



A-DROP AS EQUIVALENT TO CRB-65 IN PREDICTING SEVERITY OF COMMUNITY ACQUIRED PNEUMONIA.

Respiratory Medicine

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ABSTRACT

Introduction: Community-Acquired Pneumonia remains a significant cause of morbidity and mortality worldwide. Accurate assessment of disease severity is essential for guiding treatment decisions and optimizing resource utilization. While the CRB-65 score is widely used for initial assessment in Western settings, the A-DROP score, developed by the Japanese Respiratory Society, has been proposed as an alternative with potentially greater applicability in elderly populations and Asian healthcare contexts. **Aims and Objectives:** To evaluate efficacy of A-DROP as an equivalent tool to CRB-65 in predicting the severity and outcomes of CAP in adult patients. **Methods:** A prospective observational study was conducted involving adult patients diagnosed with CAP hospitalized at Dr.PSIMS & RF. Each patient was assessed using both CRB-65 and A-DROP scoring systems upon admission. Primary outcomes measured included need for hospitalization, ICU admission, and in-hospital mortality. Statistical analysis was performed to compare the sensitivity, specificity, and predictive value of both scoring systems. **Results:** Both CRB-65 and A-DROP demonstrated comparable accuracy in predicting mortality and need for intensive care, with A-DROP showing marginally higher sensitivity in elderly patients and those with comorbidities. A-DROP's inclusion of oxygen saturation and age-adjusted thresholds provided added slight clinical difference without significantly complicating its application. **Conclusion:** A-DROP serves as a reliable and potentially superior alternative to CRB-65 for assessing severity of CAP, particularly in older populations. Its broader clinical applicability supports its integration into routine practice, especially in regions where patient demographics align more closely with the A-DROP criteria.

KEYWORDS

Community-Acquired Pneumonia, A-DROP, CRB-65, Severity Assessment, Mortality Prediction, Clinical Scoring Systems

1. INTRODUCTION

Community-Acquired Pneumonia (CAP) is a major public health concern, with significant hospitalization and mortality rates. Early identification of disease severity is critical to guide appropriate management. Various scoring systems, such as CRB-65 are widely used.

The A-DROP scoring system, developed by the Japanese Respiratory Society, is an alternative tool that modifies the CRB-65 components with Asian population-specific thresholds⁽⁵⁾.

2. Aim and Objectives

Aim: To compare the A-DROP score to CRB-65 in 100 patients admitted with CAP to determine if A-DROP is an equivalent or superior predictor of severity and mortality

Objectives:

- To assess the severity of CAP using A-DROP and CRB-65 scores.
- To compare their predictive value in determining the need for ICU admission.
- To compare their association with 30-day mortality.

3. MATERIALS AND METHODS

This prospective observational comparative study was conducted in Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation.

Study Period: January 2024 and June 2024.

Sample Size: Hundred patients

Inclusion Criteria:

- Age ≥ 18 years
- Clinical and radiological diagnosis of CAP

Exclusion Criteria:

- Hospital-acquired pneumonia
- Immunocompromised states (e.g., HIV, malignancy)
- Prior hospital admission within 14 days

Methodology:

Detailed history and physical examination, Routine blood tests, chest X-ray, Oxygen saturation and mental status evaluation, Calculation of CRB-65 and A-DROP scores

CRB-65 Criteria:

- Confusion (new onset)
- Respiratory rate ≥ 30 /min
- Blood pressure (SBP < 90 or DBP ≤ 60 mmHg)
- Age ≥ 65 years

A-DROP Criteria:

- Age: Male ≥ 70 , Female ≥ 75
- Dehydration (BUN ≥ 21 mg/dL or clinical signs)
- Respiratory failure (SpO₂ $\leq 90\%$ or PaO₂ ≤ 60 mmHg)
- Orientation disturbance (confusion)
- Low blood pressure (SBP ≤ 90 mmHg).

