

Effective for residents who enter training on or after July 1, 2021.

DEFINITION

Pediatric Respiriology is a medical subspecialty concerned with the study, diagnosis, and management of the respiratory system of newborns, infants, children, and adolescents in health and disease and the prevention of respiratory disease.

PEDIATRIC RESPIROLOGY PRACTICE

Pediatric respirologists provide care for newborn, infant, child, and adolescent patients with respiratory symptoms and/or lung disease of any etiology, including acute and chronic, uncomplicated and complex respiratory conditions, and respiratory failure. This includes patients with diseases of the upper and lower airway, lung parenchyma, pleura, mediastinum, pulmonary circulation, as well as disorders of sleep and control of breathing.

Pediatric respirologists provide assessment, management, and longitudinal care of patients with conditions affecting the respiratory system, including primary and secondary prevention, treatment, and pulmonary rehabilitation. They perform the procedures and interpret the diagnostic modalities of the subspecialty. Pediatric respirologists prescribe and monitor ventilatory support and oxygen delivery systems, as well as other treatments that support breathing. They provide care along the trajectory of the patient's illness and across the spectrum of disease severity from preventive care to management of end stage lung disease. At the societal level, they promote and advocate for pulmonary health.

Pediatric respirologists serve as consultants to and make medical decisions with other specialists, including primary care physicians. They work effectively with members of the interprofessional health care team.

Pediatric respirologists practice in both inpatient and outpatient care settings, in academic health centres, major regional hospitals, community or regional care centres, or in private practices. Pediatric respirologists may also provide medical direction and supervise the operations of pulmonary function laboratories.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

Royal College certification in Pediatrics.

OR

Eligibility for the Royal College examination in Pediatrics.

OR

Registration in a Royal College-accredited residency program in Pediatrics (see requirements for these qualifications).

A maximum of one year of training may be undertaken during training for certification in Pediatrics.

ELIGIBILITY REQUIREMENTS FOR EXAMINATION¹

All candidates must be Royal College certified in Pediatrics in order to be eligible for the Royal College examination in Pediatric Respiriology.

PEDIATRIC RESPIROLOGY COMPETENCIES

Medical Expert

Definition:

As *Medical Experts*, pediatric respirologists 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 respirologists are able to...

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

- 1.1. Demonstrate a commitment to high-quality care of their patients
- 1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Pediatric Respiriology
- 1.3. Apply knowledge of the clinical and biomedical sciences relevant to Pediatric Respiriology
 - 1.3.1. Embryologic development of the respiratory system and the pathogenesis of congenital anomalies
 - 1.3.2. Gross anatomy and histology of the upper airway, lungs, pulmonary vasculature, chest wall, and neuromuscular apparatus of breathing

¹ These eligibility requirements are not applicable to SEAP candidates. Please contact the Royal College for information about the Subspecialty Examination Affiliate Program.

- 1.3.3. Developmental physiology
 - 1.3.4. Respiratory physiology:
 - 1.3.4.1. Ventilation and its control
 - 1.3.4.2. Respiratory muscle function
 - 1.3.4.3. Mechanics of breathing
 - 1.3.4.4. Distribution of alveolar ventilation
 - 1.3.4.5. Perfusion and vascular physiology
 - 1.3.4.6. Ventilation-perfusion relationships
 - 1.3.4.7. Diffusion of oxygen and carbon dioxide
 - 1.3.4.8. Alveolar gas composition
 - 1.3.4.9. Oxygen delivery, utilization, and transport
 - 1.3.4.10. Carbon dioxide transport
 - 1.3.4.11. Acid base balance
 - 1.3.4.12. Respiratory function in sleep
 - 1.3.4.13. Respiratory function during exercise
 - 1.3.5. Cardiac physiology as it relates to Respiriology in health and disease
 - 1.3.6. Gross and microscopic pathology as applied to clinical disorders of the respiratory system
 - 1.3.7. Normal defense mechanisms of the respiratory system and consequences of their interruption
 - 1.3.8. Microbiology and transmission of respiratory tract infections
 - 1.3.9. Principles of cellular and molecular biology as they apply to Pediatric Respiriology
 - 1.3.10. Principles of clinical immunology as they apply to Pediatric Respiriology
 - 1.3.11. Principles of clinical genetics
 - 1.3.12. Principles of epidemiology and surveillance
 - 1.3.13. Mechanisms of action of major pharmacological agents with effects on the respiratory system, with attention to age-specific responses
 - 1.3.14. Pathophysiology, differential diagnosis, and diagnostic approach to the following signs and symptoms:
 - 1.3.14.1. Adventitious breath sounds
 - 1.3.14.2. Chest pain
 - 1.3.14.3. Clubbing of the fingernails
 - 1.3.14.4. Cough
 - 1.3.14.5. Cyanosis
 - 1.3.14.6. Dyspnea
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- 1.3.14.7. Hemoptysis
- 1.3.14.8. Snoring

