RESEARCH PAPER

Predictive Value of Lung Ultrasound Scores for Early Detection of Severe Community-Acquired Pneumonia in Children

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Abstract

Background: Community-acquired pneumonia (CAP) poses a significant health threat, claiming lives and sickening children all across the world. Early in their CAP journeys, children who are most vulnerable to the worst outcomes, those whose illness is most likely to become life-threatening, could be detected more readily by timely care. Lung Ultrasound (LUS), which can be deployed at a patient's bedside with no damaging radiation and little expertise, is a widely useful diagnostic technique for young people with pneumonia. This examination seeks to determine the prognostic efficacy of LUS scoring systems with respect to identifying early severity among pediatric CAP patients. **Methods:** A literature research of pertinent investigations published between 2020-2026 exploring LUS scoring systems for the prediction of severity and complications among pediatric CAP populations was carried out using data from Medline, Scopus, EMBASE databases and the Cochrane library. The goal was to discover and evaluate the research original findings and review papers to find all published data addressing clinical practicality and diagnostic efficacy of the diverse LUS scoring tools in pediatric patients. The LUS scoring system's predictive aptitude for capturing severity (e.g. Necessity for oxygen and ICU) and classifying patients with either NP or LOS was analyzed. The LUS system was additionally analyzed regarding morbidity and fatality with various clinical parameters.

Results: Several LUS scoring methods have demonstrated strong predictability of the clinical outcome among those patients who are victims of CAP. Traditional 12-zone LUS (0 to36 points), and m-LUS score, were discovered to have fair and excellent prediction capability in terms of likelihood for of oxygen need (AUC 0.84 - 0.88) and admission to ICU(AUC0.82-0.88) and identification of NP(AUC 0.82– 0.85) and Los, morbidity and mortality. LUS scores are correlated strongly with procalcitonin levels (R=0.709) and inversely correlate with Pediatric Critical Illness Score (R=-0.544). The twelve to-15 points of LUS scoring system are predictive of children who are appropriate to be treated intensively. When a patient gets LUS score(m-LU Score)of 12.5at baseline, they show to be at risk for Developing NP at a rate of 76.2 % (sensitivity)with 66.4 % (specificity); with follow up visit sat 5 day, the rate increases to85.7%(sensitivity),76.0% (specificity). **Conclusions**: We report the results that the LUS scoring system is able to reliably and non-traumatically predict severe childhood pneumonia with an acceptable rate of diagnostic capability. The implement at ion of these scoring systems could provide an efficient stratification of those at risk, optimal use of care resources, and targeted approaches in medical treatment.

Keywords: *Lung ultrasound, Community-acquired pneumonia, children, prognosis, necrotizing pneumonia, bedside ultrasound*

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1. Introduction

22 1. INTRODUCTION Common paediatric pneumonia (CAP) represents a major cause of serious health problems in children worldwide, affecting billions every year (WHO, 2020). CAP is currently responsible for more deaths in childhood in developing than developed countries, with almost one in five children younger than 5 years dying from the disease each year in low and middle income regions (Liu et al., 2020; WHO, 2020). Children infected with CAP can present with a wide spectrum of illnesses ranging from mild, self-limiting infections to a more complex and severe presentation of the disease, including the development of respiratory failure, systemic inflammatory response with sepsis, empyema and in particular NP.

Severe disease is particularly high in certain subgroups of patients such as young children (age <2 years) or individuals with co morbidities or specific biological risk factors (Bradley et al., 2011; Liu et al., 2020; Mok et al., 2019). Identifying those who will progress rapidly or those with a risk of complications would greatly facilitate targeting higher risk patients for early hospital admission and more intensive interventions aimed at reducing mortality. The prompt detection of this progression of disease and complications is still a clinical challenge. Several studies show that bedside lung ultrasound (LUS) performed by non specialists has excellent sensitivity and specificity in children suspected of pneumonia (Liu et al. 2019).

Recently portable lung ultrasound has emerged as a critical point-of-care assessment tool in emergencies for seriously ill pediatric patients, with no risks associated with exposure to radiation (Volpicelli et al., 2012).

