Appendix 5 – Final Voting Results for Thoracentesis Recommendations

▇ Approved Recommendations with no disagreement

▇ Disapproved Recommendations with disagreement

- D2S2S1: Use ultrasound to guide thoracentesis to reduce the risk of post-procedure pneumothorax, the most common major complication of thoracentesis.
- D2S2S2: Use ultrasound to guide thoracentesis to increase the procedure success rate.
- D2S2S3: Use ultrasound to guide thoracentesis, which may decrease the risk of bleeding.

REFERENCE: (Fulfil C3 and D3 cells)	Main theme Round 1 - Thora Voting	Recommendation (D2S2S1)	Recommendation (D2S2S2)	Recommendation (D2S2S3)
Statistic / Results	**Main theme Round 1 - Thora Voting**	**Round 1 - Thora Voting (D2S2S1)**	**Round 1 - Thora Voting (D2S2S2)**	**Round 1 - Thora Voting (D2S2S3)**
Total number of panelists		26	26	26
Median		9	9	7
Median value of votes for appropriateness (median [Q1 / Q3])		9 [9 / 9]	9 [9 / 9]	7 [5 / 7.75]
Middle 50% interquartile range (Q3-Q1)		0	0	2.75
Number of votes outside the region of median		0 (0%)	0 (0%)	10 (38.46%)
Number of votes 1 point around the median		26	25	16
Number of votes 2 points around the median		26	26	24
Number of votes 3 points around the median		26	26	25
Region of median (Region of appropriateness where the median is situated)		**Appropriate**	**Appropriate**	**Appropriate**
Disagreement ("Yes" if more than 30% of votes are situated out of the region of median)		**No**	**No**	**Yes**
Degree of consensus ("No" if more than 30% of votes are situated out of the region of median)		**Very good**	**Very good**	**No**
Grade of recommendation ("No" if any disagreement)		**Strong with**	**Strong with**	**No**

- D2S3S1: Use ultrasound guidance when performing pleural drainage procedures, including thoracentesis.
- D2S3S2: Ultrasound-guided thoracentesis is recommended to be performed, or closely supervised, by experienced operators.
- D2S3S3: Use ultrasound guidance to reduce the risk of complications from thoracentesis in mechanically ventilated patients.
- D2S3S4: Use ultrasound to identify the chest wall, pleura, diaphragm, lung, and subdiaphragmatic organs throughout the respiratory cycle before selecting a needle insertion site
- D2S3S5: Use ultrasound to detect the presence or absence of an effusion and approximate the volume of pleural fluid to guide clinical decision-making.
- D2S3S6: Use ultrasound to detect complex sonographic features, such as septations, to guide decision-making regarding timing and method of pleural drainage.

Recommendation (D2S3S1)	Recommendation (D2S3S2)	Recommendation (D2S3S3)	Recommendation (D2S3S4)	Recommendation (D2S3S5)	Recommendation (D2S3S6)
Round 1 - Thora Voting (D2S3S1)	Round 1 - Thora Voting (D2S3S2)	Round 1 - Thora Voting (D2S3S3)	Round 1 - Thora Voting (D2S3S4)	Round 1 - Thora Voting (D2S3S5)	Round 1 - Thora Voting (D2S3S6)
26	26	25	26	26	26
9	8	7	9	8.5	8
9 [8.25 / 9]	8 [7 / 9]	7 [6 / 8]	9 [8 / 9]	8.5 [8 / 9]	8 [7 / 9]
0.75	2	2	1	1	2
0 (0%)	6 (23.08%)	7 (28%)	2 (7.69%)	2 (7.69%)	3 (11.54%)
24	20	15	21	23	23
26	21	24	24	24	25
26	24	25	25	26	26
Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
No	No	No	No	No	No
Very good	Good	Good	Very good	Very good	Very good
Strong with	Strong with	Strong with	Strong with	Strong with	Strong with

- 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.
- 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.
- D2S3S9: Use ultrasound to evaluate for normal lung sliding pre- and post-procedure to rule out pneumothorax.
- 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.
- D2S3S11: During thoracentesis, avoid delay or interval change in patient position after the needle insertion site has been marked.
- D2S3S12: Consider performing real-time (dynamic) ultrasound-guided thoracentesis of small pleural effusions measuring at least 10 mm in depth throughout the respiratory cycle.

Recommendation (D2S3S7)	Recommendation (D2S3S8)	Recommendation (D2S3S9)	Recommendation (D2S3S10)	Recommendation (D2S3S11)	Recommendation (D2S3S12)
Round 1 - Thora Voting (D2S3S7)	Round 1 - Thora Voting (D2S3S8)	Round 1 - Thora Voting (D2S3S9)	Round 1 - Thora Voting (D2S3S10)	Round 1 - Thora Voting (D2S3S11)	Round 1 - Thora Voting (D2S3S12)
25	26	24	26	26	25
7	8	8.5	6.5	8	6
7 [5 / 9]	8 [7 / 9]	8.5 [6.75 / 9]	6.5 [5 / 8]	8 [7 / 9]	6 [5 / 7]
4	2	2.25	3	2	2
10 (40%)	6 (23.08%)	6 (25%)	14 (53.85%)	2 (7.69%)	15 (60%)
10	20	13	8	24	16
23	23	18	18	24	17
24	24	21	25	25	24
Appropriate	Appropriate	Appropriate	Uncertain	Appropriate	Uncertain
Yes	No	No	Yes	No	Yes
No	Good	Some	No	Very good	No
No	Strong with	Weak with	No	Strong with	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.
- D2S3S14: Consider using post-procedural ultrasonography to assess residual pleural fluid and lung re-expansion, and monitor for re-expansion pulmonary edema.
- 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.
- D2S4S2: Novices can undergo simulation-based training prior to performing ultrasound-guided thoracentesis on a live patient.
- 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.

Recommendation (D2S3S13)	Recommendation (D2S3S14)	Recommendation (D2S4S1)	Recommendation (D2S4S2)	Recommendation (D2S5S1)
Round 1 - Thora Voting (D2S3S13)	Round 1 - Thora Voting (D2S3S14)	Round 1 - Thora Voting (D2S4S1)	Round 1 - Thora Voting (D2S4S2)	Round 1 - Thora Voting (D2S5S1)
26	24	26	26	26
7.5	7	9	8	7
7.5 [7 / 8.75]	7 [5 / 8]	9 [7.25 / 9]	8 [7 / 9]	7 [6 / 9]
1.75	3	1.75	2	3
6 (23.08%)	11 (45.83%)	1 (3.85%)	5 (19.23%)	8 (30.77%)
13	11	19	21	12
22	21	25	22	25
25	22	26	25	26
Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
No	Yes	No	No	No
Good	No	Good	Very good	Good
Strong with	No	Strong with	Strong with	Strong with