- 1.3.15. Pathophysiology, clinical manifestations, differential diagnosis, approach to prevention, diagnosis and management, natural history and prognosis of the following:
 - 1.3.15.1. Abnormalities of developmental origin
 - 1.3.15.2. Diseases of prematurity
 - 1.3.15.3. Airways obstruction
 - 1.3.15.3.1. Upper airway
 - 1.3.15.3.2. Lower airway

 - 1.3.15.4. Pleural diseases
 - 1.3.15.4.1. Pleural effusion and empyema
 - 1.3.15.4.2. Pneumothorax

 - 1.3.15.5. Mediastinal diseases
 - 1.3.15.6. Allergic and immunologic diseases
 - 1.3.15.7. Environmental diseases
 - 1.3.15.8. Complications of aspiration
 - 1.3.15.9. Infectious diseases
 - 1.3.15.10. Lung/airway injury
 - 1.3.15.11. Neoplastic diseases
 - 1.3.15.12. Restrictive diseases
 - 1.3.15.12.1. Chest wall deformities
 - 1.3.15.12.2. Neuromuscular diseases
 - 1.3.15.12.3. Interstitial lung diseases (ILD)

 - 1.3.15.13. Pulmonary hemorrhage syndromes
 - 1.3.15.14. Disorders of the pulmonary circulation
 - 1.3.15.15. Respiratory manifestations of extrapulmonary diseases
 - 1.3.15.16. Non-cardiogenic pulmonary edema
 - 1.3.15.17. Acute respiratory distress syndrome
 - 1.3.15.18. Respiratory failure
 - 1.3.15.19. Sleep-related respiratory disorders
 - 1.3.15.20. Disorders of the control of breathing

- 1.3.15.21. Sudden infant death syndrome
- 1.3.15.22. Brief resolved unexplained event

- 1.3.16. Principles of imaging modalities, techniques, and contrast agents, applicable to the care of patients with respiratory disease
- 1.3.17. Indications, contraindications, interpretation, limitations, and complications of diagnostic and therapeutic procedures performed on the respiratory system
- 1.3.18. Potential risks and complications of endoscopic procedures for patient, operator, and assistant and the measures appropriate to minimize such hazards
- 1.3.19. Infection control and care of equipment as relevant to bronchoscopy procedures
- 1.3.20. Principles of physical medicine and pulmonary rehabilitation
- 1.3.21. Principles of the operation of a pulmonary function laboratory
 - 1.3.21.1. Instrumentation and common analytical techniques
 - 1.3.21.2. Quality control
 - 1.3.21.3. Infection prevention and control, including disinfection and sterilization procedures
 - 1.3.21.4. Occupational health and safety
 - 1.3.21.5. Guidelines for pulmonary function testing and interpretation

- 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 Pediatric Respiriology 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, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion
 - 2.2.1. Elicit a maternal, antenatal, perinatal, neonatal, family, and exposure history, as relevant
 - 2.2.2. Assess functional status and exercise capacity
 - 2.2.3. Determine the clinical significance of findings on the physical exam

- 2.2.4. Select and interpret the results of:
 - 2.2.4.1. Arterial and capillary blood gas measurements
 - 2.2.4.2. Sweat (chloride) tests
 - 2.2.4.3. Pleural fluid analysis
 - 2.2.4.4. Chest radiographs
 - 2.2.4.5. Computerized tomography (CT) of the chest
 - 2.2.4.6. Flow volume loops
 - 2.2.4.7. Spirometry
 - 2.2.4.8. Lung volume measurements via plethysmography, helium dilution, and nitrogen washout
 - 2.2.4.9. Diffusion capacity
 - 2.2.4.10. Overnight oximetry
 - 2.2.4.11. Bronchoprovocation challenge via methacholine, histamine, exercise, and/or cold air
 - 2.2.4.12. Respiratory section of the polysomnogram
 - 2.2.4.13. Cardiopulmonary exercise testing
 - 2.2.4.14. Tests of respiratory muscle strength
- 2.3. Establish goals of care in collaboration with patients and their families², which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation
- 2.4. Establish a patient-centred management plan