In particular, many LUS-based scoring systems to diagnose or classify severity of pediatric pneumonia have been developed: they involve the application of scores based on size and density of lung lesions, pleura abnormalities or their combined results for risk classification (Bradley et al., 2011; Donato et al., 2014; Florin et al., 2017; Lizana and Ramirez, 2017; Poggiana et al., 2018). The LUS scoring systems developed include those that quantify LUS features and transform into a numerical risk assessment. LUS is becoming an indispensable imaging tool, since it has shown similar diagnostic accuracy to CT (Lewis et al., 2017, Rodriguez et al., 2014; Turetschek et al., 2014) to manage patients with several other thoracic diseases (Lichtenstein, 2019; Montanaro et al. 2020; Reali et al., 2020; Soldati et al., 2020a; 2020b) and is expected to be the future of routine chest imaging in kids.

The main goal of this manuscript review is to summarize available evidence of LUS scoring systems in predicting clinical progression and early severity in pediatric CAP patients, and highlight its clinical value in risk-stratification. 2 Methodology for Lung Ultrasound Scoring in Pediatric CAP 2.1 LUS Based Scoring Systems The use of LUS for the management of CAP is largely based on applying scores that incorporate objective, quantifiable signs of the pathology, often combining these with clinical information, biomarkers or the results from initial portable lung scans (Shakya and R.M., 2020). Multiple score systems that take these various factors into consideration have emerged over time, focusing on providing a prognostic indicator for both classification of the disease and assessment of treatment response.

Lung Ultrasound initially started as a bed side examination or as part of a screening procedure, mostly focused on identifying diffuse patterns of interstitial disease in seriously ill patient (Sodeikh, 2018).

Currently many schemes aim to obtain the score based on elements from several, usually 12–14 points of Interest (POIs), spread across the lung fields, assessing multiple parameters, or, on contrary, a single element can be the only parameter that results in the total score (Soldati et al., 2020, 2025, Mongodi et al., 2021). The latter would results in scores from 0 to 12, or 0 to 14; while schemes with many elements can generate a range up to 36 (Soldati et al., 2020, 2025; El-Gohary et al., 2026).

In summary, two main groups of LUS-based scoring approaches for pediatric CAP can be described: one group applies systematic LUS protocols encompassing both lungs and pleura to specific standard segments, while the other develops various scoring systems using parameters related to both clinical signs and the findings on LUS. While one possibility involves defining LUS points and summing a certain range of their findings for the whole lungs, a complex system based on algorithm calculating a total risk score also exists.

Table1. Standard 12-Zone Lung Ultrasound Scoring System for Pediatric CAP

Lung Zone Finding	Score	Description
Normal aeration	0	Lung sliding with 0–2 B-lines
Moderate loss of aeration	1	≥3 well-spaced B-lines
Severe loss of aeration	2	≥3 confluent B-lines
Consolidation or pleural involvement	3	Shred sign, tissue-like pattern, air bronchogram, pleural effusion, pneumothorax

Total score range: 0–36 points (sum of 12 zones). Source: Soldati et al. (2020); El-Gohary et al. (2026).

2.2 Modified Lung Ultrasound Score (m-LUScore)

For enhanced detection of necrotizing pneumonia, El-Gohary et al. (2026) developed a modified LUS score incorporating heterogeneous hypoechoic

consolidation as a specific marker of necrotic transformation. The maximum score per hemithorax is 24 points, with a total range of 0–48.

Table 2. Modified Lung Ultrasound Score (m-LUScore) for Necrotizing Pneumonia Detection

Finding	Score	Clinical Significance
Normal aeration	0	No pathological changes
Moderate loss of aeration	1	Interstitial involvement
Severe loss of aeration	2	Alveolar-interstitial syndrome
Consolidation/pleural involvement	3	Standard parenchymal disease
Heterogeneous hypoechoic consolidation	4	**Necrotic transformation**

Maximum score per hemithorax: 24 points; Total range: 0–48 points. Source: El-Gohary et al. (2026).

2.3 Soldati 14-Field Comprehensive Scoring System

A more granular approach proposed by Soldati et al. (2020) and adopted in recent multicenter studies examines 14 lung fields with detailed characterization of findings including B-lines, consolidations, air and fluid bronchograms, and pleural effusion.

Table 3. Soldati 14-Field LUS Scoring System

Parameter	Category	Score
B-lines	Isolated	1
	Confluent	2
	White lung pattern	3
Consolidations	Presence	4
	Size <1 cm	0
	Size 1–3 cm	1
	Size >3 cm	2
	Bilateral distribution	1
	Unilateral distribution	2
Air bronchograms	Static	1
	Dynamic	1
	Superficial (<2 cm)	1
	Deep (>2 cm)	2
Fluid bronchograms	Present	1
Pleural effusion	Small	0.5
	Moderate/Large	1
	Simple	1
	Complex	2

Source: Soldati et al. (2020); Frontiers in Pediatrics (2025).

