Outcomes of **Patients** with **Community Acquired Pneumonia** Using the **Pneumonia Severity Index** Versus the **CURB-65** as Severity Assessment Tool in **Routine Practice** of **Emergency Departments**

Anna G. Kaal, MD[1], Linde op de Hoek, BSc[1], Davinia T. Hochheimer, MSc[2], Corline Brouwers, PhD[2], Prof W. Joost Wiersinga, PhD[3], Dominic Snijders, PhD[4], Katrijn L. Rensing, PhD[2], Christel E. van Dijk, PhD[2], Prof Ewout W. Steyerberg, PhD[5], Cees van Nieuwkoop, PhD[1]

1 Dept. of Internal Medicine, Haga Teaching Hospital, The Hague, The Netherlands
2 The National Health Care Institute, Diemen, The Netherlands
3 Division of Infectious Diseases, Dept. of Medicine, Amsterdam UMC, Amsterdam, The Netherlands
4 Dept. of Pulmonology, Spaarne Gasthuis, Haarlem, The Netherlands
5 Dept. of Biomedical Data Sciences, Leiden University Medical Center, Leiden, The Netherlands

Objective

Compare the **clinical performance** of the **Pneumonia Severity Index** (PSI) and the **CURB-65** score according to **clinical outcomes** and **admission rates**.

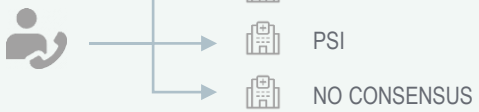
Background

Prediction tools like the PSI and the CURB-65 help physicians to estimate disease severity in patients with community acquired pneumonia (CAP). The PSI is based on 20 variables, whereas the CURB-65 consists of only five elements. There is no consensus yet which tool is preferred for clinical practice. Current IDSA guidelines recommend the PSI as a decision aid in guiding site of treatment, stating that there is a paucity of evidence regarding the effectiveness and safety of the CURB-65. Contrarily, most European countries prefer the CURB-65. Since Dutch CAP guidelines do not prefer the use of either the PSI or CURB-65, we had the unique opportunity to compare both prognostic scores in clinical practice.

Method

Nationwide observational cohort study in the Netherlands using claims data from 2018/2019

Hospitals



We interviewed multiple physicians from almost every Dutch hospital to determine which severity assessment tool was used in their hospital. A hospital was labelled as 'no consensus' when both prognostic scores were used.

Inclusion criteria

Outcomes

30-day mortality
ICU admission rate
Admission rate
Length of hospital stay
Delayed admissions
Readmissions

Outcomes were corrected for age, gender, comorbidity, medical specialism and type of hospital

Results

We included **51241 patients** from **59 hospitals**

Characteristics 47,1 % 72 years

Table 1. Outcomes of patients with community-acquired pneumonia using CURB-65 versus PSI

	CURB-65 (N = 21233)	PSI (N = 17389)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Admission, N (%)	16,391 (77·2)	13,892 (79·9)	0·81 (0·64-1·02)	0·81 (0·64-1·02)
Readmission, N (%)	411 (2·5)	333 (2·4)	1·02 (0·85-1·23)	1·02 (0·85-1·23)
Delayed admission, % N (%)	371 (7·7)	275 (7·9)	0·98 (0·79-1·22)	0·99 (0·80-1·23)
ICU admission, N (%)	1,881 (8·9)	1,409 (8·1)	1·10 (0·93-1·30)	1·10 (0·94-1·30)
30-day mortality, % N (%)	1,836 (8·6)	1,691 (9·7)	**0·88 (0·81-0·97)**	**0·88 (0·82-0·95)**

The mortality rate was 8.9% in the hospitals where both prognostic scores were used. Furthermore, the **admission rate** was **significantly lower** in hospitals consistently using one prognostic score, **aOR 0.79 (0.72-0.998)**

Conclusion

The routine use of **CURB-65** for risk assessment in CAP patients presenting to the emergency department in the Netherlands is associated with **lower 30-day mortality. Consensus** hospitals had **lower admission rates** than **no-consensus** hospitals.

The Dutch CAP guideline recommends antibiotic treatment based on severity assessment. We hypothesize that the PSI classifies more patients as low-risk, resulting in a more narrow antibiotic treatment regimen, which could explain the difference in 30-day mortality. This might be different in an international setting.

Furthermore, other clinical outcomes are similar and the CURB-65 is more user-friendly. After further confirmation, the **CURB-65 may** be **recommended over** the use of the **PSI**

Want to know more? Feel free to contact a.g.kaal@hagaziekenhuis.nl