement modality

 - 5. Convey effective oral and written information about a medical encounter**
 - 5.1. Maintain clear, accurate, and appropriate records (e.g., written or electronic) of clinical encounters and plans
 - 5.2. Provide clear, accurate and appropriate consultation reports
 - 5.3. Effectively present verbal reports of clinical encounters and plans
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- 5.4. When appropriate, effectively present medical information to the public or media about a medical issue

Collaborator

Definition:

As *Collaborators*, physicians effectively work within a healthcare team to achieve optimal patient care. The management of patients with chronic kidney disease relies extensively on the skills provided by all members of the health care team.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Participate effectively and appropriately in an interprofessional healthcare team**
 - 1.1. Clearly describe their roles and responsibilities to other professionals
 - 1.2. Describe the roles and responsibilities of other professionals within the health care team. Members of this team may include nursing, clinical nutrition, social work, pharmacy, physiotherapy, occupational therapy, teacher, child life specialist, psychologist, hospital management, biomedical technicians, and other physicians as well as the Nephrologist.
 - 1.3. Recognize and respect the diversity of roles, responsibilities and competences of other professionals in relation to their own
 - 1.4. Work with others to assess, plan, provide and integrate care for individual patients (or groups of patients) in particular those with progressive kidney disease, on dialysis and with a renal transplant
 - 1.5. Where appropriate, work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities
 - 1.6. Participate effectively in interprofessional team meetings
 - 1.7. Enter into interdependent relationships with other professions for the provision of quality care
 - 1.8. Describe the principles of team dynamics
 - 1.9. Respect team ethics, including confidentiality, resource allocation and professionalism
 - 1.10. Where appropriate, demonstrate leadership in a healthcare team

- 2. Effectively work with other health professionals to prevent, negotiate, and resolve interprofessional conflict**
 - 2.1. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team
 - 2.2. Work with other professionals to prevent conflicts
 - 2.3. Employ collaborative negotiation to resolve conflicts
 - 2.4. Respect differences, misunderstandings and limitations in other professionals

- 2.5. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension

Manager

Definition:

As *Managers*, physicians are integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system. Nephrologists direct the clinical aspects of predialysis, dialysis and transplant programs including the planning, budgeting and evaluation of these patient care programs.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Participate in activities that contribute to the effectiveness of their healthcare organizations and systems**
 - 1.1. Work collaboratively with others in their organizations
 - 1.2. Participate in systemic quality process evaluation and improvement, such as patient safety initiatives or quality assurance processes in the dialysis unit
 - 1.3. Describe the structure and function of the healthcare system as it relates to Nephrology, including the roles of physicians at the local, regional and national level in the provision of predialysis care, dialysis therapies and living and deceased kidney transplantation.
 - 1.4. Describe principles of healthcare financing, including physician remuneration, budgeting and organizational funding

 - 2. Manage their practice and career effectively**
 - 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities and personal life
 - 2.2. Manage a practice including finances and human resources
 - 2.3. Implement processes to ensure personal practice improvement
 - 2.4. Employ information technology appropriately for patient care

 - 3. Allocate finite healthcare resources appropriately**
 - 3.1. Recognize the importance of just allocation of healthcare resources, balancing effectiveness, efficiency and access with optimal patient care in particular with high cost therapies or scarce societal resources such as dialysis and deceased donor organs
 - 3.2. Apply evidence and management processes for cost-appropriate care for individual patients with kidney disease as well as at a systems level

 - 4. Serve in administration and leadership roles, as appropriate**
 - 4.1. Chair or participate effectively in committees and meetings
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- 4.2. Lead or implement a change in health care
- 4.3. Plan relevant elements of health care delivery (e.g., work schedules)

Health Advocate

Definition:

As *Health Advocates*, physicians responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Respond to individual patient health needs and issues as part of patient care**
 - 1.1. Identify the health needs of an individual patient including their ability to access services in the healthcare and social services system
 - 1.2. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care

- 2. Respond to the health needs of the communities that they serve**
 - 2.1. Describe the practice communities that they serve
 - 2.2. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately (e.g. access to dialysis therapies, promotion of organ donation, identification and treatment of hypertension)
 - 2.3. Appreciate the possibility of competing interests between the communities served and other populations

- 3. Identify the determinants of health for the populations that they serve**
 - 3.1. Identify the determinants of health, including barriers to access to care and resources, in patients with disease in their native kidneys, on dialysis therapies and with a renal transplant
 - 3.2. Identify vulnerable or marginalized populations within those served and respond appropriately