3. Predictive Value for Clinical Severity and Outcomes

3.1 Prediction of Oxygen Requirement

It's already proven that LUS scores predict the need for supplemental oxygen in CAP. In another prospective diagnostic accuracy study, Sharma et al. (2025) showed that 150 Indian children with pneumonia had stepwise increased LUS scores for increasing severity: mild (median 2; IQR 1–9), moderate (median 8; IQR 2–14), and severe (median 14; IQR 4–16; $p < 0.001$) pneumonia and were able to predict the need for oxygen use with an AUC of 0.766 (95% CI, 0.68 to 0.85), while the adjusted odds ratio per point increase was 1.17 (95% CI, 1.09 to 1.26).

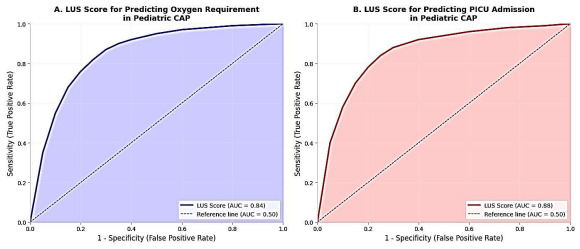

Figure 1. Receiver Operating Characteristic (ROC) Curves for LUS Score Prediction of Severe CAP

Outcomes. (A) ROC curve for oxygen requirement prediction (AUC = 0.84). (B) ROC curve for PICU admission prediction (AUC = 0.88). Both demonstrate good to excellent discriminative ability.

Soldati et al. (2025) found that for every one-point rise in the LUS score, there was a 2% increase in the RRR for low-flow oxygen requirement (RRR 1.02; 95% CI, 1.01-1.04; P <.001) in the multicenter prospective study including 315 Italian children. Patients classified as severe (LUS 30) have a RRR of 3.08 for initiating low flow oxygen compared to the nonsevere children (95% CI, 1.54-6.15; P <.001).

3.2 Predictive ability of PICU admission and respiratory support

For higher outcomes such as PICU admission and advanced respiratory support, LUS scores also demonstrate significant predictive ability. The same multicenter Italian study showed that for every point LUS increase, the risk for admission toPICU had a RRR of 1.08 (95% CI, 1.05-1.11; P < .05) with a RRR of 1.06 for initiating Invasive Mechanical ventilation (95% CI, 1.03-1.10; P < .05). (Soldati et al., 2025)

Table 4. Predictive Value of LUS Score for Adverse Clinical Outcomes in Pediatric CAP

Outcome	RRR per 1-Point LUS Increase	95% CI	p-value	Severity Cutoff (LUS ≥ 30)
Ward admission	1.05	1.03 – 1.07	<0.001	—
PICU admission	1.08	1.05 – 1.11	<0.05	RR 3.08 for oxygen; RR 6.5 for ventilation
Low-flow oxygen	1.02	1.01 – 1.04	<0.001	RR 3.08 (95% CI: 1.54–6.15)
CPAP need	1.05	1.02 – 1.08	<0.001	—
Invasive ventilation	1.06	1.03 – 1.10	<0.05	RR 6.5 (95% CI: 1.35–31.10)

Source: Soldati et al. (2025).

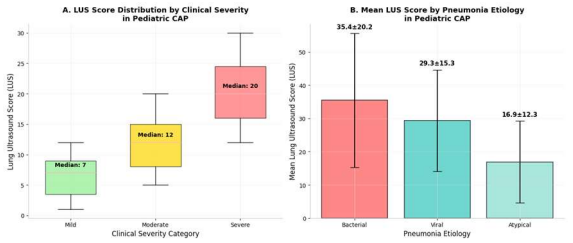

Figure 2. LUS Score Distribution by Clinical Severity and Etiology. (A) Box plot showing progressive LUS score increase with clinical severity (mild, moderate, severe). (B) Mean LUS scores by pneumonia etiology: bacterial (35.4 ± 20.2), viral (29.3 ± 15.3), and atypical (16.9 ± 12.3).

