Original Article

Beyond Traditional Risk Assessment: Evaluating CURB-65 in Diabetic Patients – A Narrative Review

Arati Ambrish Shahade[1], Chennakesavulu Dara[2], Veershetty Pasari[3], Omkaram Siddhardha Varma[3], K Vaishnavi[4]

[1]Consultant Physician & Diabetologist, Department of General Medicine, Shahade Hospital, Pune, Maharashtra, India

[2]Associate Professor, Department of General Medicine, ESIC Medical College & Hospital, Hyderabad, Telangana, India

[3]Senior Resident, Department of General Medicine, ESIC Medical College & Hospital, Hyderabad, Telangana, India

[4]Assistant Professor, Department of General Medicine, ESIC Medical College & Hospital, Hyderabad, Telangana, India

Abstract

Background: Community-acquired pneumonia (CAP) remains a major cause of morbidity and mortality worldwide. Diabetes mellitus increases susceptibility to CAP and is associated with poorer clinical outcomes. CURB-65 is a widely used severity assessment tool for CAP; however, its prognostic performance in diabetic patients remains uncertain. To evaluate the prognostic performance of CURB-65 in diabetic patients with community-acquired pneumonia and compare its predictive utility with that observed in non-diabetic populations. **Material and Methods:** A narrative review of literature published between 2015 and 2025 was conducted using PubMed, MEDLINE, and Google Scholar. Studies evaluating CURB-65 in adult CAP patients with diabetes mellitus and reporting mortality or severity outcomes were included. Eleven eligible studies comprising observational, cohort, validation, and prognostic model analyses were synthesized. **Results:** CURB-65 demonstrated acceptable prognostic performance in diabetic patients, with reported AUC values ranging from 0.67 to 0.75, generally lower than those observed in non-diabetic populations. Sensitivity and specificity were approximately 72.3% and 59.5%, respectively. Increasing CURB-65 scores consistently correlated with higher mortality risk and disease severity. Alternative models, including diabetes-specific nomograms, stress hyperglycemia ratio (SHR), Pneumonia Severity Index (PSI), and biomarker-enhanced scores, showed superior predictive accuracy, with AUC values ranging from 0.81 to 0.91. **Conclusion:** CURB-65 remains a practical and valuable tool for risk stratification in diabetic patients with CAP; however, its prognostic accuracy is reduced compared with non-diabetic populations. Incorporation of diabetes-related clinical and biochemical parameters may improve outcome prediction and support more individualized risk assessment**.**

Keywords: Community-acquired pneumonia; CURB-65; Diabetes mellitus; Prognosis; Mortality prediction; Risk stratification.

Received: 15 May 2026 **Revised: 01 June 2026** **Accepted: 19 June 2026** **Published: 24 June 2026**

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a chronic respiratory disorder characterized by persistent airflow obstruction and an inflammatory response in the airways and lungs. The incidence of COPD is increasing across the world. It is now one of the significant sources of morbidity and mortality, contributing to one of the major causes of death by respiratory diseases in the neaCommunity-acquired pneumonia (CAP) remains a major global public health concern, with an estimated incidence ranging from 1.5 to 14 cases per 1,000 person-years depending on geographical region, seasonal variation, and population demographics. The annual incidence among adults is approximately 248 per 100,000 population, increasing substantially with advancing age. Despite advances in antimicrobial therapy and supportive care, CAP continues to account for more than three million deaths globally each year, with mortality rates ranging from approximately 6% among hospitalized patients to nearly 25% among those requiring intensive care unit (ICU) admission.[1,2]

Among the comorbid conditions influencing CAP outcomes, diabetes mellitus represents one of the most important and rapidly growing global health challenges. Currently, nearly one in nine individuals worldwide is affected by diabetes, and projections estimate that by 2050, one in eight adults—approximately 853 million people—will have the disease. Beyond its well-established microvascular and macrovascular complications, diabetes substantially increases susceptibility to infections, including pneumonia, thereby placing additional strain on healthcare systems.[3,4]

