

Procedural Competence:

What Does the PCCM Trainee Need to Know in 2016

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 **CHEST**
Annual Meeting
2016



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Disclosure

- None



Assessment of Competency

- Which of the following does your program rely on to document procedural competence?
 - A. Number of procedures performed
 - B. Consensus by the CCC
 - C. Attending observation with completed skills checklist
 - D. Combination of simulation performance and objective observation



Definitions

- Procedural Competence
 - The skill to safely and successfully perform the required steps of a particular procedure.
 - Minimum standard needed to be safe and perform the procedure independently.



Program Requirements

IV.A.5.a).(2)	Fellows must be able to competently perform all medical, diagnostic and surgical procedures considered essential for the area of practice. Fellows: (Outcome)		perform a minimum of 100 such procedures); (Detail)
IV.A.5.a).(2).(a)	must demonstrate competence in interpreting data derived from various bedside devices commonly employed to monitor patients, and data from laboratory studies related to sputum, bronchopulmonary secretions, pleural fluid; and, (Outcome)	IV.A.5.a).(2).(b).(v)	pulmonary function tests to assess respiratory mechanics and gas exchange, (Outcome)
IV.A.5.a).(2).(b)	must demonstrate competence in procedural and technical skills, including: (Outcome)	IV.A.5.a).(2).(b).(v).(a)	including spirometry, flow volume studies, lung volumes, diffusing capacity, arterial blood gas analysis, exercise studies, and interpretation of the results of bronchoprovocation testing using methacholine or histamine; (Detail)
IV.A.5.a).(2).(b).(i)	airway management; (Outcome)	IV.A.5.a).(2).(b).(vi)	diagnostic and therapeutic procedures, (Outcome)
IV.A.5.a).(2).(b).(ii)	the use of a variety of positive pressure ventilatory modes, including: (Outcome)	IV.A.5.a).(2).(b).(vi).(a)	including paracentesis, lumbar puncture, thoracentesis, endotracheal intubation, and related procedures; (Detail)
IV.A.5.a).(2).(b).(ii).(a)	initiation and maintenance of ventilatory support; (Detail)	IV.A.5.a).(2).(b).(vii)	use of chest tubes and drainage systems; (Outcome)
IV.A.5.a).(2).(b).(ii).(b)	respiratory care techniques; and, (Detail)	IV.A.5.a).(2).(b).(viii)	insertion of arterial, central venous, and pulmonary artery balloon flotation catheters; (Outcome)
IV.A.5.a).(2).(b).(ii).(c)	withdrawal of mechanical ventilatory support. (Detail)	IV.A.5.a).(2).(b).(ix)	operation of bedside hemodynamic monitoring systems; (Outcome)
IV.A.5.a).(2).(b).(iii)	the use of reservoir masks and continuous positive airway pressure masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry; (Outcome)	IV.A.5.a).(2).(b).(x)	emergency cardioversion; (Outcome)
IV.A.5.a).(2).(b).(iv)	flexible fiber-optic bronchoscopy procedures, (Outcome)	IV.A.5.a).(2).(b).(xi)	interpretation of intracranial pressure monitoring; (Outcome)
IV.A.5.a).(2).(b).(iv).(a)	including those where endobronchial and transbronchial biopsies, and transbronchial needle aspiration are performed (each fellow must	IV.A.5.a).(2).(b).(xii)	nutritional support; (Outcome)
		IV.A.5.a).(2).(b).(xiii)	use of ultrasound techniques to perform thoracentesis and place intravascular and intracavitary tubes and catheters; (Outcome)
		IV.A.5.a).(2).(b).(xiv)	use of transcatheter pacemakers; and, (Outcome)
		IV.A.5.a).(2).(b).(xv)	the use of paralytic agents and sedative and analgesic drugs in the critical care unit. (Outcome)



