Endobronchial Ultrasound and EBUS-Guided Needle Aspiration

Bronchoscopy Education Project

EBUS 10 Point Checklists

Checklists

A collection of checklists and user instructions:

- EBUS Sedation-Anesthesia
- EBUS Informed consent
- EBUS Procedural pause
- EBUS Image processor, needle and scope handling
- EBUS Practical Approach
- EBUS Proctored EBUS-TBNA
- EBUS and EBUS-TBNA Program completion

Scoring Recommendations for
EBUS CHECKLISTS
(Sedation/Anesthesia, Informed Consent, Procedural Pause, Image Processor, needle and scope handling, Practical Approach, Proctored EBUS-TBNA,)

The goal of these checklists is to be able to monitor a learner's progress along the learning curve from *novice* (Score < 60) to *advanced beginner* (Score 60-79), *intermediate* (score 80-99), and *competent* (score 100). The instructor should be able to ascertain, by observing the learner's performance that each of the TEN elements in each tool are covered satisfactorily. The frequency with which these tools should be used remains to be studied and is currently at the discretion of program directors.

Repeated testing will demonstrate knowledge and skill acquisition as the learner climbs the learning curve from novice to advanced beginner, intermediate and competent bronchoscopist for the procedure being assessed.

To maximize objective scoring, each task in the checklists has been defined explicitly in this user manual. Participation in specially-designed *Train-the-Trainers* courses being currently organized is encouraged to assist with standardization, and to help instructors use this program to its fullest potential.

Scores can be plotted on a graph, and each institution/program can obviously choose its own cut-offs for a PASS grade, although we recommend that a final PASS grade be achieved with a score of 100, in order for the student to be judged competent to perform bronchoscopy independently.

In the absence of a large pilot study demonstrating standard normograms as is done for high-stakes testing, consensus of world renowned experts was obtained to delineate cut-off scores for the following four categories.

Category	Score
Novice	< 60
Advanced Beginner	60-79
Intermediate	80-99
Competent	100

Specific instructions marked by an asterisk (*) are provided in each of the following checklists.

EBUS SEDATION/ANESTHESIA 10-Point CHECKLIST*

Learner _____ Training Year _____

Faculty _____ Date _____

☐ Interactive session   ☐ Patient environment

Educational Item* Items 1-10 are scored 10 points each (no partial points given)	**Satisfactory** **Yes/No**
1. Definitions ☐ Moderate sedation ☐ Deep sedation ☐ General anesthesia	Yes / No
2. Able to obtain sedation-anesthesia informed consent	Yes / No
3. Able to describe ASA classification ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	Yes / No
4. Able to identify high risk patients	Yes / No
5. Able to describe potential contraindications	Yes / No
6. Able to list equipment that must be available	Yes / No
7. Sedation/anesthetic agents: role, dosage, precautions ☐ Midazolam ☐ Fentanyl ☐ Propofol	Yes / No
8. Reversal agents: role, dosage, precautions ☐ Flumazenil ☐ Naloxone	Yes / No
9. Able to describe how to respond to complications such as ☐ Vomiting ☐ Seizure ☐ Hypotension	Yes / No
10a. Able to describe how to respond to over-sedation and ☐ Hypotension ☐ Airway obstruction	Yes / No
10b. Able to describe how to respond to over-sedation and ☐ Hypoxemia ☐ Respiratory failure	Yes / No

* Each of the 10 items contains all of the elements required by ACGME (patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism, and systems-based practice).

FINAL GRADE   PASS   FAIL   **SCORE** _____/100

EBUS INFORMED CONSENT 10-Point CHECKLIST*

Learner _____ Training Year _____

Faculty _____ Date _____

☐ Simulation EBUS-TBNA Workshop   ☐ Patient-based EBUS-TBNA Scenario

Educational Item* Items 1-10 are scored 10 points each (no partial points given)	Satisfactory Yes/No
1. Able to define "Informed Consent": ☐ Informed decision-making regarding indications and expected outcomes, conflict of interest ☐ Protection from liability ☐ Provides opportunity to assess management strategies ☐ Provides opportunity to discuss risks, benefits, and alternatives	Yes / No
2. Able to discuss diagnosis and pertinent clinical issues	Yes / No
3. Able to describe the purpose of the procedure	Yes / No
4. Able to describe the nature of the procedure	Yes / No
5. Able to describe procedure-related risks	Yes / No
6. Able to describe procedure-related benefits	Yes / No
7. Able to describe alternative procedures regardless of cost or health care coverage	Yes / No
8. Able to describe potential risks and benefits from choosing the alternatives	Yes / No
9. Able to describe the risks and benefits of not performing the procedure or not choosing any of the alternatives	Yes / No
10. Able to demonstrate "effectiveness" of the informed consent process by asking the patient to explain in his or her own words, their understanding of the procedure	Yes / No