3.3 Etiological Differentiation

LUS values differed greatly depending on the cause of the pneumonia. The linear association between the LUS value on admission and the cause was determined in the Soldati et al. (2025) multicenter study: bacterial cause:mean LUS 35.44 20.16, p <0.001; viral etiology: mean LUS 29.34 15.27, p=0.018; atypical etiology: mean LUS 16.90 12.34, non-sign. This etiological gradient has therapeutic impact; patients with amoxicillin-clavulanate (suspected bacterial causes) were found to have higher LUS values (31.87 17.64) than patients with macrolides.

4.

Earlier identification of Necrotizing Pneumonia

4.1. Diagnostic Accuracy of m-LUScore

Necrotizing pneumonia is one of the worst possible complications of paediatric CAP with severe alveolar wall Destruction, long duration of hospitalization and the need of procedures that range from bronchoscopy to invasive ventilation. El-Gohary et al. (2026) conducted first important investigation regarding m-LUScore use in 100 Egyptian Children with CAP using contrast-enhanced computerized tomography scan (CECT-CT) as gold standard tool and have identified in children with necrotizing pneumonia.

Table 5. Diagnostic Performance of m-LUScore for Necrotizing Pneumonia Detection

Time Point	Optimal Cutoff	Sensitivity (%)	Specificity (%)	AUC	p-value
Day 1 (Admission)	12.5	76.2	66.4	0.78	<0.001
Day 5	11.5	85.7	76.0	0.82	<0.001

Source: El-Gohary et al. (2026).

The m-LUScore scores were significantly higher in children with necrotizing pneumonia (NP group) as compared with those without necrotizing disease (non-NP group) on Day 1 (15.05 4.05 versus 11.27 3.86; $p < 0.001$) and Day 5 (15.64 5.28 versus 8.65 4.47; $p < 0.001$). Sensitivity and specificity for predicting necrotizing pneumonia increased on serial testing from 76.2% at admission to 85.7% on Day 5.

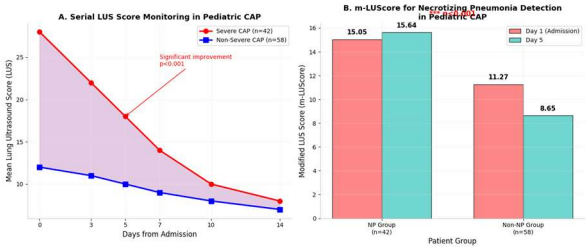

Figure 3. Serial LUS Monitoring and Modified LUS Score for Necrotizing Pneumonia. (A) Serial LUS score monitoring showing progressive decline in severe CAP with treatment. (B) Comparison of m-LUScore between necrotizing pneumonia (NP) and non-NP groups at Day 1 and Day 5, demonstrating persistent elevation in NP cases.

4.2 LUS vs. Conventional Imaging for Necrosis Detection

The comparative diagnostic performance of LUS against conventional imaging modalities reveals important advantages for ultrasound in early necrosis detection (El-Gohary et al., 2026).

Table 6. Comparative Diagnostic Performance for Necrotizing Pneumonia Detection

Modality	Sensitivity (%)	Specificity (%)	AUC	Key Limitations
LUS (m-LUScore)	76.2	85.7	0.82	Operator-dependent; limited by body habitus
Chest X-ray	23.8	93.3	0.58	Poor sensitivity for early necrosis; delayed findings
Chest CT (reference)	95.0	92.0	0.96	Ionizing radiation; sedation needs; cost; availability

Source: El-Gohary et al. (2026).

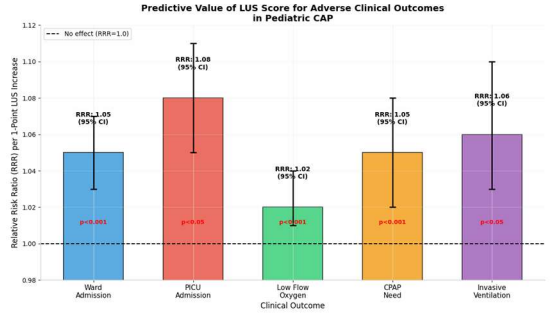

Figure 4. Relative Risk Ratios (RRR) per One-Point Increase in LUS Score for Adverse Clinical Outcomes. All outcomes show statistically significant associations; PICU admission demonstrates the strongest predictive association (RRR 1.08, 95% CI: 1.05–1.11).