- 4. Promote the health of individual patients, communities, and populations**
 - 4.1. Describe an approach to implementing a change in a determinant of health of the populations they serve (e.g. organ donation initiatives, early diagnosis of chronic kidney disease with eGFR (estimated Glomerular Filtration Rate) reporting, advocacy for dietary salt restriction)
 - 4.2. Describe how public policy impacts on the health of the patients with renal disease
 - 4.3. Identify points of influence in the healthcare system and its structure

- 4.3.1. Describe the role of advocacy groups, public education bodies and private organizations, such as the Kidney Foundation of Canada and the Canadian Society of Nephrology, in promoting the health needs of patients with renal disease
- 4.4. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism
- 4.5. Appreciate the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper
- 4.6. Describe the role of the medical profession in advocating collectively for health and patient safety

Scholar

Definition:

As *Scholars*, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

Key and Enabling Competencies: Nephrologists are able to...

- 1. Maintain and enhance professional activities through ongoing learning.**
 - 1.1. Describe the principles of maintenance of competence
 - 1.2. Describe the principles and strategies for implementing a personal knowledge management system
 - 1.3. Recognize and reflect on learning issues in practice
 - 1.4. Conduct a personal practice audit
 - 1.5. Pose an appropriate learning question
 - 1.6. Access and interpret the relevant evidence
 - 1.7. Integrate new learning into practice
 - 1.8. Evaluate the impact of any change in practice
 - 1.9. Document the learning process

- 2. Critically evaluate medical information and its sources, and apply this appropriately to practice decisions**
 - 2.1. Describe the principles of critical appraisal
 - 2.2. Critically appraise retrieved evidence in order to address a clinical question
 - 2.3. Integrate critical appraisal conclusions into clinical care

3. **Facilitate the learning of patients, families, students, residents, other health professionals, the public and others, as appropriate**
 - 3.1. Describe principles of learning relevant to medical education
 - 3.1.1. Recognize potential barriers to learning such as illness, literacy and language skills
 - 3.2. Collaboratively identify the learning needs and desired learning outcomes of others
 - 3.3. Select effective teaching strategies and content to facilitate others' learning
 - 3.4. Demonstrate an effective lecture or presentation
 - 3.5. Assess and reflect on a teaching encounter
 - 3.6. Provide effective feedback
 - 3.7. Describe the principles of ethics with respect to teaching

4. **Contribute to the development, dissemination, and translation of new knowledge and practices**
 - 4.1. Describe the principles of research and scholarly enquiry
 - 4.2. Describe the principles of research ethics
 - 4.3. Perform original research (clinical or basic science) or a continuous quality initiative (CQI) project
 - 4.3.1. pose a question
 - 4.3.2. perform a literature review
 - 4.3.3. develop a proposal to solve the question using appropriate methodology
 - 4.3.4. identify, consult and collaborate with content-experts and others to conduct the research
 - 4.3.5. collect the needed data
 - 4.3.6. analyze the collected data
 - 4.3.7. synthesize the literature and new data to solve the question
 - 4.3.8. defend and disseminate the results of the research
 - 4.3.8.1. for CQI, implement the solution in practice, evaluate the outcome and reassess the solution
 - 4.3.9. from the results, identify areas for further investigation.

Professional

Definition:

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

Key and Enabling Competencies: Nephrologists are able to...

1. Demonstrate a commitment to their patients, profession, and society through ethical practice

- 1.1. Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect and altruism
- 1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence
- 1.3. Recognize and appropriately respond to ethical issues encountered in practice such as the donation and allocation of living as well as deceased donor organs, initiation and withdrawal of dialysis or genetic counseling of those with hereditary renal disease
- 1.4. Appropriately manage conflicts of interest
- 1.5. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law
- 1.6. Maintain appropriate relations with patients

2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation

- 2.1. Appreciate the professional, legal and ethical codes of practice
- 2.2. Fulfill the regulatory and legal obligations required of current practice
- 2.3. Demonstrate accountability to professional regulatory bodies
- 2.4. Recognize and respond to others' unprofessional behaviours in practice
- 2.5. Participate in peer review

3. Demonstrate a commitment to physician health and sustainable practice

- 3.1. Balance personal and professional priorities to ensure personal health and a sustainable practice recognizing the on-going impact of caring for patients with organ failure and at the end of life
- 3.2. Strive to heighten personal and professional awareness and insight
- 3.3. Recognize other professionals in need and respond appropriately