

# Hyperglycaemia on admission does not predict mortality in patients hospitalised with community-acquired pneumonia: multicentre prospective cohort

D.F. Postma\*; C.H. van Werkhoven\*; D. Troeman‡; J.J. Oosterheert‡; M.J.M. Bonten\*¶

Julius Center for Health Sciences\*, Department of Internal Medicine and Infectious Diseases‡, and Medical Microbiology¶, University Medical Center Utrecht, The Netherlands



University Medical Center  
Utrecht

## Introduction

The prediction of disease severity and mortality in community-acquired pneumonia (CAP) may benefit patient management. The CURB-65 and PSI score are used widely to predict mortality, but may not be accurate in certain patient categories.<sup>1-2</sup>

Recently, it was suggested that mild to severe hyperglycaemia (serum glucose of  $\geq 6$  mmol/l) on admission independently predicts mortality in CAP patients (HR 2.80; 95%CI 2.19-3.57).<sup>3</sup> Although hyperglycaemia has been related to adverse outcomes, these milder levels of hyperglycaemia have not been predictive of mortality before.

## Objective

To determine the association between hyperglycaemia on admission and mortality in hospitalised CAP patients.

## Methods

- Prospective cohort from on-going multicentre CAP-START study
- CAP is defined by clinical criteria and a new infiltrate on chest X-ray or CT
- Glucose level on admission from medical chart
- Patients with cystic fibrosis, ICU admission <24h or hypoglycaemia are excluded
- Cox proportional hazards (PH) models predicting all-cause mortality on day 90 after admission

## Results

- 998 CAP patients; 90-day mortality: 10,3%
- Mean age: 65 years (SD 16,7); Sex: 573 males (58%)
- Prior Diabetes: 158 (16%)
- Median CURB-65: 1 (IQR 0-2); PSI: 93 (IQR 69-114)
- Neoplastic disease: 171 (17%)
- Immunosuppressive medication: 97 (10%)

Pie chart Glucose distribution by category:

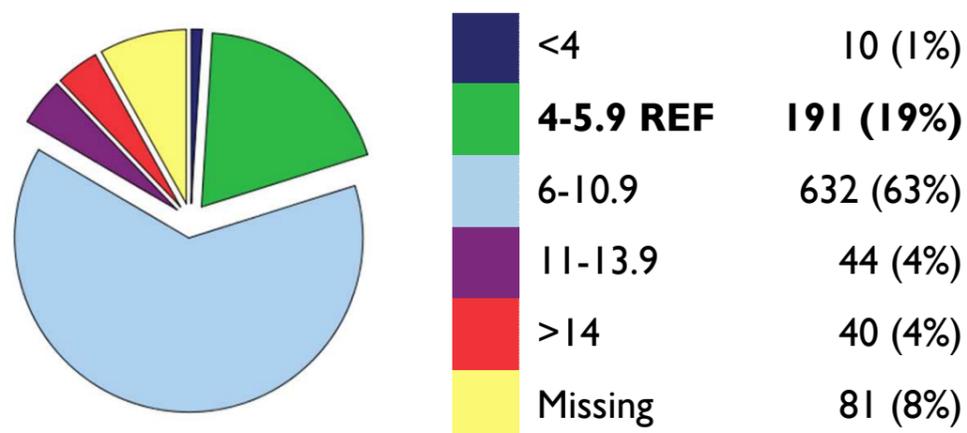
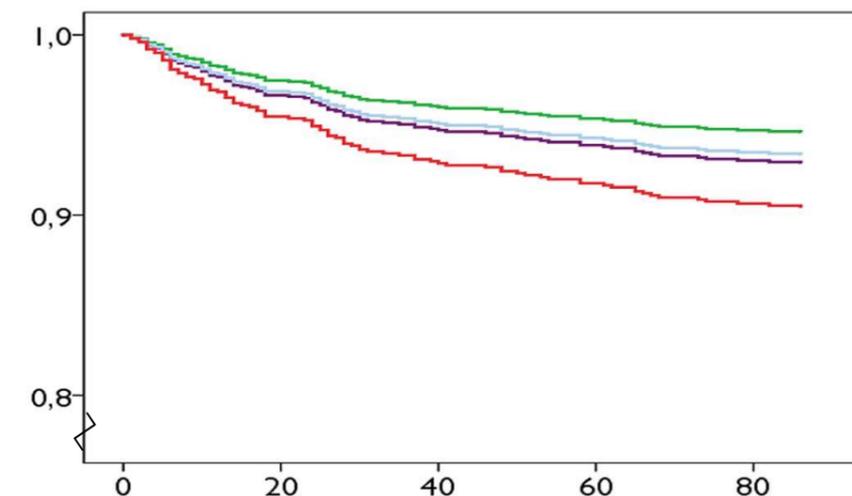


Table Three Cox PH models were fitted (n=907)

	bivariate model	adj. for CURB-65	adj. for PSI
REF	REF	REF	REF
4-5.9	1,49 (0,82-2,71)	1,37 (0,76-2,50)	1,32 (0,73-2,42)
6-10.9	2,15 (0,82-5,67)	1,57 (0,59-4,15)	1,23 (0,47-3,26)
>14	3,29 (1,36-7,94)	2,18 (0,89-5,31)	1,80 (0,75-4,38)
	p=0,05*	p=0,38*	p=0,62*

\*p-value for Wald-test

## Survival in days Adjusted for PSI



## Discussion

- Univariate step-wise relationship
- Low predictive value after multivariate adjustment; especially for mild hyperglycaemia; different confidence intervals compared to earlier studies
- Different population: immunocompromised patients included in present study
- Baseline risk is higher in present study, although ICU admissions <24h excluded
- Sample size probably large enough for mild hyperglycaemia group

## Conclusion

In this explorative analysis of 907 CAP patients, hyperglycaemia on admission did not independently predict 90-day mortality when adjusted for the CURB-65 or PSI score.

1 Lim et al; Thorax 2003 May;58(5):377-82

2 Fine et al; N Engl J Med 1997 Jan 23;336(4):243-50

3 Lepper et al; BMJ. 2012 May 28;344:e3397

Email:

[d.f.postma@umcutrecht.nl](mailto:d.f.postma@umcutrecht.nl)