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FINAL GRADE   PASS   FAIL   **SCORE** _____/100

EBUS PROCEDURAL PAUSE 10-Point CHECKLIST*

Learner _____   Training Year _____

Faculty _____   Date _____

☐ Simulation EBUS Workshop   ☐   Patient-based EBUS Scenario

Educational Item* Items 1-10 are scored 10 points each (no partial points given)	Satisfactory Yes/No
1. Able to define "Procedural Pause" as: ☐ Time-Out ☐ Wrong patient, site, procedure ☐ Team communication/patient understanding ☐ Mandatory in USA	Yes / No
2. Able to describe requirements of the procedural pause: ☐ Immediately before procedure ☐ Correct site, position, procedure ☐ Correct patient ☐ Pertinent medical records and equipment ☐ Verbal acknowledgements by all team members ☐ Elimination of environmental distractions	Yes / No
3. Able to describe the team leader's role	Yes / No
4. Able to describe the nursing team's role	Yes / No
5. Able to describe the patient's role	Yes / No
6. Able to describe other person's roles (technicians, other physicians)	Yes / No
7. Able to list the elements that must be covered: ☐ Patient ☐ Procedure ☐ Side and site ☐ Informed consent ☐ Medical records and equipment ☐ Medications ☐ Allergies/drug reactions ☐ Safety concerns based on history	Yes / No
8. Able to address behaviors in case of distractions	Yes / No
9. Able to describe behaviors in case of disagreements	Yes / No
10. Able to describe other elements pertaining to assuring a culture of safety: ☐ Communication ☐ Ability to prevent and respond to complications ☐ Universal, Droplet, and Airborne pathogen precautions	Yes / No

*Each of the 10 items contains all of the elements required by ACGME (patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism, and systems-based practice).

FINAL GRADE   PASS   FAIL   **SCORE**   _____/100

EBUS Image Processor, Needle and Scope Handling 10-Point CHECKLIST*

Learner _____ Training Year _____

Faculty _____ Date _____

☐ Interactive session ☐ Patient environment

Educational Item* Items 1-10 are scored 10 points each (**no partial points given**)	Satisfactory Yes/No
1. Airway access and alternate among EBUS and White light bronchoscopy ☐ Airway access Oral/LMA/ET Tube ☐ Alternate EBUS/WLB	Yes / No
2. Image quality adjustments: **Depth** ☐ Describe ☐ Demonstrate	Yes / No
3. Image quality adjustments: **Gain** ☐ Describe ☐ Demonstrate	Yes / No
4. Image quality adjustments: **Frequency** ☐ Describe ☐ Demonstrate	Yes / No
5. Image quality adjustments: **Doppler** ☐ Describe ☐ Demonstrate	Yes / No
6. Image target measurements: **Cursor placement** ☐ Able to describe cursor placement for measuring lymph node size ☐ Able to demonstrate cursor placement and size measurements	Yes / No
7. Scope: Able to demonstrate balloon placement and functionality for optimal image acquisition ☐ Balloon placement onto scope ☐ Balloon integrity check ☐ Removal of air bubbles	Yes / No
8. Needle: Able to check mechanics and integrity of: ☐ Needle adjuster lock ☐ sheath adjuster knob ☐ Connecting slide	Yes / No
9. Needle: Integrity, retraction, and slider ☐ Integrity ☐ Retracts into sheath ☐ Slider moves freely and locks	Yes / No
10. Needle: Stylet and aspiration syringe integrity and function ☐ Moves freely ☐ Aspiration syringe functions	Yes / No

* Each of the 10 items contains all of the elements required by ACGME (patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism, and systems-based practice).