Program Requirements

- Evaluation

IV.A.6.g)	Procedures and Technical Skills
IV.A.6.g).(1)	Direct supervision of procedures performed by each fellow must occur until proficiency has been acquired and documented by the program director. <small>(Core)</small>
IV.A.6.g).(2)	Faculty members must teach and supervise the fellows in the performance and interpretation of procedures, which must be documented in each fellow's record, including indications, outcomes, diagnoses, and supervisor(s). <small>(Core)</small>

V.A.2.b)	The program must:
V.A.2.b).(1)	provide objective assessments of competence in patient care and procedural skills, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice based on the specialty- specific Milestones; <small>(Core)</small>



Subcompetency Procedural Milestones

PC-4a

Demonstrates skill in performing and interpreting invasive procedures

MK-2

Knowledge of diagnostic testing and procedures.



PCCM Procedures

- Airway Management
- Bronchoscopy
- Chest Tube
- Mechanical Ventilation
- POC Ultrasound
- Venous Access



Procedural Assessment

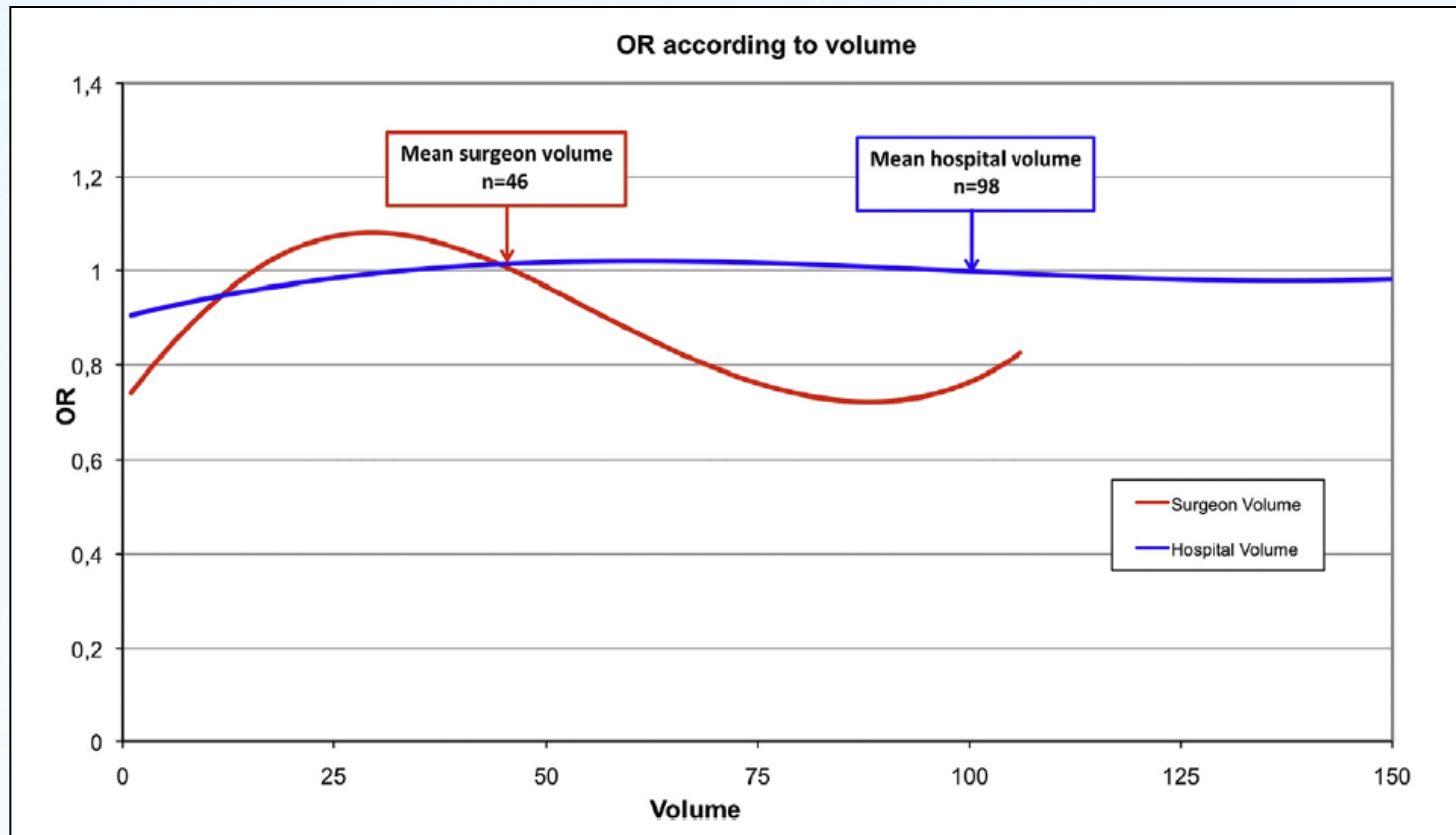
- Volume Based Competence
 - Bronchoscopy: ACGME (100)