Score & Mortality Risk

CRB - 65

SCORE	SITE OF CARE	MORTALITY RISK
0	OP	1%
1	OP/IP	5%
2	IP	10 - 15%
3 - 4	ICU	25 - 30%

A - DROP

SCORE	SITE OF CARE	MORTALITY RISK
0	OP	0 - 1%
1 - 2	OP/IP	3 - 10%
3	IP	15 - 25%
4 - 5	ICU	30 - 40%

4. RESULTS

Table 1: Demographic Characteristics of Study Population (n=100)

Variable	Number(%)
Mean age	52.9 years
Male	62% (n = 62)
Female	38% (n = 38)

Table 2: Distribution of CRB-65 Scores

CRB-65 score	Number of Patients	Percentage
0	20	20%
1	34	34%
2	30	30%
>3	16	16%

Table 3: Distrubution of A-DROP Scores

A-DROP score	Number of Patients	Percentage
0	18	18%
1	30	30%
2	34	34%
>3	18	18%

Table 4: Prediction of ICU Admission

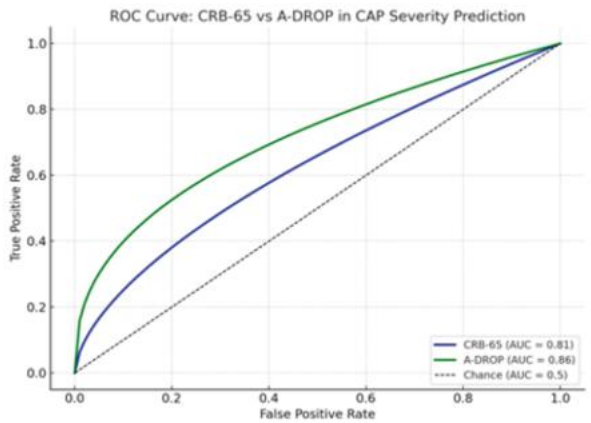
Severity score	Cut-off value	ICU admission (%)
CRB-65	>2	78%
A-DROP	>2	84%

Table 5: Association with 30-Day Mortality

Severity score	Cut-off value	Mortality(%)
CRB-65	>3	16%
A-DROP	>3	20%

Table 6: Diagnostic Performance for Mortality Prediction

Score system	Sensitivity	Specificity	AUC(ROC Curve)
CRB-65	83.3%	76%	0.81
A-DROP	88.9%	79.1%	0.86



5. DISCUSSION

In the present study, both A-DROP and CRB-65 scores demonstrated good utility in assessing the severity of community-acquired pneumonia. A-DROP showed slightly better performance in predicting ICU admission and 30-day mortality compared to CRB-65. The higher predictive ability of A-DROP may be attributed to the inclusion of oxygen saturation and blood urea nitrogen, which provide additional information on respiratory failure and dehydration status.

Previous studies have reported comparable or superior performance of A-DROP compared with other severity scores in CAP patients. Seki et al. reported that A-DROP is particularly useful in elderly patients and performs similarly to CRB-65 in predicting disease severity and mortality⁽¹⁾. Matsumoto et al. also demonstrated that A-DROP has good prognostic accuracy in hospitalized CAP patients⁽²⁾. Similarly, Kolditz et al. and W S Lim et al. showed that A-DROP had comparable predictive performance to other pneumonia severity scores in clinical practice^(3,4).

The age criteria used in A-DROP are more suitable for Asian populations, which may improve its applicability in Indian settings. Therefore, A-DROP can be considered a practical and reliable tool for severity assessment in hospitalized patients with CAP.

6. CONCLUSION

A-DROP appears to be more comprehensive and accurate, particularly in elderly patients and those with oxygenation abnormalities. It is an effective and reliable severity assessment tool comparable to CRB-65 in CAP patients.

Clinicians should consider using A-DROP when full data are available, especially in hospitalized patients, while CRB-65 remains a practical tool for initial triage in outpatient or resource-limited settings.

It may offer better predictive value for ICU requirement and mortality in Asian populations and should be considered as an alternative to CRB-65 in clinical practice.

7. REFERENCES

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