The relationship between diabetes mellitus and CAP has been extensively documented. Population-based studies have demonstrated a 1.26-fold increased risk of CAP among individuals with diabetes, while pooled analyses report a risk of approximately 1.64-fold. Diabetic individuals account for nearly 15–20% of all CAP cases, corresponding to an estimated 52–70 million cases annually. Poor glycemic control further worsens outcomes; patients with HbA1c levels exceeding 9% demonstrate a markedly increased likelihood of hospitalization.[5-7]

CURB-65 is one of the most widely used severity assessment

Address for correspondence: Dr. Arati Ambrish Shahade, Consultant Physician & Diabetologist, Department of General Medicine, Shahade Hospital, Pune, Maharashtra, India
E-mail: shahade.arati@outlook.com

DOI:
10.21276/amit.2026.v13.i2.766

How to cite this article: Shahade AA, Dara C, Pasari V, Varma OS, Vaishnavi K.Beyond Traditional Risk Assessment: Evaluating CURB-65 in Diabetic Patients – A Narrative Review. Acta Med Int. 2026;13(2):790-795.

tools for CAP worldwide. Owing to its simplicity, practicality, and reproducibility, it remains a cornerstone for risk stratification and decisions regarding hospitalization and ICU admission. However, because diabetes mellitus influences multiple physiological and biochemical pathways that are not directly represented within the CURB-65 score, concerns have emerged regarding its prognostic accuracy in diabetic populations. This has prompted increasing interest in evaluating whether CURB-65 performs differently in diabetic patients compared with non-diabetic individuals and whether diabetes-specific modifications may improve risk prediction.[8-10]

Given the growing global burden of both CAP and diabetes mellitus, understanding the prognostic utility of CURB-65 in diabetic patients is clinically important. Therefore, this narrative review was undertaken to evaluate the performance of CURB-65 in diabetic patients with CAP and to compare its predictive utility with that observed in non-diabetic populations.

Objective

To evaluate the prognostic performance of CURB-65 in diabetic patients with community-acquired pneumonia, compare its predictive utility with that observed in non-diabetic populations, and assess evidence regarding alternative or modified prognostic models that may improve risk stratification in this subgroup.

Materials and Methods

Study Design: This narrative review was conducted to critically evaluate the prognostic performance of CURB-65 in adult patients with community-acquired pneumonia and diabetes mellitus and to compare its predictive utility with that observed in non-diabetic populations.

Research Question: The review specifically aimed to determine whether the predictive performance of CURB-65 differs in diabetic patients compared with non-diabetic individuals diagnosed with CAP.

Rationale for Narrative Review: A narrative review methodology was selected because of the marked heterogeneity among available studies with respect to study design, patient populations, outcome definitions, and diagnostic criteria for diabetes mellitus. Such variability rendered quantitative meta-analysis inappropriate. The narrative approach allowed inclusion and interpretation of diverse forms of evidence, including validation studies, observational studies, and cohort analyses. Additionally, it facilitated identification of existing knowledge gaps and areas requiring future research. Furthermore, the available literature specifically evaluating CURB-65 in diabetic CAP populations remains limited, making a narrative synthesis more appropriate than quantitative pooling.

Literature Search Strategy: The final literature search was conducted in December 2025. The following electronic databases were systematically searched: PubMed, MEDLINE via Ovid, and Google Scholar. Priority was given to studies published between January 2015 and December 2025; however, earlier landmark studies relevant to CAP severity assessment, diabetes-related outcomes, and prognostic model development were also included where appropriate.