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

- 3.1. Determine the most appropriate procedures or therapies
 - 3.1.1. Respiratory therapy, including airway secretion management
 - 3.1.2. Physical therapy
 - 3.1.3. Pulmonary rehabilitation
 - 3.1.4. Bronchoscopy and bronchoalveolar lavage
 - 3.1.5. Pharmacotherapy, including inhalational therapeutics and devices
 - 3.1.6. Supplemental oxygen and oxygen delivery systems
 - 3.1.7. Invasive and non-invasive ventilation

² 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.

3.1.8. Surgical interventions:

- 3.1.8.1. Thoracentesis and closed intrapleural chest tube insertion
- 3.1.8.2. Video-assisted thorascopic surgery (VATS) and open chest tube drainage
- 3.1.8.3. Long-term management of tracheostomy
- 3.1.8.4. Lung transplantation

3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy

3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources

3.4. Perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances

3.4.1. Initiation, maintenance, and discontinuation of acute and chronic mechanical ventilation, including non-invasive techniques

3.4.2. Flexible bronchoscopy and bronchoalveolar lavage

3.4.3. Spirometry in school-age and adolescent patients

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. Determine the necessity and appropriate timing of referral to other health care providers

4.1.2. Provide referral for advanced respiratory procedures

4.1.3. Develop and implement plans to monitor the response to therapy and course of the patient's illness

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*, pediatric respirologists 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 respirologists are able to...

1. Establish professional therapeutic relationships with patients and their families

- 1.1. Communicate using a patient-centred approach that encourages patient and family 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, 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, including
 - 1.5.1. Delivering information about progression of disease, deterioration in medical condition, and/or poor prognosis
 - 1.5.2. Addressing anger, confusion, and misunderstanding
 - 1.5.3. Initiating, withdrawing, or withholding mechanical ventilation or other treatments
- 1.6. Adapt to the unique needs and preferences of each patient and to each patient's clinical condition and circumstances

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 assessing for patient and family understanding
 - 3.1.1. Convey information related to diagnosis and treatment, including uncertainty, clearly and compassionately
 - 3.1.2. Convey information related to the role of genetic screening and implications of its results clearly and compassionately
 - 3.1.3. Convey information about the risks of respiratory transmission of infection and associated precautionary measures
- 3.2. Disclose harmful patient safety incidents to patients and their families

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
- 4.2. Assist patients and their families to identify, access, and make use of information and communication technologies to support their care and manage their health
 - 4.2.1. Facilitate self-care and chronic disease management
- 4.3. Use communication skills and strategies that help patients and their families make informed decisions regarding their health
 - 4.3.1. Engage patients and families in discussions about diagnostic uncertainty
 - 4.3.2. Engage patients and families in discussions about the use of controversial therapy or therapy with a narrow therapeutic window
 - 4.3.3. Support patients and families in decisions regarding end-of-life care

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
 - 5.1.1. Prepare consultation, discharge, progress, or clinic notes that are well organized, document all relevant findings, and provide a plan for ongoing management
 - 5.1.2. Provide clear, concise, and timely reports of diagnostic studies
 - 5.1.3. Communicate critical values or unexpected results in a timely manner
- 5.2. Communicate effectively using a written health record, electronic medical record, or other digital technology

- 5.3. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Collaborator

Definition:

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

Key and Enabling Competencies: Pediatric respirologists 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
- 1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions
 - 1.3.1. Develop a care plan for the patient in collaboration with members of the interprofessional team

2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts

- 2.1. Show respect toward collaborators
- 2.2. Implement strategies to promote understanding, manage differences, and resolve conflict in a manner that supports a collaborative culture

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

Leader

Definition:

As *Leaders*, pediatric Respiriologists 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 respirologists are able to...