FINAL GRADE   PASS   FAIL   **SCORE** _____/100

EBUS PRACTICAL APPROACH 10 Point CHECKLIST*

Learner _____ Training Year _____

Faculty _____ Date _____

☐ Instructor-learner 30 minute session ☐ Daily rounds & EBUS consultation

Educational Item* Items 1-10 are scored 10 points each (no partial points given)	**Satisfactory** **Yes/No**
1. Initial evaluation A ☐ Physical examination, laboratory tests, and functional assessment ☐ Comorbidities	Yes / No
2. Initial evaluation B ☐ Support system ☐ Preferences and expectations	Yes / No
3. Procedural strategies A ☐ Indications, contraindications, expected results ☐ Operator and team experience and expertise	Yes / No
4. Procedural strategies B ☐ Risk-benefits and therapeutic alternatives ☐ Informed consent	Yes / No
5. Techniques and results A ☐ Anesthesia and perioperative care ☐ Techniques and instruments	Yes / No
6. Techniques and results B ☐ Anatomic dangers and other risks ☐ Results and complications	Yes / No
7. Long-term management plan A ☐ Outcome assessment ☐ Follow-up tests and procedures	Yes / No
8. Long-term management plan B ☐ Referrals to other specialists ☐ Quality improvement and team evaluation	Yes / No
9. Able to answer case-specific questions ☐ Question 1 ☐ Question 2 ☐ Question 3	Yes / No
10. General ability to provide evidence for and rationally justify decision making ☐ Subjective assessment of learner ability	Yes / No

*These 10 items contains all of the elements required by ACGME (patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism, and systems-based practice).

FINAL GRADE   PASS   FAIL   **SCORE** _____/100

EBUS PROCTORED EBUS & EBUS-TBNA 10-Point CHECKLIST*

Learner _____   Training Year _____

Faculty _____   Date _____

☐ Simulation EBUS Workshop   ☐ Patient-based EBUS Scenario

Educational Item* Items 1-10 are scored 10 points each (no partial points given)	Satisfactory Yes/No
1. Formulation of effective plan and strategy: ☐ Informed consent obtained, signed and in medical record ☐ History and physical ☐ Review imaging studies ☐ Cost-effective practice ☐ Use of information resources ☐ Applies evidence-based medicine ☐ Use of systems resources	Yes / No
2. Patient safety: ☐ ASA assessment ☐ Airway assessment ☐ Allergies ☐Medications ☐ Comorbidities	Yes / No
3. Patient safety: ☐ Positioning ☐ Supplemental oxygen ☐ Vital signs ☐ Suction ☐ Bite-block and/or ET tube if applicable ☐ Verifies ability to respond to complications and accessibility of resuscitation equipment	Yes / No
4. Patient and procedural team safety: ☐ Knowledgeable use of image processor ☐ Hand disinfection ☐ Universal precautions ☐ "Time-Out".	Yes / No
5. Procedure: ☐ Premedication ☐ Moderate sedation ☐ Topical anesthetic ☐ General anesthesia as applicable	Yes / No
6. Procedure: ☐ Scope insertion ☐ Empathy and Communication with patient	Yes / No
7. Procedure: ☐ Image processor controls ☐ Balloon attachment and troubleshooting ☐ Needle, stylet, and syringe function and troubleshooting	Yes / No
8. Procedure: ☐ Alternate between white light and EBUS ☐ Image acquisition ☐ Recognition of mediastinal and hilar nodal anatomy ☐ Recognition of mediastinal and hilar vascular structures ☐ Lymph node sampling ☐ Smear preparation and station labeling	Yes / No
9. Communication with staff, patient, and patient family ☐ Puts needs of patient first ☐ Punctuality ☐ Respect ☐ Listening skills ☐ Personal appearance ☐ Initiative & Motivation ☐ Empathy ☐ Honesty ☐ Accepts responsibility	Yes / No
10. Documentation/procedure note ☐ Informative ☐ Accurate ☐ Communication with colleagues	Yes / No

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FINAL GRADE   PASS   FAIL   **SCORE** _____/100

Recommendations for Using the EBUS and (CP) EBUS-TBNA Competency Program Completion Checklist

This checklist contains all of the elements of the EBUS and (CP) EBUS-TBNA bronchoscopy curriculum. The purpose of this curriculum is to help learners climb the learning curve from novice and advanced beginner to intermediate then competent EBUS bronchoscopist able to independently perform EBUS and EBUS-TBNA.