Search Terms: Medical Subject Headings (MeSH) and relevant keywords were used. The principal search strategies included:

1. ("CURB-65"[All Fields] OR "CURB65"[All Fields] OR "CRB-65"[All Fields] OR "pneumonia severity index"[All Fields] OR "PSI"[All Fields])

And

("diabetes mellitus"[MeSH Terms] OR "diabetes"[All Fields] OR "diabetic"[All Fields] OR "hyperglycemia"[MeSH Terms])

And

("pneumonia"[MeSH Terms] OR "community-acquired pneumonia"[All Fields] OR "CAP"[All Fields])

And

("mortality"[MeSH Terms] OR "prognosis"[MeSH Terms] OR "outcome"[All Fields] OR "prediction"[All Fields])

Filters applied: English language; publications within the last 10 years.

This search yielded 40 results.

2. ("CURB-65" OR "CURB65" OR "CRB-65")

And

(diabetes OR diabetic OR "diabetes mellitus")

And

("community-acquired pneumonia" OR "community acquired pneumonia")

3. ("CURB-65" OR "CURB65" OR "CRB-65" OR "pneumonia severity index" OR "PSI" OR "CURB" OR "A-DROP")

And

(diabetes OR diabetic OR "diabetes mellitus" OR "type 2 diabetes" OR hyperglycemia)

And

("community-acquired pneumonia" OR "CAP" OR pneumonia)

And

(mortality OR outcome OR prognosis OR prediction OR severity OR validation)

The same filters were applied to all searches.

More than 31,000 studies related to CURB-65 and over 40,000 publications involving diabetes mellitus and pneumonia severity scores were identified overall. Additional studies were retrieved through forward citation tracking in Google Scholar and by reviewing references from systematic reviews and meta-analyses.

Search Results: The electronic database search identified more than 31,000 records related to CURB-65, diabetes mellitus, and community-acquired pneumonia. Application of predefined search filters, including English language and publication within the last 10 years, substantially reduced the number of potentially relevant articles. After removal of duplicate records and screening of titles and abstracts, full-text articles were assessed for eligibility according to the predefined inclusion and exclusion criteria.

Additional studies were identified through forward citation tracking in Google Scholar and by reviewing the reference lists of relevant review articles and meta-analyses. Studies specifically evaluating the prognostic performance of CURB-65 in diabetic patients with community-acquired pneumonia, or comparing outcomes between diabetic and non-diabetic

populations, were considered for inclusion.

A total of 11 studies meeting the eligibility criteria were included in the final narrative synthesis. These studies comprised observational studies, cohort studies, validation studies, and prognostic model analyses evaluating mortality prediction, intensive care unit admission, hospitalization outcomes, and comparative performance of CURB-65 with alternative risk stratification tools.

Inclusion Criteria

- Studies evaluating CURB-65 in adults aged 18 years and above with community-acquired pneumonia (CAP)
- Studies including diabetes mellitus as a variable, risk factor, comorbidity, or subgroup
- Studies reporting mortality outcomes, including in-hospital, 30-day, or 60-day mortality
- Original research articles, validation studies, observational studies, and cohort studies
- English-language publications
- Peer-reviewed journal articles

Exclusion Criteria

- Studies involving participants younger than 18 years
- Case reports, case series, editorials, commentaries, and letters to the editor
- Studies involving hospital-acquired pneumonia (HAP) or ventilator-associated pneumonia (VAP)
- Studies not including diabetes mellitus as a variable of interest
- Conference abstracts, unpublished studies, or articles unavailable in full text
- Studies in which CURB-65 was not applied or outcome measures were inadequately reported

Data Extraction and Assessment

Data were extracted from the included studies using a standardized approach. The following parameters were reviewed:

- Bibliographic details (author, year of publication, and study setting)
- Study characteristics and design
- Patient population characteristics
- Application and timing of CURB-65 assessment
- Outcome definitions, including mortality, ICU admission, and hospitalization outcomes
- Performance metrics such as area under the receiver operating characteristic curve (ROC-AUC), sensitivity, specificity, and predictive values

The methodological quality of observational and cohort studies was appraised using the Newcastle–Ottawa Scale (NOS), focusing on participant selection, comparability, and outcome assessment. Additional consideration was given to study attrition, measurement of prognostic factors, potential confounding variables, and statistical reporting, including ROC-AUC, sensitivity, specificity, confidence intervals, and adequacy of sample size.

