

Medication cost in a Greek tertiary care coronary intensive care unit

Dear Editor,

The medication cost of critically ill patients varies among different countries as different health care strategies are applied in each country^{1,2}. Data regarding the cost of medications in Coronary Intensive Care Units (CICUs) in Greece is sparse in the literature. We assessed this cost in a tertiary care CICU and searched for clinical factors associated with the increased cost in a substudy of a previously described³ prospective observational study of consecutive patients hospitalized in the CICU of the University Hospital of Heraklion, over 53 months. Patients received the standards of care according to established protocols by the current European Society of Cardiology guidelines. The cost analysis was based on the drugs' hospital prices, assuming that each drug box was used for a single patient. We only included the drug costs. All other costs could not be estimated on an individual patient basis due to lack of relevant data. Body mass index was not included in our analysis, as it did not seem to affect the medication cost significantly in CICU patients. We used the Statistical Package STATA to analyze the collected data.

Nine hundred forty-three patients with a median age of 68 years, 673 men and 270 women were enrolled. The total medication cost was 89,234.14 EUR, with an average cost of 94.63 ± 3.60 EUR per patient. Eight hundred ninety-two patients were hospitalized once, 43 patients twice, two patients three, two patients five, and two patients eleven times. The average cost for patients hospitalized only once was 85.1 EUR, while it was higher per CICU admission for those hospitalized more than once (91.91 EUR). The average cost for men was 91.95 EUR, while 101.3 EUR for women. The average cost per age group was 82.19 EUR for patients up to 50 years, 92.89 for patients 51-60 years, 98.71 for patients 61-70 years, 96.2 for patients 71-80 years, and 99.38 EUR for patients over 80 years.

The development of sustained cardiac arrhythmias³ increased the medication cost by 3.41 EUR in those patients who developed arrhythmias. The type of arrhythmias (supraventricular, ventricular) did not have a statistically significant impact on the medication cost, while the mean duration of CICU hospitalization was significantly longer for the patients who developed (756 patients; 3.89 ± 4.90 days) than for those who did not develop tachyarrhythmias (187 patients; 2.79 ± 3.31 days) ($p < 0.001$). The majority of the patients (68.7 %) were hospitalized due to acute coronary syndromes (ACS), while 31.3 % were due to other cardiac diseases (17.2 % due to acute heart failure)³. The mean cost for ACS patients was 94.15 EUR, while for others it was 95.69 EUR.

Linear regression analysis did not show any statistically significant impact of gender, smoking, hypertension, diabetes mellitus, hyperlipidemia, or left ventricular ejection fraction on the total medication cost. However, increased creatinine levels and age were associated with prolonged CICU hospitalization and higher medication cost. Each year of age increased the medication cost by 0.32 EUR ($p = 0.014$).

Intensive Care Units and CICUs have different daily cost patterns, and it is unclear which has the higher medication cost^{1,2}. CICUs that manage patients after cardiac surgery (not included in our analysis) present significantly higher medication cost¹. Not all CICUs are the same, as each country applies different strategies to manage critically ill patients¹⁻³. The duration of hospitalization in the CICU is one of the most important factors influencing the total medication cost².

Keywords: Coronary Intensive Care Unit, CICU, medication cost, drugs

Conflict of Interest

None to declare.

References

1. Gershengorn HB, Garland A, Gong MN. Patterns of Daily Costs Differ for Medical and Surgical Intensive Care Unit Patients. *Ann Am Thorac Soc*. 2015; 12: 1831-1836.
2. Aung YN, Nur AM, Ismail A, Aljunid SM. Determining the Cost and Length of Stay at Intensive Care Units and the Factors Influencing Them in a Teaching Hospital in Malaysia. *Value Health Reg Issues*. 2020; 21: 149-156.
3. Papakonstantinou PE, Malliou A, Chlouverakis G, Kallergis E, Mavrakis H, Parthenakis F, et al. Impact of Sustained Cardiac Tachyarrhythmias Recorded in Coronary Intensive Care Unit on Short- and Long-Term Mortality and Duration of Hospitalization. *J Intensive Care Med*. 2021; 36: 775-782.

Papakonstantinou PE, Malliou A, Simantirakis EN

Department of Cardiology, University Hospital of Heraklion, School of Medicine, University of Crete, Heraklion, Greece

Corresponding author: Panteleimon E. Papakonstantinou, MD, MSc, PhD, Cardiology Department, University Hospital of Heraklion, 71110 Voutes, Heraklion, Crete, Greece, tel: +306948050600, fax: +302810542055, e-mail: pantelispapakon@gmail.com