This curriculum assures that all learners have completed certain materials to the satisfaction of their instructors. It is understood that some learners may need to repeat certain elements of the curriculum until they obtain a passing grade. Some institutions may wish for their trainees to repeat parts of the curriculum during the course of their training (yearly for example, or during the months prior to completing their training).

Not all learners will progress at the same speed. The frequency with which the checklists and assessments tools are administered is at the discretion of the program or training course directors.

To maximize objective scoring, each element in the program checklist has been defined explicitly in this user manual. Participation in specially-designed *Train-the-Trainers* courses is encouraged to assist with standardization so that instructors may use this program to its fullest potential.

A PASS grade signifies that learners haves achieved a satisfactory (passing) score in each of the ten elements contained in the curriculum. The overall number of procedures performed by the learner should also be recorded; it is recommended that learners keep a diary-log of their procedures, and that program directors or course instructors conduct feedback sessions with learners to monitor patient-care related outcomes.

EBUS and (CP) EBUS-TBNA
Competency Program Completion Checklist

Educational Item	Complete Yes / No	Assessment Item	Pass/Fail/Incomplete
1. Participation in regional EBUS course if available*	Yes / No	Post-test scores Target 12/20 (60% correct) Score _____%	Pass / Fail / Incomplete
2. Assigned reading: *The EBUS Bronchoscopist*	Yes / No	Post-test scores Target (70% correct) ____	Pass / Fail / Incomplete
3. Lung cancer staging & lymph node map EBUS-CT-FB correlations EBUS Physics and terminology	Yes / No Yes / No Yes / No	Subjective assessments possible during practical approach exercises or simulation sessions	Pass / Fail / Incomplete
4. Tumor markers synopsis and clinical pathway	Yes / No	Idem	Pass / Fail / Incomplete
5. EBUS Airway access, and image acquisition simulation workshop	Yes / No	Image processor, needle and scope handling 10-pt Checklist : Target 100% Score _____%	Pass / Fail / Incomplete
6. EBUS Airway access and image acquisition patient encounter	Yes / No	Image Processor, Needle & Scope handling 10-pt Checklist: Target 100% Score _____%	Pass / Fail / Incomplete
7. Practical Approach interactive workshop	Yes / No	EBUS Practical Approach 10-pt Checklist: Target 100% Score _____% Subjective Target: Pass	Pass / Fail / Incomplete
8. EBUS-TBNA simulation workshop includes Informed Consent, Patient Safety, Procedural Pause workshops, and EBUS step by step	Yes / No	Target scores 100% EBUS-STAT _____% EBUS-SAT Completed Consider using Informed consent, Procedural Pause, and Processor, needle & scope handling checklists	Pass / Fail / Incomplete
9. EBUS-TBNA Patient encounters	Yes / No	Target scores 100% EBUS-STAT _____% EBUS-SAT completed. May include all checklists	Pass / Fail / Incomplete
10. Proctored case EBUS-TBNA proctored checklist	Yes / No	Proctored EBUS-TBNA 10-pt Checklist: Target 100% Score _____%	Pass / Fail / Incomplete

Bronchoscopy International, Foundation for the Advancement of Medicine, is a transnational charitable organization whose members are devoted to bronchoscopy education. Our vision is that patients need not suffer the burden of medical procedure-related training. Our mission is to help physicians become skilled practitioners, and to make bronchoscopy more readily available to patients so that we might defeat the effects of lung disease around the world.

Bronchoscopy International partners with national, regional, and international medical societies to train physicians and their health care teams, donate equipment, and implement learning programs that support the democratization of knowledge. The organization has developed a six part curriculum to enhance cognitive, affective and experiential knowledge and technical skill. With implementation of the Bronchoscopy Education Project, we also offer a uniform curriculum to training centers and educators around the world. The project is officially endorsed by numerous professional medical associations. Learning resources include books and training manuals, instructional videos, patient-centered problem-based exercises, simulation scenarios, and interactive on-site and on-line seminars. Faculty Development Programs are conducted to nurture a cadre of expert educators. To learn more about Bronchoscopy International and our global activities, please go to www.Bronchoscopy.org.