In addition to CURB-65, alternative prognostic tools and modified prediction models, including the Pneumonia Severity Index (PSI), qSOFA, APUA score, stress hyperglycemia ratio (SHR), diabetes-specific nomograms, and biomarker-enhanced models, were reviewed where relevant. Outcomes of interest included mortality prediction, intensive care unit admission, disease severity assessment, and duration of hospitalization in adult patients with community-acquired pneumonia and diabetes mellitus.

Results

Characteristics of Included Studies: A total of 11 studies were included in the final narrative synthesis. The included studies comprised observational studies, retrospective and prospective cohort studies, validation studies, and prognostic model analyses. Collectively, several thousand patients with community-acquired pneumonia were evaluated across these studies. Most studies assessed mortality prediction, intensive care unit admission, disease severity, or hospitalization outcomes in diabetic and non-diabetic populations.[9-19]

Table 1: Summary of Included Studies Evaluating Prognostic Assessment in Community-Acquired Pneumonia among Patients with Diabetes Mellitus

Author	Year	Study Design	Population	Main Findings
Ma et al.	2021	Cohort Study	CAP patients with and without T2DM	CURB-65 and PSI predicted mortality; performance differed between diabetic and non-diabetic patients.
Cheng et al.	2020	Retrospective Cohort	T2DM patients with CAP	Developed a mortality prediction model for hospitalized diabetic CAP patients.
Tan et al.	2022	Multicenter Observational Study	Diabetic patients with CAP	Diabetes-specific nomogram demonstrated superior predictive performance compared with conventional severity scores.
Liu et al.	2023	Cohort Study	Diabetic inpatients with pneumonia	Stress Hyperglycemia Ratio (SHR) was associated with inflammation and adverse clinical outcomes.
Viasus et al.	2013	Prospective Cohort	Hospitalized adults with CAP	Hypoalbuminemia was independently associated with mortality and poor clinical outcomes.
Ma et al.	2022	Cohort Study	CAP patients with diabetes	APUA score improved short- and long-term outcome prediction compared with conventional models.
Ugajin et al.	2014	Observational Study	Elderly patients with CAP and NHAP	CURB-65 showed prognostic utility for mortality prediction in elderly populations.
Falguera et al.	2005	Prospective Study	CAP patients with diabetes mellitus	Diabetes influenced clinical presentation and outcomes of community-acquired pneumonia.
Di Yacovo et al.	2013	Prospective Cohort	CAP patients with diabetes mellitus	Diabetes was associated with distinct clinical characteristics and outcomes.
Lepper et al.	2012	Prospective Cohort	Hospitalized CAP patients	Elevated serum glucose levels were associated with increased mortality risk.
Lee et al.	2011	Cohort Study	Patients with CAP	Albumin and C-reactive protein were significant prognostic markers for adverse outcomes.

Predictive Accuracy: The predictive accuracy of CURB-65 in diabetic patients with community-acquired pneumonia was evaluated across the included studies using the area under the receiver operating characteristic curve (AUC). Overall, CURB-65 demonstrated acceptable but relatively lower discriminatory performance in diabetic populations compared with non-diabetic individuals.[11]

Across the reviewed studies, the AUC of CURB-65 ranged from 0.67 to 0.75 among diabetic patients, whereas studies involving non-diabetic populations generally reported AUC values around 0.75. These findings suggest that although CURB-65 remains useful for risk stratification, its predictive precision may be reduced in the presence of diabetes mellitus.[11]

Several studies evaluated alternative prognostic approaches. Tan et al. reported that the Pneumonia Severity Index (PSI) demonstrated superior predictive performance in severe CAP patients with type 2 diabetes mellitus, achieving an AUC of 0.809. In the same study, a diabetes-specific nomogram showed markedly improved discrimination with an AUC of 0.907.[11]

