



Entrustable Professional Activities

EPA 5 for Pediatric Pulmonology

EPA 5: Demonstrate Competence in Performing the Common Procedures of the Pediatric Pulmonary Subspecialist

Supervision Scale for This EPA

1. Trusted to observe or assist
2. Trusted to execute with direct supervision and coaching
3. Trusted to execute with indirect supervision for most simple cases and some complex cases
4. Trusted to execute with indirect supervision but may require discussion or direct supervision at critical portions for a few complex cases
5. Trusted to execute without supervision

Description of the Activity

All pediatric pulmonologists need to be able to perform and/or interpret the common procedures of the subspecialty, including tests of pulmonary function, evaluation of respiration during sleep, bronchoscopy, mechanical ventilation, and noninvasive ventilation.

The specific functions which define this EPA include:

1. Demonstrating knowledge of the anatomy, physiology, indications, risks, benefits, alternatives, and potential complications of the procedures
2. Communicating with the patient and family to ensure informed consent as well as post procedure instructions
3. Managing pain and sedation for the procedure
4. Performing technical skills pertinent to the procedure
5. Managing post-procedure complications
6. Interpreting results of the procedure in the context of the patient
7. Demonstrating confidence that puts patients and families at ease

Judicious Mapping to Domains of Competence

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice
- Personal and Professional Development

Competencies Within Each Domain Critical to Entrustment Decisions

PC 6:	Using optimal clinical judgment
PC 8:	Performing procedures



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PC 9:	Counseling patients and families
MK 1:	Demonstrating knowledge
ICS 2:	Demonstrating insight into emotion
ICS 6:	Maintaining medical records
SBP 3:	Incorporating cost awareness into care
PPD 1:	Engaging in help seeking behaviors
PPD 7:	Demonstrating self-confidence

Context for the EPA

Rationale: Pediatric pulmonologists must have the knowledge and skills to competently perform specialty specific procedures as well as the knowledge and skills to discuss and refer patients for procedures and diagnostic testing performed by other specialists.

Scope of Practice: Pediatric pulmonologists must be able to perform procedures specific to the specialty across pediatric age ranges (newborn to late adolescence/young adult) including tests of pulmonary function, evaluation of respiration during sleep, flexible bronchoscopy, and management of invasive and noninvasive ventilation. In addition, pediatric pulmonologists must be able to recognize the indications for procedures performed by other specialists, communicate the rationale for referral for these procedures to children and their families, and interpret the results. Procedures in this category would include diagnostic imaging of the respiratory system and other systems when relevant to breathing, evaluation of nonrespiratory parameters during sleep, biopsies, sampling, or resection of components of the upper and lower airways, pleura or pleural fluid, lung parenchyma, GI tract, and other organ systems when relevant. Pediatric pulmonologists must also understand airway clearance and pulmonary rehabilitation procedures.

Curricular Components That Support the Functions of the EPA

1. Demonstrating knowledge of the anatomy, physiology, indications, risks, benefits, alternatives, and potential complications of the procedure
 - Describes normal anatomy and physiology relevant to the procedure.
 - Distinguishes normal variants from pathologic findings
 - Stratifies pre-procedure risk based on child's age, diagnosis, and comorbidities, and incorporates assessment into risk benefit analysis and procedure planning
 - Considers cost benefit analysis as part of procedural planning
2. Communicating with the patient and family to ensure informed consent as well as post procedure instructions
 - Adapts informed consent process based on pre-procedure risk assessment
 - Adapts communication of results based on family/child knowledge, developmental level, and preferences
 - Works with primary care physician/medical home and other care team members to incorporate findings into a coordinated treatment plan



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3. Managing pain and sedation for the procedure

- Prepares patient and family with what to expect in developmentally appropriate manner, uses nonpharmacologic comfort measures in conjunction with pharmacologic measures
- Coordinates with the sedating physician/anesthesiologist to ensure appropriate degree of sedation or anesthesia as well as appropriate airway management to perform procedure safely and comfortably
- Describes potential adverse effects of commonly used medications to achieve pain control and sedation

4. Performing technical skills pertinent to the procedure

- Demonstrates competence in motor skills relevant to the procedure
- Prepares equipment relevant to the procedure (calibration, set up, choosing correct size)
- Describes infection control strategies relevant to the procedure
- Positions and instructs patient and family in developmentally appropriate manner
- Leads team members in conducting the procedure with confidence and attention to patient comfort
- Demonstrates the technical skills to safely and effectively perform the procedure, guides a junior colleague in safely and effectively performing the procedure, or seeks help from a colleague if needed to ensure the optimal outcome for the patient
- Oversees procedures to clean and store equipment following each procedure
- Completes proper documentation of procedure

5. Managing post-procedure complications

- Anticipates complications based on pre-procedure risk assessment and implements procedures to minimize risk when appropriate
- Distinguishes normal transient physiologic response to procedure from complications that require intervention
- Identifies complications during procedure, seeks help from other team members, and if necessary, aborts the procedure based on assessment of risk-benefit balance in the context of the patient

6. Interpreting results of the procedure in the context of the patient

- Interprets results in the context of other clinical information
- Synthesizes findings into unifying diagnoses/treatment plan when possible
- Ensures proper and prompt follow up

7. Demonstrating confidence that puts patients and families at ease

- Demonstrates the knowledge to explain procedures and their possible complications as well as answer questions to help allay anxiety
- Communicates with the patient/family at a level that aligns with their health literacy

Procedures **generally** within the scope of the practice of a pediatric pulmonologist include:

- Spirometry
- Lung volume measurement



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- Diffusing capacity of the lung
- Tests of bronchoprovocation (e.g., exercise, methacholine)
- Assessment of respiration during sleep (respiratory channels in a polysomnogram, measurement of gas exchange during sleep)
- Use of noninvasive ventilation
- Use of invasive ventilation
- Flexible fiberoptic bronchoscopy, bronchoalveolar lavage, mucosal biopsies

Related procedures that generally require consultation from other specialists including pulmonologists with advanced training:

- Transbronchial lung biopsies
- Lung biopsies (thoroscopic/open)
- Rigid bronchoscopy
- Nonrespiratory assessment of sleep
- Functional evaluation of feeding
- Diagnostic imaging of the respiratory system (X-ray, fluoroscopy, ultrasound, CT, MRI)
- Diagnostic imaging of the CNS (MRI, CT)
- Endoscopy and biopsies of the GI tract
- pH probe/impedance probe monitoring
- Diagnostic imaging of the spine
- Diagnostic testing of muscle strength and function
- Genetic testing

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