1. Contribute to the improvement of health care delivery in teams, organizations, and systems

- 1.1. Apply the science of quality improvement to systems of patient care
 - 1.1.1. Demonstrate knowledge of available outcome measures for a quality assurance program
 - 1.1.2. Identify and address systems or processes in need of improvement
 - 1.1.3. Develop standards of care to promote patient safety
- 1.2. Contribute to a culture that promotes patient safety
- 1.3. Analyze patient safety incidents to enhance systems of care
- 1.4. Use health informatics to improve the quality of patient care and optimize patient safety

2. Engage in the stewardship of health care resources

- 2.1. Allocate health care resources for optimal patient care
 - 2.1.1. Apply knowledge of the allocation of scarce resources, including for lung transplantation
- 2.2. Apply evidence and management processes to achieve cost-appropriate care
 - 2.2.1. Apply knowledge of the costs and benefits of investigations and treatment modalities

3. Demonstrate leadership in health care systems

- 3.1. Demonstrate leadership skills to enhance health care
 - 3.1.1. Supervise a pulmonary function testing laboratory, including issues pertaining to quality assurance, staffing, and diagnostic reporting
- 3.2. Facilitate change in health care to enhance services and outcomes

4. Manage career planning, finances, and health human resources in personal practice(s)

- 4.1. Set priorities and manage time to integrate practice and personal life
- 4.2. Manage personal professional practice(s) and career
- 4.3. Implement processes to ensure personal practice improvement

Health Advocate

Definition:

As *Health Advocates*, pediatric respirologists 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 respirologists 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
 - 1.1.1. Assess the patient's ability to adhere with the therapeutic program
 - 1.1.2. Facilitate access to health and social services
 - 1.1.3. Advocate for the vulnerable child
- 1.2. Work with patients and their families to increase opportunities to adopt healthy behaviours
 - 1.2.1. Work with patients to increase opportunities for self-care and independence
 - 1.2.1.1. Provide effective teaching in the use of inhaled device therapies
 - 1.2.2. Promote smoking cessation and direct families to smoking cessation resources
- 1.3. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients
 - 1.3.1. Promote adherence to immunization schedules

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
 - 2.1.1. Recognize the role of pediatric respirologists in advocating for healthy indoor and outdoor air quality
- 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 they serve
 - 2.3.1. Promote awareness of immunization guidelines
 - 2.3.2. Promote access to lung transplantation
 - 2.3.3. Promote awareness of global initiatives to improve pediatric lung health

Scholar

Definition:

As *Scholars*, pediatric respirologists 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 respirologists are able to...

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

- 1.1. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice
- 1.2. Identify opportunities for learning and improvement by regularly reflecting on and assessing their performance using various internal and external data sources
- 1.3. Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice

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

- 2.1. Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners
- 2.2. Promote a safe and respectful learning environment
- 2.3. Ensure patient safety is maintained when learners are involved
- 2.4. Plan and deliver learning activities
- 2.5. Provide feedback to enhance learning and performance

- 2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner

3. Integrate best available evidence into practice

- 3.1. Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them
- 3.2. Identify, select, and navigate pre-appraised resources
- 3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature
- 3.4. Integrate evidence into decision-making in their practice

4. Contribute to the creation and dissemination of knowledge and practices applicable to health

- 4.1. Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care
- 4.2. Identify ethical principles for research and incorporate them into obtaining informed consent, considering potential harms and benefits, and vulnerable populations
- 4.3. Contribute to the work of a research program
- 4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them
- 4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry

Professional

Definition:

As *Professionals*, pediatric respirologists 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 respirologists are able to...

1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

- 1.1. Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality
- 1.2. Demonstrate a commitment to excellence in all aspects of practice

- 1.3. Recognize and respond to ethical issues encountered in practice
 - 1.4. Recognize and manage conflicts of interest
 - 1.5. Exhibit professional behaviours in the use of technology-enabled communication
- 2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care**
- 2.1. Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians
 - 2.2. Demonstrate a commitment to patient safety and quality improvement
- 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. Exhibit appropriate professional relationships with industry
 - 3.2. Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care professions
 - 3.3. Participate in peer assessment and standard setting
- 4. Demonstrate a commitment to physician health and well-being to foster optimal patient care**
- 4.1. Exhibit self-awareness and manage influences on personal well-being and professional performance
 - 4.2. Manage personal and professional demands for a sustainable practice throughout the physician life cycle
 - 4.3. Promote a culture that recognizes, supports, and responds effectively to colleagues in need

This document is to be reviewed by the Specialty Committee in Respiriology by December 2021.

APPROVED – Specialty Standards Review Committee – July 2019

REVISED CBD LAUNCH DATE – Specialty Committee in Pediatric Respiriology – May 2020