Procedure	CHEST Threshold	ATS/ERS Threshold	ATS/ERS Ongoing/Year
Advanced bronchoscopy (diagnostic and therapeutic)
Rigid bronchoscopy	20	20	15
Autofluorescence bronchoscopy	20	10	...
EBUS guided	50	40	...
TBNA (radial and convex probe)	...	25	...
EBUS-TBNA	...	40	...
Endoluminal therapies
Laser	15	20	10-15
Electrocautery/argon plasma coagulation	15	10	5-10
Cryotherapy	10	10	5-10
Brachytherapy	5	5	5-10
Photodynamic therapy	10	10	5-10
Airway stents silicone (silastic, metallic, dynamic Y, hybrid)	20	10	5-10
Balloon tracheobronchoplasty	5
TTNA	...	10	5-10

Ernst A. et al. CHEST. 2015; 148:321-332.



Volume Based Competence



Falcoz PE, et al. J Thorac Cardiovasc Surg. 2014;148:841-48.

Procedural Assessment

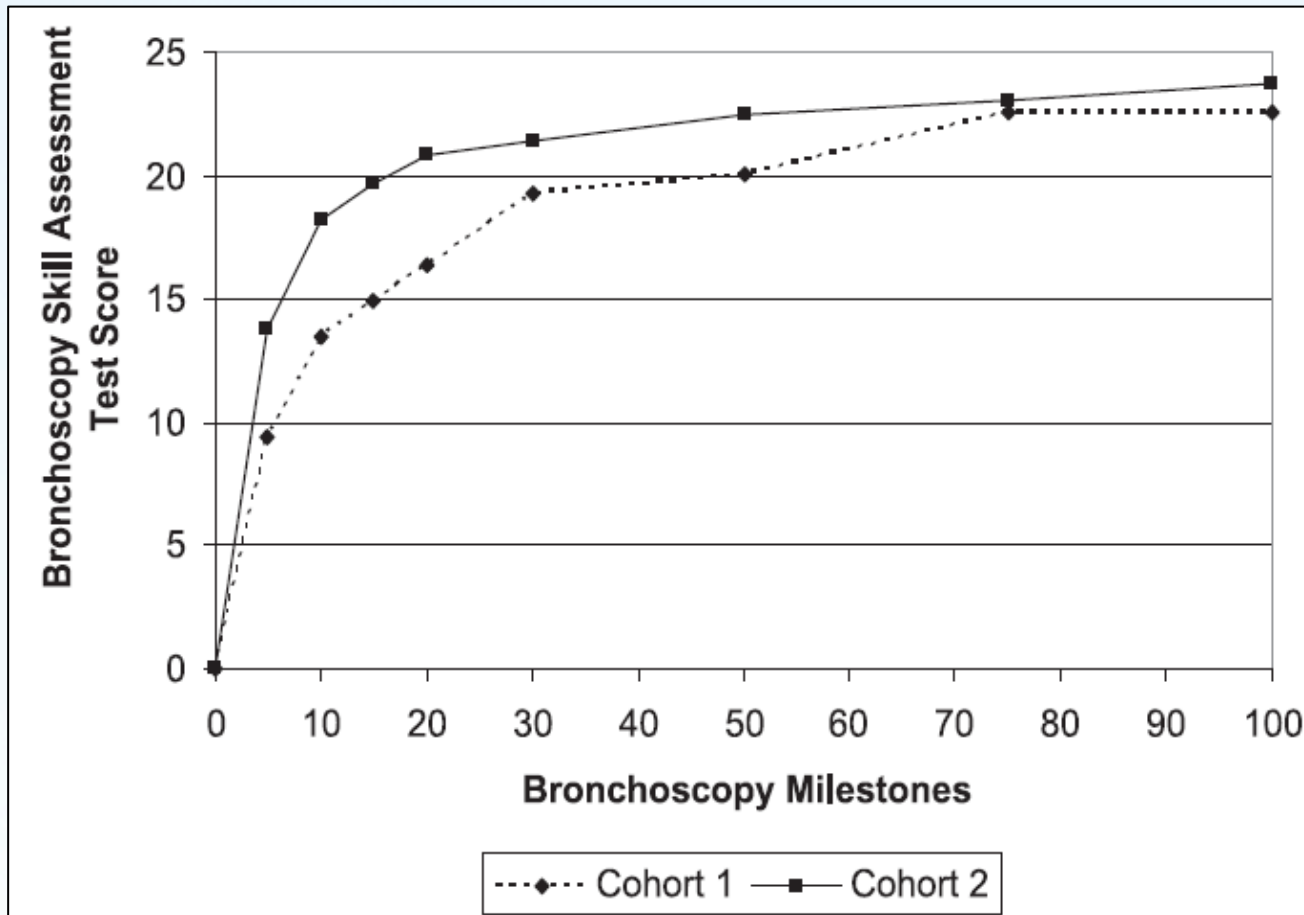
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Ernst A. et al. CHEST. 2015; 148:321-332.



Variability in Skill Acquisition



Wahidi, MM et al. CHEST. 2010; 137:1040-49.

Optimized Curriculum

- Competency
 - Technical skills
 - Safely perform
 - Knowledge of procedure
 - Indications/Contraindications/Risks
 - Assessing Risk
 - Perform independently