Similarly, Liu et al. demonstrated that the stress hyperglycemia ratio (SHR) was a stronger predictor of adverse outcomes than CURB-65, with an AUC of 0.831 compared with 0.755 for CURB-65.[12] Other studies reported that serum albumin was an important prognostic marker, and hypoalbuminemia was associated with adverse outcomes and increased mortality in patients with community-acquired pneumonia.[13]

Taken together, the reviewed studies indicate that while CURB-65 retains clinical utility for assessing CAP severity, its discriminatory ability is comparatively lower in diabetic patients. Models incorporating diabetes-related clinical and biochemical parameters consistently demonstrated superior predictive performance.[11-13]

Sensitivity, Specificity, and Mortality Prediction: Several studies evaluated the sensitivity and specificity of CURB-65 for predicting adverse outcomes in patients with community-acquired pneumonia. Among diabetic patients, CURB-65 demonstrated sensitivity and specificity values of approximately 72.3% and 59.5%, respectively. In contrast, studies involving predominantly non-diabetic populations reported sensitivity and specificity values of approximately 70%.[11]

These findings indicate that CURB-65 retains adequate sensitivity for identifying diabetic patients at increased risk of poor outcomes. However, its specificity appears to be lower in diabetic populations, suggesting a tendency to classify a greater proportion of patients as high risk than may ultimately experience adverse clinical outcomes. This pattern was particularly evident in studies involving elderly and nursing-home populations.[11,15]

Mortality prediction remained one of the principal strengths of CURB-65. Across the reviewed studies, increasing CURB-65 scores were consistently associated with higher mortality rates and greater disease severity. The score effectively identified patients at elevated risk of death and adverse outcomes, supporting its continued role in clinical decision-making.[11,12,15]

Nevertheless, the reduced specificity observed among diabetic patients may limit its overall prognostic precision. Diabetes mellitus is frequently associated with advanced age, renal dysfunction, metabolic abnormalities, and multiple comorbidities, several of which overlap with components incorporated within the CURB-65 score. Consequently, diabetic patients may be assigned higher risk categories even when their actual probability of mortality is comparatively lower.[11]

Overall, the available evidence suggests that CURB-65 remains a valuable screening and risk-stratification tool for mortality prediction in diabetic patients with CAP. However, its reduced specificity highlights the need for complementary clinical assessment and consideration of additional prognostic markers in this population.[11-13]

Comparison with Alternative Prognostic Models: Several studies compared the performance of CURB-65 with alternative prognostic tools and modified prediction models in patients with community-acquired pneumonia. Although CURB-65 remained clinically useful because of its simplicity and ease of application, a number of alternative models demonstrated superior predictive accuracy, particularly in diabetic populations.[11-14]

Tan et al. reported that the Pneumonia Severity Index (PSI) outperformed CURB-65 in patients with severe CAP and type 2 diabetes mellitus, achieving an AUC of 0.809. Furthermore, a diabetes-specific nomogram developed in the same study demonstrated excellent discriminatory ability with an AUC of 0.907, substantially exceeding the predictive performance of both CURB-65 and PSI.[11]

Similarly, Liu et al. demonstrated that the stress hyperglycemia ratio (SHR) was a stronger predictor of adverse outcomes than CURB-65, with an AUC of 0.831 compared with 0.755 for CURB-65.[12] Moreover, other studies indicated that hypoalbuminemia was an independent predictor of the outcomes and death in community-acquired pneumonia (CAP) patients, supporting the use of serum albumin to stratify the patients' risk level.[13]

Further biomarkers were added to the CURB-65 scale, which gave some promise of effectiveness as well. These studies have evaluated serum albumin as an adjunct prognostic marker and have correlated hypoalbuminemia with increased mortality and worse clinical outcomes in CAP, indicating that the incorporation of nutritional and inflammatory markers into risk stratification should help to improve this beyond that of traditional clinical markers alone.

