**Appendix 5 – Final Voting Results for Thoracentesis Recommendations**



Approved Recommendations with strong endorsement

Approved Recommendations with weak endorsement





Unapproved Recommendations, with disagreement

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **# of**  **Panelists** |  |  | **# of votes**  **out of Zone** | **# of votes within X of median** | | |  |
| **Recommendation** | **Median** | **Zone** | **1 pt** | **2 pts** | **3 pts** | **Consensus** |
| D2S2S1: Use ultrasound to guide thoracentesis to reduce the risk of post-procedure pneumothorax, the most common major complication of thoracentesis. | 30 | 9 | Appropriate | 0  (0%) | 29  (97%) |  |  | Very Good |
| D2S2S2: Use ultrasound to guide thoracentesis to increase the procedure success rate. | 30 | 9 | Appropriate | 0  (0%) | 30  (100%) |  |  | Very Good |
| D2S2S3: Use ultrasound to guide thoracentesis, which may decrease the risk of bleeding. | 30 | 6 | Uncertain | 15  (50%) |  |  |  | No |
| D2S3S1: Use ultrasound guidance when performing pleural drainage procedures, including thoracentesis. | 29 | 9 | Appropriate | 1  (3%) | 28  (97%) |  |  | Very Good |
| D2S3S2: Ultrasound-guided thoracentesis is recommended to be performed, or closely supervised, by experienced operators. | 30 | 8 | Appropriate | 1  (3%) | 29  (97%) |  |  | Very Good |
| D2S3S3: Use ultrasound guidance to reduce the risk of complications from thoracentesis in mechanically ventilated patients. | 29 | 9 | Appropriate | 2  (7%) | 22  (76%) | 27  (93%) |  | Good |
| D2S3S4: Use ultrasound to identify the chest wall, pleura, diaphragm, lung, and subdiaphragmatic organs throughout the respiratory cycle before selecting a needle insertion site. | 30 | 8 | Appropriate | 1  (3%) | 29  (97%) |  |  | Very Good |
| D2S3S5: Use ultrasound to detect the presence or absence of an effusion and approximate the volume of pleural fluid to guide clinical decision-making. | 30 | 9 | Appropriate | 1  (3%) | 28  (93%) |  |  | Very Good |
| D2S3S6: Use ultrasound to detect complex sonographic features, such as septations, to guide decision-making regarding timing and method of pleural drainage. | 30 | 8 | Appropriate | 2  (7%) | 28  (93%) |  |  | Very Good |
| D2S3S7: Obtain cross-sectional imaging, such as a computed tomography (CT) scan, or expert consultation when a hypoechoic pleural or parenchymal lung lesion is detected by ultrasound. | 29 | 6 | Uncertain | 14  (48%) |  |  |  | No |
| D2S3S8: Use ultrasound to measure the depth from the skin surface to the parietal pleura to help select an appropriate length needle and determine the maximum needle insertion depth. | 30 | 9 | Appropriate | 3  (10%) | 22  (73%) | 27  (90%) |  | Good |
| D2S3S9: Use ultrasound to evaluate for normal lung sliding pre- and post-procedure to rule out pneumothorax. | 30 | 8 | Appropriate | 7  (23%) | 23  (77%) | 30  (100%) |  | Good |
| D2S3S10: Prior to thoracentesis, a high frequency transducer with color flow or power Doppler may be used to evaluate the proposed needle trajectory above the target rib to avoid intercostal vessels. | 29 | 6 | Uncertain | 13  (45%) |  |  |  | No |
| D2S3S11: During thoracentesis, avoid delay or interval change in patient position after the needle insertion site has been marked. | 30 | 9 | Appropriate | 1  (3%) | 23  (77%) | 29  (97%) |  | Good |
| D2S3S12: Consider performing real-time (dynamic) ultrasound-guided thoracentesis of small pleural effusions measuring at least 10 mm in depth throughout the respiratory cycle. | 29 | 6 | Uncertain | 17  (59%) |  |  |  | No |
| D2S3S13: Routine post-procedure chest radiographs are not indicated in patients that have successfully undergone thoracentesis with ultrasound guidance that are asymptomatic and demonstrate normal lung sliding post-procedure. | 30 | 8 | Appropriate | 2  (7%) | 28  (93%) |  |  | Very Good |
| D2S3S14: Consider using post-procedural ultrasonography to assess residual pleural fluid and lung re-expansion, and monitor for re-expansion pulmonary edema. | 30 | 5.5 | Uncertain | 16  (53%) |  |  |  | No |
| D2S4S1: Healthcare providers that are novice in ultrasound-guided thoracentesis need focused training in lung and pleural ultrasonography and hands-on practice in procedural technique. | 30 | 9 | Appropriate | 1  (3%) | 26  (87%) |  |  | Very Good |
| D2S4S2: Novices can undergo simulation-based training prior to performing ultrasound-guided thoracentesis on a live patient. | 29 | 9 | Appropriate | 0  (0%) | 22  (76%) | 29  (100%) |  | Good |
| D2S5S1: Training curves for novices to become competent to perform lung ultrasound and ultrasound-guided thoracentesis are not completely understood, and training should be tailored to the skill acquisition of the learner and resources of the institution. | 30 | 8 | Appropriate | 2  (7%) | 28  (93%) |  |  | Very Good |