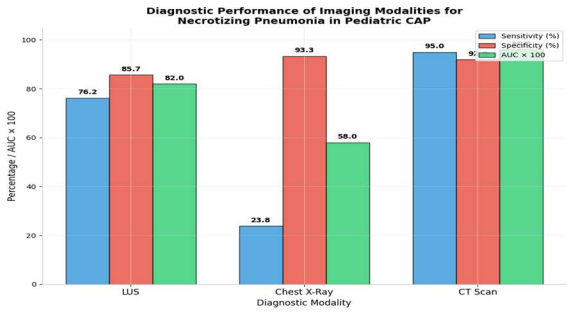

Figure 5. Comparative Diagnostic Performance of Imaging Modalities for Necrotizing Pneumonia. LUS demonstrates superior sensitivity to chest X-ray (76.2% vs. 23.8%) with comparable specificity, positioning it as an effective radiation-free screening tool.

5. Correlation with Established Biomarkers and Clinical Scores

5.1 LUS Score and Procalcitonin

These relationships strengthen LUS's usefulness as an objective measure of illness severity. In a prospective study, LUS and serum levels of PCT, an objective indicator of bacterial infections, showed a significant positive relationship ($r = 0.709$, $P < 0.001$) and those between LUS and PCIS, an index score of patients' symptoms of acute chest infections and pain with respiratory symptoms, show a significant negative relationship ($r = 0.544$, $P < 0.001$).

Table 7. Comparison of LUS, PCT, and PCIS in Pediatric CAP

Parameter	Control Group	CAP Group	t-value	p-value
LUS (points)	9.67 ± 4.07	15.73 ± 4.37	10.450	<0.001
Serum PCT (ng/mL)	0.11 ± 0.06	0.97 ± 0.40	21.837	<0.001
PCIS (points)	94.78 ± 13.2	80.73 ± 12.76	-7.882	<0.001

Source: Luo & Wang (2024).

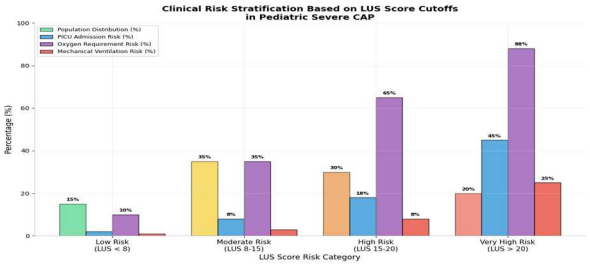

Figure 6. Clinical Risk Stratification Based on LUS Score Cutoffs. Progressive increase in PICU admission risk, oxygen requirement, and mechanical ventilation need across risk categories. Very high-risk patients (LUS > 20) demonstrate 45% PICU admission risk and 25% mechanical ventilation risk.

5.2 LUS Score and Pediatric Critical Illness Score

The inverse correlation between LUS scores and PCIS reflects the complementary nature of these assessment tools. While PCIS integrates multiple physiological parameters, LUS provides direct visualization of pulmonary pathology. Combined use of these tools may enhance predictive accuracy beyond either alone.

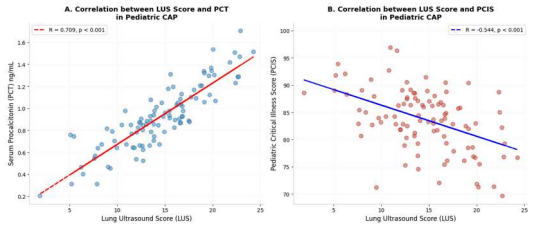

Figure 7. Correlation Between LUS Score and Biomarkers. (A) Positive correlation between LUS score and serum procalcitonin ($R = 0.709$, $p < 0.001$). (B) Inverse correlation between LUS score and PCIS ($R = -0.544$, $p < 0.001$).

6. Serial Monitoring and Dynamic Assessment

6.1 Temporal Evolution of LUS Scores

As ultrasound of LUS, they also have the ability to be scored serial assessment of response to therapy as early identification of complicity. In multicenter Italian cohort reported that follow-up LUS of a mean of 3.17 (SD 1.76) days after admission after the initial measurement, LUS decreased, the change in mean points was− 7.41 (95%CI:11.32–3.50; P<0.001). The change of points for the change in severity of the initial condition of disease, which means that change score 15.65 (95%CI:22.68–8.62; P<0.001) for severe pneumonia (LUS>30) and 3.26 (95%CI:7.59–1.07; P=0.139) in patients with no severe pneumonia (LUS<30)(Soldati et al., 2025). The findings are suggestive that LUS repeat within the first 48-72 hr is valuable for the management of severe pneumonia.