Other scores, such as APUA (Age, Pulse, Urea, and Albumin) and qSOFA were assessed in selected studies. Developed specifically for diabetic patients with CAP, the APUA score showed better prognostic performance than traditional severity scores. Others alternative models exhibited satisfactory predictive performance, but there is not much evidence to support the wide applicability of others models. For this reason, these tools are not as clinically accepted as CURB-65 or PSI.[14]

In summary, the evidence available suggests that diabetes-specific models and scoring systems that incorporate diabetes-related statistics are generally more accurate in predicting prognosis than conventional CURB-65. The simplicity, ease of

use, and wide validation in various clinical settings, however, still make CURB-65 a useful tool.[11–14]

Discussion

This was a narrative review addressing the prognostic performance of the CURB-65 score in diabetic patients with community-acquired pneumonia (CAMP) and to test its predictive power in non-diabetic individuals. The reviewed studies were all consistent in showing CURB-65 is a clinically useful and practical instrument for CAP risk-stratification. The simplicity, ease of use, and the fact that it has been clinically validated worldwide, have led to its continued use in routine clinical practice.[8]

Data from the studies provided here indicate that CURB-65 has reasonable sensitivity in patients with diabetes, but has less discriminatory ability than in non-diabetic patients. In the studies included, the AUC for the diabetic groups was in the fair to acceptable range of 0.67 to 0.75. Lower specificity was consistently calculated, and this finding may indicate that CURB-65 is more likely to be over-sensitizing the calculation of disease severity and may lead to a higher number of people with diabetes being described as high risk than is clinically appropriate.[11,15]

The decreased prognostic accuracy of the CURB-65 score when applied to diabetes mellitus may be attributed to several reasons. In the chronic hyperglycemia there is a alteration in immune function, systemic inflammation, and metabolic derangements, all of which are associated with clinical outcomes in CAP. Plus, other diabetes-related issues such as hypoalbuminemia, hyperglycemia caused by stress, and having multiple comorbidities can increase risk associated with diabetes but are not directly part of the CURB-65 scoring system. The conventional CURB-65 criteria for assessing risk for sepsis alone, therefore, may miss important prognostic information.[12,13,16-20]

One of the interesting findings in this review was the better performance of alternative prognostic models. All the Pneumonia Severity Index (PSI), the stress hyperglycemia ratio (SHR), the diabetes-specific nomograms and the CURB-65 models enhanced with biomarkers showed superior predictive performance compared to the classic CURB-65. The addition of clinical parameters such as diabetes to the model in particular significantly enhanced the discrimination and the prediction of mortality. The results of this study are in line with the growing interest in establishing more personalized risk assessment instruments for CAP in diabetic patients.[11–13,19]

Despite a few shortcomings, CURB-65 remains a very useful and clinically important tool because of its simplicity, ease of use (bedside), and ability to predict those at elevated risk of adverse outcomes. Future strategies may not replace CURB-65 but consider incorporating additional diabetes-specific biomarkers and metabolic parameters with current severity scores for better prediction, without losing clinical utility.[8,11–13]

Limitations: There are several limitations of this narrative review. There was a high degree of Variation between included studies (both in terms of study design and patient populations, definitions of outcomes and methods of diabetes assessment and quantifiable meta-analysis).

Moreover, there were relatively few studies that specifically tested the performance of CURB-65 in diabetic patients with CAP. Some of the studies contained in this document were single-center studies or conducted in a geographic area, which may limit the generalizability of their results.

Third, outcomes and measures of the prognostic performance reported varied across studies, such as definition of mortality, ROC-AUC value, sensitivity and specificity. Notwithstanding these restrictions, the limited existing data gives useful insights into the usefulness of CURB-65 in a CAP diabetic population and suggest key areas for future research. It is not possible to rule out publication bias and selective reporting among the studies included.

