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Too old for the ICU?

Long term prognosis of critically ill patients

Long term mortality

All patients have a largely increased risk of death after ICU discharge
The relative risk is higher in younger patients

SAPSII

Better accuracy for predicting one-year mortality



INTRODUCTION

The mean age of patients admitted to the Intensive Care Unit (ICU) has been continuously increasing. However, little is known about the long term follow up of patients according to age.

OBJECTIVES

Evaluate the age stratified long-term all-cause mortality, after discharge from the ICU.

Compare the one-year mortality rate with a standard population with the same age and gender.

METHODS

Retrospective cohort study of all patients admitted to a multipurpose ICU between 2015-2019. Patients <18 years or admitted for <24h were excluded.

One-year all-cause mortality was assessed for all patients. Standard Mortality Ratio (SMR) according to SAPS II were determined at hospital discharge and at a 1-year follow-up.

Survival curves were plotted. Expected mortality was computed from the national statistics system according to age and gender. The ratio between observed and expected mortality was determined for patients discharged alive from the ICU.

CONCLUSIONS

Patients discharged alive from the ICU have a significant one-year increased mortality risk, independently of age.

RESULTS

ICU Population N = 2184

Age

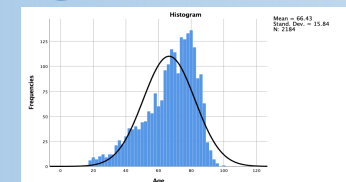


Figure 1 – Cases distribution by age

Gender

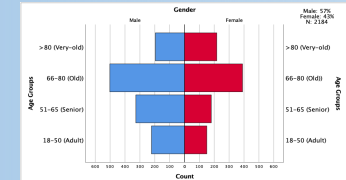


Figure 2 – Cases by Gender and Age Group

SAPSII

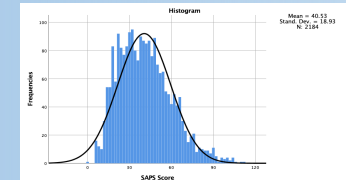


Figure 3 – Cases distribution by SAPSII Score

Standard Mortality Ratio

Age Groups (years)	N	Predicted Mort. (SAPSII)	I.H Mortality	SMR	Follow-up	
					Real	SMR
Adult [18-50]	372	60 (16.1%)	40 (9.2%)	0.67	56 (15%)	0.93
Senior [51-65]	507	125 (24.6%)	84 (16.5%)	0.67	136 (26.8%)	1.09
Old [66-80]	892	321 (36%)	199 (22.3%)	0.62	322 (36.1%)	1.00
Very-old >80	413	181 (43.8%)	110 (26.6%)	0.61	200 (48.4%)	1.10
Total	2184	687 (31.5%)	433 (19.8%)	0.63	714 (32.7%)	1.04

Table 1 – Mortality by Age Group. Predicted and observed In-hospital mortality (with SAPSII), and one-year follow-up. SMR-Standard Mortality Ratio

SAPSII was accurate to predict one-year mortality, for all age groups.

One year survival

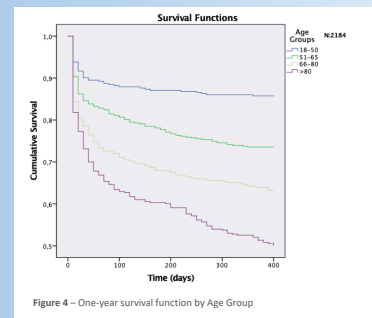


Figure 4 – One-year survival function by Age Group

- Sharp drop in survival in the first days, corresponding to the in-hospital mortality.
- Statistically significant difference in the survival probability for all age groups (log rank test, p < 0.01).
- Continuous decay in survival was observed in the Old and Very-old groups, less evident in the younger.

Ratio of increased mortality

Age Groups (years)	N	1 st year		Ratio
		After discharge	Population Estimate	
Adult [18-50]	332	14 (4.2%)	1 (0.3%)	14
Senior [51-65]	423	51 (12.2%)	3 (0.71%)	16.9
Old [66-80]	692	125 (18.4%)	16 (2.3%)	8
Very-old >80	302	89 (29.5%)	32 (10.6%)	2.8
Total	1750	535 (30.6%)	69 (3.9%)	7.8

Table 2 – One-year mortality after discharge and age adjusted control population estimate

- Mortality was higher in the older patients.
- A high relative mortality risk (ratio between the observed and expected mortality) was observed for all age groups.
- This was higher in younger patients.

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