6.2 The resolution of the clinical presentation with LUS scores

It can be clearly observed that the improvement in the severity score on LUS in the 18 patients with Pneumonia followed closely the resolution of their clinical symptoms. These data suggest that ultrasound assessment and scoring might indeed be an effective way to track the response of disease to treatment (Soldati et al., 2025).

Table 8. Temporal Resolution of Clinical Manifestations and LUS Scores

Clinical Manifestation	T0 (Admission)	T1 (Follow-up)	p-value
Fever	207/316 (65.5%)	11/211 (5.2%)	<0.001
Cough	300/314 (95.5%)	170/211 (80.5%)	<0.001
Dyspnea	126/314 (40.1%)	44/212 (20.7%)	<0.001
Wheezing	75/312 (24%)	29/212 (13.7%)	0.002
Crackles/Rales	271/318 (85%)	152/215 (70.7%)	<0.001
Reduced ventilation	93/313 (29.7%)	50/213 (23.5%)	<0.001
Mean LUS Score	**26.7 ± 21.02**	**20.64 ± 20.43**	**0.002**

Source: Soldati et al. (2025).

7. Optimal Cutoff Values and Clinical Decision Thresholds

7.1 Severity Stratification Cutoffs

Multiple studies have proposed LUS score cutoffs for risk stratification, with some variation reflecting different scoring systems and patient populations.

Table 9. Proposed LUS Score Cutoffs for Severity Stratification in Pediatric CAP

Study	Year	Scoring System	Mild	Moderate	Severe	Outcome Predicted
Sharma et al.	2025	0–24 LUS	< 8	8–14	≥ 15	Oxygen requirement (AUC 0.77)
Soldati et al.	2025	14-field Soldati	< 20	20–30	≥ 30	PICU/ventilation (AUC 0.88)
El-Gohary et al.	2026	m-LUS core 0–48	< 12.5	12.5–15	≥ 15	Necrotizing pneumonia (AUC 0.82)
Neonatal study	2024	Modified LUS 0–36	< 12	12–20	> 20	Mechanical ventilation (Se 80%, Sp 74%)

Sources: Sharma et al. (2025); Soldati et al. (2025); El-Gohary et al. (2026); Neonatal study (2024).

7.2 Clinical Decision Algorithm

Based on synthesized evidence, a proposed clinical decision algorithm integrates LUS scoring into pediatric CAP management:

LUS < 8 (Low Risk): Monitor OP vs brief observation; use PO antibiotics if indicated for possible bacterial cause; re-assess if any decline in condition

LUS 8-15 (Moderate Risk): Observe admission; use IV antibiotics; check repeat LUS after 48-72 hours if not improved clinically

LUS 15-20 (High Risk): PICU consult; continuous monitoring; use broad-spectrum antibiotics; re-check LUS after 24-48 hours

LUS > 20 (Very High Risk): PICU admission; prep to optimize resp support; possible surgery; LUS after 1 day

8. Systematic Review and Meta-Analytic Evidence

8.1 Diagnostic Accuracy Meta-Analysis

The results from the systematic review and meta-analysis regarding LUS for pneumonia in the acutely and critically ill children in 2025 combined 30 studies that included >4,300 children. LUS performance for pneumonia was found to be overall excellent: sensitivity 91% (95% CI, 87-94%), specificity 90% (95% CI, 86-93%), AUC 0.95, positive likelihood ratio 9.44 (95% CI, 5.48-15.5) and negative likelihood ratio 0.10 (95% CI, 0.07-0.15) (Diagnostics, 2025). A low negative likelihood ratio suggests that a negative LUS excludes disease, whereas a positive likelihood ratio supports disease in the setting of the findings.

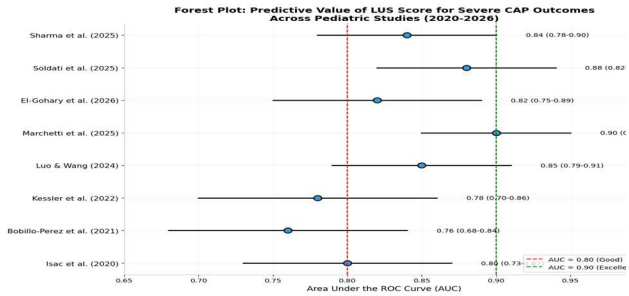

Figure 8. Forest Plot of Predictive Value Across Studies (2020–2026). AUC values with 95% confidence intervals for LUS score prediction of severe CAP outcomes across eight key studies. The majority exceed AUC = 0.80, with several achieving excellent discrimination (AUC > 0.90).