Simulation

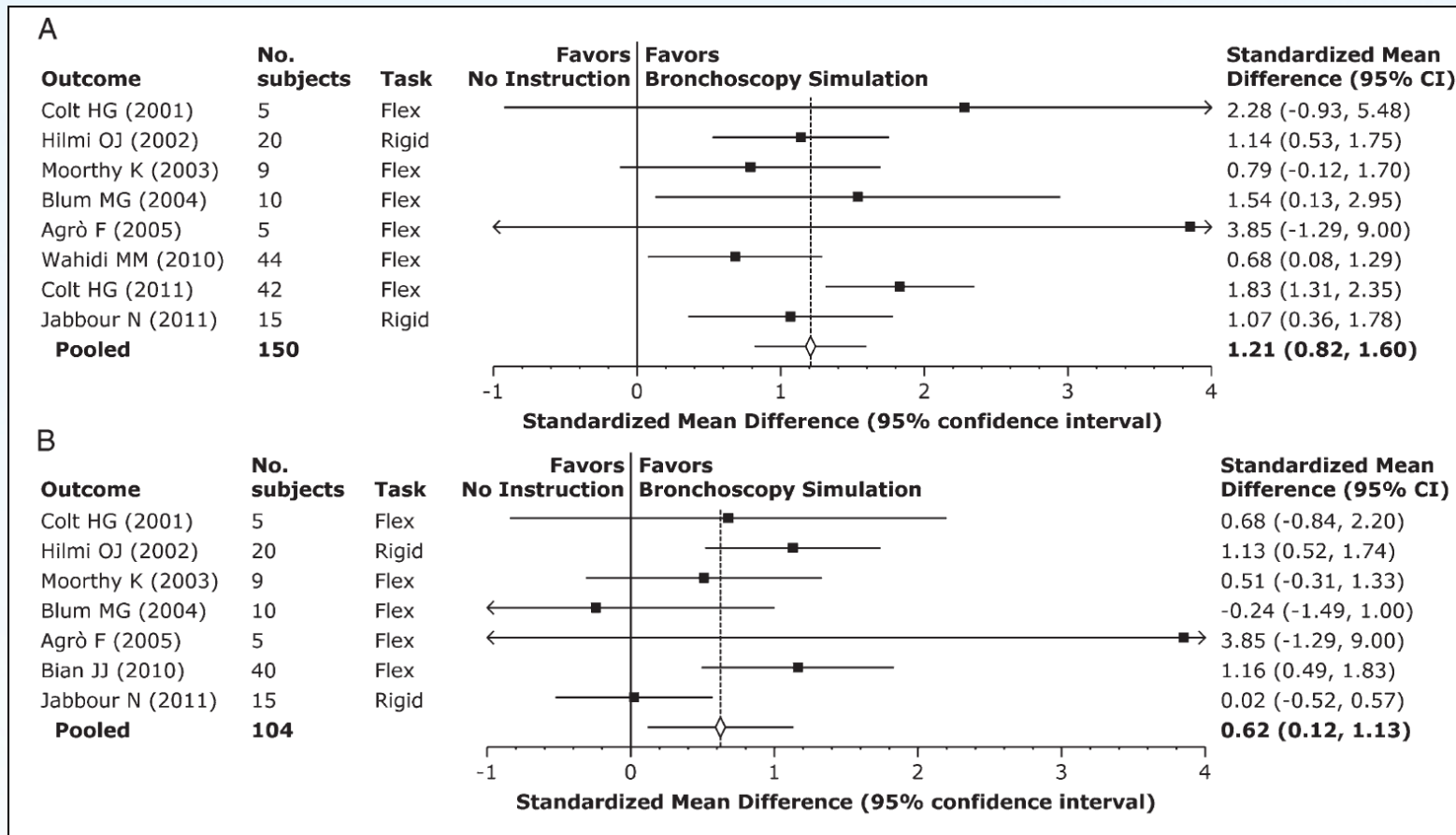
- Trainee Benefits
 - Cues and consequences
 - Complex situations
 - Reproducible
 - Modifiable

- Key to Success
 - Immediate feedback
 - Repetitive practice
 - Integrated into curriculum
 - Ramped difficulty
 - Controlled environment
 - Clearly defined goals

McGaghie, WC et al. CHEST. 2009; 135:62S-68S.



Bronchoscopy Simulation



Kennedy, CC et al. CHEST. 2013; 144:183-92.

Simulation and Fidelity

- High Fidelity
 - Virtual reality
 - Accurate anatomy
 - Variable
 - Variable cases
 - Track performance
 - High cost
- Low Fidelity
 - Easy access
 - Accurate anatomy
 - Muscle memory
 - Low cost
 - Lack situational variability

Davoudi, M et al. Respiration. 2010; 80:327-34.



Assessment

- Knowledge
 - Written test
 - Verbal
- Technical Skills
 - Confidence
 - Self-assessment
 - BSAT
 - Checklist
 - BSTAT
 - EBUS-STAT

Quadrelli, S. et al. CHEST. 2009; 135:315-21.

www.bronchoscopy.org

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Bronchoscopy Self Assessment Tool (BSAT)

Please answer each question by writing the number that most closely represents your experience with the Bronchoscopy Education Program using the following scale.

