

TABLE 6. Summary of Key Recommendations

Topic	Overall Grade of Recommendation	Strength of Recommendation	Level of Quality of Evidence
Diagnosis of pleural effusion (ruling-in)	1-A	Strong	A
Guidance of small pleural effusion drainage	1-B	Strong	B
Dynamic vs static technique for pleural effusion drainage	N/A	N/A	N/A
Diagnosis of pneumothorax	1-A	Strong	A
Interstitial and parenchymal lung pathology	2-B	Conditional	B
Ascites (nontrauma setting)	1-B	Strong	B
Acalculous cholecystitis (by sonographer)	2-C	Conditional	C
Acalculous cholecystitis (by intensivist)	2-B	Conditional against	B
Renal failure (mechanical causes)	2-C	Conditional	C
Renal failure (by intensivist)	N/A	N/A	N/A
DVT diagnosis	1-B	Strong	B
DVT by intensivist	1-B	Strong	B
Central venous access			
General	1-A	Strong	A
Real time	1-B	Strong	B
Short axis	1-B	Strong	B
One operator	1-C	Strong	C
Use of Doppler	2-B	Conditional	B
Needle guide device	N/A	N/A	N/A
Postcannulation	2-B	Conditional	B
Access location			
Internal jugular	1-A	Strong	A
Subclavian/axillary	2-C	Conditional	C
Femoral	1-A	Strong	A
Others venous	2-B	Conditional	B
Others arterial	2-B	Conditional	B

DVT = deep venous thrombosis, N/A = not applicable.

Numbers indicate the strength of recommendation, where 1 = strong and 2 = weak/conditional. Letters indicate the level of quality of evidence, where A = high, B = moderate, and C = low.

C. Diagnosis of Interstitial and Parenchymal Lung Pathology

- We suggest that a systematic approach incorporating bedside ultrasound may be a primary diagnostic modality for the ICU patient with respiratory failure. Grade 2B.

Rationale: The sensitivity and specificity of ultrasound to diagnose alveolar consolidation exceed 90% (40). The use of the Bedside Lung Ultrasound in Emergency protocol results in a diagnostic accuracy rate exceeding 90% for the most common etiologies of acute respiratory failure in the ICU (41). The competence and experience of the sonographer are likely to play a role in determining the success of using this protocol.

Others have described a continuum of the normal lung typified by artifactual horizontal “A” lines beyond the pleural line characterizing normal aeration to various pathologic states. These disease states include the interstitial syndrome characterized by multiple vertical “B” lines (comet tails) with well-defined spacing (7 mm apart), irregularly spaced “B” lines consistent with pneumonia and coalescent “B” lines less than 3 mm apart typical of pulmonary edema or confluent bronchopneumonia. They have demonstrated a steep but achievable learning curve and ability to use ultrasound to assess lung recruitment strategies (40–46). Because the supportive body of literature has been contributed largely by a single group, the evidence is graded as “moderate” quality.