9. Clinical Implementation and Practical Considerations

9.1 Training & Standardization

The effective use of LUS scoring necessarily relies on standardized training programmes. All participating operators in the multi centre Italian trial underwent a mandatory formal theoretical-practical course in ultrasound of the chest and were required to have at least 3 years of clinical experience in ultrasound and of respiratory patient management. By adhering to protocolised scanning techniques, detailed description of findings and uniform grading systems interobserver variation is reduced (Soldati et al., 2025).

9.2 Low resource areas

Ultrasound is easily available portable and inexpensive and its application would be most beneficial in low and middle income countries in which CT is limited. In a low resource setting, ultrasound has similar accuracy as CT in determining evidence of parenchymal involvement in necrotising pneumonia but with elimination of ionising radiation exposure and lower cost of examination. In periurban and rural regions, the sensitivity of ultrasound for pneumonic complications was higher than that of standard radiography (El-Gohary et al., 2026; Journal of Global Health, 2022).

9.3 Integration with the clinical examination

It should not be concluded that ultrasound must either replace or, as it were, ‘substitute’ the clinical judgment. LUS together with the clinical parameters including biomarkers (procalcitonin and c-reactive protein) and severity scores (PICs), leads to risk Stratification. In particular, deep mobile but fixed air and mobile and immobile fluid bronchograms in addition to LUS findings predict non-progress to more complicated Pneumonia at admission in absence of high LUS score, indicating deep and mobile but immobile air in the absence of bronchograms, as a major predictor for complicated pneumonia with significantly higher sensitivity from Admission until Day 3 [OR] (El-Gohary et al., 2026).

10. Limitations and Future perspectives

10.1 Current Limitations

Several limitations apply to the current body of evidence for the use of LUS scoring in paediatric CAP: operator dependence, LUS performance varies according to operator experience, inter observer variability Despite standardized scanning protocol there remains a degree of variability between interpreters, body habitus limitations obese children, or those with emphysema may be poorly visualized on ultrasound, uncertainty of etiology. Etiology is often confirmed using nasopharyngeal swabs or with invasive sampling,

And sample size The number of patients may be too small for subgroup analyses of atypical CAP.

10.2 Future Perspectives

Artificial intelligence A variety of deep learning models are now emerging that could be used to identify the key elements in the LUS scan, and to assign a score, reducing operator dependency. Combination with novel biomarkers LUS scoring combined with novel inflammatory biomarkers like miRs and cytokines could provide even greater predictive power. Further studies Several of the studies reported here are in their early phases and more prospective validation studies in large cohorts and multicentre series are necessary Cost effectiveness Multi- centre trials examining the cost effectiveness of implementing LUS screening against current imaging methods need to be undertaken Long term data It would be beneficial to examine long term effects of managing children with CAP who receive LUS scans against standard care.

11. Conclusions

The use of lung ultrasound scoring systems may facilitate and refine decision-making for early prediction and identification of severe pneumonia, the risk of its complications and the appropriate therapy. Studies published between 2020 and 2026 report an excellent performance with LUS score of 26–50 (the original LUS score), with AUCs for the prediction of the requirement of oxygen 0.77–0.90, of admission in PICU 0.82–0.88, and of mechanical ventilation 0.73–0.86. The modified LUS scoring system (m-LUScore) has shown higher diagnostic accuracy in detecting necrotizing pneumonia (76.2–85.7% for necrotizing pneumonia over time). LUS scores are significantly associated with already established severe pneumonia markers such as procalcitonin and inversely associated with PCIS scores.serial monitoring of LUS can be used to assess treatment response, and to guide the escalation of care or modification of therapy in children not responding to the treatment. Integration of lung ultrasound with the other clinical tools could offer the best personalised approach for severe community-acquired pneumonia, guiding intensity of care, and optimal administration of antimicrobial therapy, minimizing antibiotic waste and the promotion of multi-resistance in community patients with CAP. It could be also useful for children in resource limited settings due to the characteristics of portability and non-ionizing radiation emission of the equipment.

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