1	2	3	4	5
Not comfortable		Comfortable		Very comfortable

1. I am able to identify airway anatomy _____
2. I am able to identify airway mucosal abnormalities _____
3. I am able to describe secretions and other airway abnormalities _____
4. I am able to maneuver the flexible bronchoscope _____
5. I am able to do a BAL through the flexible bronchoscope _____
6. I am able to use a brush through the flexible bronchoscope _____
7. I am able to use a forceps to perform an endobronchial biopsy _____
8. I am able to use a forceps to perform a transbronchial biopsy _____
9. I am able to perform a conventional transbronchial needle aspiration _____
10. I would now feel comfortable performing this case in a patient _____

Anatomy Abnormalities Technique Equipment Interpretation of findings

I would like to learn more about (circle all that apply above)



Bronchoscopy Skills and Tasks Assessment Tool (BSTAT)

Student: _____ Training Year _____

Faculty _____ Date _____

Educational Item*	Satisfactory Yes/No
Items 1-10 each scored separately	
1. Identification of Right sided anatomy (2 points each, target 20 points) <input type="checkbox"/> RB1 apical <input type="checkbox"/> RB2 posterior <input type="checkbox"/> RB3 anterior <input type="checkbox"/> RB4 lateral <input type="checkbox"/> RB5 medial <input type="checkbox"/> RB6 superior <input type="checkbox"/> RB7 mediobasal <input type="checkbox"/> RB8 anterobasal <input type="checkbox"/> RB9 laterobasal <input type="checkbox"/> RB10 posterobasal	Yes / No Score ____/20
2. Identification of Left sided anatomy (2 points each, target 16 points) <input type="checkbox"/> LB1+2 apical/posterior <input type="checkbox"/> LB3 anterior <input type="checkbox"/> LB4 superior <input type="checkbox"/> LB5 inferior <input type="checkbox"/> LB6 superior <input type="checkbox"/> LB8 anterobasal <input type="checkbox"/> LB9 laterobasal <input type="checkbox"/> LB10 posterobasal	Yes / No Score ____/16
3. Identify and enter RB 4+5+6 on demand (All three segments must be entered to earn 5 points, no partial points given, target 5 points) <input type="checkbox"/> RB 4+5+6	Yes / No Score ____/5
4. Identify and enter LB 8+9+10 on demand (All three segments must be entered to earn 5 points, no partial points given, target 5 points) <input type="checkbox"/> LB 8+9+10	Yes / No Score ____/5
5. Posture/Hand positions/Equipment safety (3 points each, target 9 points) <input type="checkbox"/> Body posture <input type="checkbox"/> Hand positions <input type="checkbox"/> Equipment handling	Yes / No Score ____/9



Evidence-Based Competency

- Curriculum
 - e-learning/books
 - Lectures
 - Case-based review
 - Hands-on training
 - Simulation
 - Airway
 - Bronchoscopy
 - Mechanical Ventilation
 - Vascular
- Assessment
 - Written tests
 - Observed skills
 - Checklist
 - Scheduled assessment
 - Outcomes
 - Requires database
 - Milestone
 - PC-4a
 - MK-2

Ernst, A et al. CHEST. 2015; 148:321-32.

Szasz, P et al. Annals of Surgery. 2015; 261:1046-55.

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Thank You



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- Beginning of Fellowship
 - Self-Assessment (A)

- Initial Evaluation Side of the Bed
 - Attempt 1 on mannequin
 - Expectation:
 - Step by Step 10 point Evaluation (B)
 - Attempts 2 through 9
 - Expectation
 - Practice Bronchoscopy Stepwise Training Tool (C)
 - Attempt 10 on Mannequin
 - Expectation:
 - Step by Step 10 point Evaluation (B)
 - Passing score: 100%
 - Continue mannequin training until Step by Step Evaluation Tool is
 - Passed

- Second Evaluation
 - After 15 FOB, side of the bed
 - Expectation:
 - BSTAT Quiz
 - Passing Score: 80%
 - Step by Step 10 point Evaluation (B)
 - Passing Score 100%

- Third Evaluation
 - After 50 FOB, side of the bed
 - Expectation:
 - BSTAT Quiz
 - Passing Score: 100%
 - Step by Step 10 point Evaluation (B)
 - Passing Score 100%