Conclusion

CURB-65 is still a simple, quick, and popular predictor in CAP. Current evidence indicates that CURB-65 still has a good degree of sensitivity for identifying high risk patients, but the specificity is less, and it has comparatively worse discriminatory power in a diabetic population.

Several studies have shown that alternative methods, such as diabetes-specific nomograms, stress hyperglycemia ratio–based assessment, and biomarker–based scoring systems, and had better predictive accuracy. Despite this, the simplicity, availability and broad validation of CURB-65 remains to aid current clinical practice. There is a need for further studies that can incorporate diabetes related clinical and biochemical data with existing severity assessment models to enhance risk stratification and outcome prediction for diabetic patients with CAP.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Ramirez JA, Wiemken TL, Peyrani P, Arnold FW, Kelley R, Mattingly WA, Nakamatsu R, Pena S, Guinn BE, Furmanek SP, Persaud AK, Raghuram A, Fernandez F, Beavin L, Bosson R, Fernandez-Botran R, Cavallazzi R, Bordon J, Valdivieso C, Schulte J, Carrico RM; University of Louisville Pneumonia Study Group. Adults Hospitalized With Pneumonia in the United States: Incidence, Epidemiology, and Mortality. Clin Infect Dis. 2017 Nov 13;65(11):1806-1812. doi: 10.1093/cid/cix647.
2. Metlay JP, Waterer GW, Long AC, Anzueto A, Brozek J, Crothers K, Cooley LA, Dean NC, Fine MJ, Flanders SA, Griffin MR, Metersky ML, Musher DM, Restrepo MI, Whitney CG. Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America. Am J Respir Crit Care Med. 2019 Oct 1;200(7):e45-e67. doi: 10.1164/rccm.201908-1581ST.
3. Duncan BB, Magliano DJ, Boyko EJ. IDF Diabetes Atlas 11th edition 2025: global prevalence and projections for 2050. Nephrol Dial Transplant. 2025 Dec 23;41(1):7-9. doi: 10.1093/ndt/gfaf177.
4. GBD 2021 Diabetes Collaborators. Global, regional, and national

burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021. Lancet. 2023 Jul 15;402(10397):203-234. doi: 10.1016/S0140-6736(23)01301-6.
5. Kornum JB, Thomsen RW, Riis A, Lervang HH, Schønheyder HC, Sørensen HT. Diabetes, glycemic control, and risk of hospitalization with pneumonia: a population-based case-control study. Diabetes Care. 2008 Aug;31(8):1541-5. doi: 10.2337/dc08-0138.
6. Saibal MA, Rahman SH, Nishat L, Sikder NH, Begum SA, Islam MJ, Uddin KN. Community acquired pneumonia in diabetic and non-diabetic hospitalized patients: presentation, causative pathogens and outcome. Bangladesh Med Res Counc Bull. 2012 Dec;38(3):98-103. doi: 10.3329/bmrcb.v38i3.14336.
7. Huang D, He D, Gong L, Wang W, Yang L, Zhang Z, Shi Y, Liang Z. Clinical characteristics and risk factors associated with mortality in patients with severe community-acquired pneumonia and type 2 diabetes mellitus. Crit Care. 2021 Dec 7;25(1):419. doi: 10.1186/s13054-021-03841-w.
8. Lim WS, van der Eerden MM, Laing R, Boersma WG, Karalus N, Town GI, Lewis SA, Macfarlane JT. Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. Thorax. 2003 May;58(5):377-82. doi: 10.1136/thorax.58.5.377.
9. Ma CM, Wang N, Su QW, Yan Y, Yin FZ. The Performance of CURB-65 and PSI for Predicting In-Hospital Mortality of Community-Acquired Pneumonia in Patients with Type 2 Diabetes Compared with the Non-Diabetic Population. Diabetes Metab Syndr Obes. 2021 Mar 23;14:1359-1366. doi: 10.2147/DMSO.S303124.
10. Cheng S, Hou G, Liu Z, Lu Y, Liang S, Cang L, Zhang X, Zou C, Kang J, Chen Y. Risk prediction of in-hospital mortality among patients with type 2 diabetes mellitus and concomitant community-acquired pneumonia. Ann Palliat Med. 2020 Sep;9(5):3313-3325. doi: 10.21037/apm-20-1489.
11. Tan R, Liu B, Zhao C, Yan J, Pan T, Zhou M, Qu H. Nomogram for prediction of severe community-acquired pneumonia development in diabetic patients: a multicenter study. BMC Pulm Med. 2022 Nov 7;22(1):403. doi: 10.1186/s12890-022-02183-9.
12. Liu B, Chen Y, Yu L, Zhou M. Stress hyperglycemia ratio is associated with systemic inflammation and clinical outcomes in diabetic inpatients with pneumonia on admission. J Diabetes. 2023 Jul;15(7):545-556. doi: 10.1111/1753-0407.13398.
13. Viasus D, Garcia-Vidal C, Simonetti A, Manresa F, Dorca J, Gudiol F, Carratalà J. Prognostic value of serum albumin levels in hospitalized adults with community-acquired pneumonia. J Infect. 2013 May;66(5):415-23. doi: 10.1016/j.jinf.2012.12.007.
14. Ma CM, Wang N, Su QW, Yan Y, Wang SQ, Ma CH, Liu XL, Dong SC, Lu N, Yin LY, Yin FZ. Age, Pulse, Urea, and Albumin Score: A Tool for Predicting the Short-Term and Long-Term Outcomes of Community-Acquired Pneumonia Patients With Diabetes. Front Endocrinol (Lausanne). 2022 Jun 1;13:882977. doi: 10.3389/fendo.2022.882977.
15. Ugajin M, Yamaki K, Hirasawa N, et al. Prognostic value of CURB-65 in elderly patients with community-acquired and nursing-home-acquired pneumonia. Intern Med. 2014;53(21):2455-2460.
16. Falguera M, Pifarre R, Martin A, Sheikh A, Moreno A. Etiology and outcome of community-acquired pneumonia in patients with diabetes mellitus. Chest. 2005 Nov;128(5):3233-9. doi: 10.1378/chest.128.5.3233.
17. Di Yacovo S, Garcia-Vidal C, Viasus D, Adamuz J, Oriol I, Gili F, Vilarrasa N, García-Somoza MD, Dorca J, Carratalà J. Clinical features, etiology, and outcomes of community-acquired pneumonia in patients with diabetes mellitus. Medicine (Baltimore). 2013 Jan;92(1):42-50. doi: 10.1097/MD.0b013e31827f602a.
18. Lepper PM, Ott S, Nüesch E, von Eynatten M, Schumann C, Pletz MW, Mealing NM, Welte T, Bauer TT, Suttorp N, Jüni P, Bals R, Rohde G; German Community Acquired Pneumonia Competence Network. Serum glucose levels for predicting death in patients admitted to hospital for community acquired pneumonia: prospective cohort study. BMJ. 2012 May 28;344:e3397. doi: 10.1136/bmj.e3397.
19. Lee JH, Kim J, Kim K, Jo YH, Rhee J, Kim TY, Na SH, Hwang SS. Albumin and C-reactive protein have prognostic significance in patients with community-acquired pneumonia. J Crit Care. 2011 Jun;26(3):287-94. doi: 10.1016/j.jcrc.2010.10.007.
20. Lee SY, Cha SI, Seo H, Oh S, Choi KJ, Yoo SS, Lee J, Lee SY, Kim CH, Park JY. Multimarker Prognostication for Hospitalized Patients with Community-acquired Pneumonia. Intern Med. 2016;55(8):887-93. doi: 10.2169/internalmedicine.55.5764.