

058: VARIATION OF UTILIZATION OF CARDIOVASCULAR SURGERY IN MARCHE REGION

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Objective:

To describe variation rates of cardiac and vascular surgical procedures in Marche Region and to find its determinants.

Methods:

We collected data of all the cardiovascular surgical procedures performed during the period 1997-2001 in Marche Region, Italy. We used the Health Authorities areas as geographical units to measure variation. Marche Region is divided in 13 Health Authorities. We built our database using the current information system for the reimbursement of hospital admissions of the Regional Healthcare Agency of Marche. Data were classified according to Diagnosis Related Group system (DRG). We quantified the level of variation of the following procedures: Heart transplantation, cardiac valve procedures, coronary by-pass, other cardiovascular procedures, Major cardiovascular procedures, percutaneous coronary angioplasty, amputation for circulatory disorders, cardiac pace-maker implantation/replacement, vein ligation and stripping, other circulatory system procedures. We described the data set variability with standardized intervention ratios and we calculated the variation rates for each surgical procedure and geographical area to detect any possible situation of underuse and overuse. Finally we built multiple regression models in order to evaluate the effect of socio-economic and sanitary factors on the observed variations. We considered significant p values <0.05 , strongly significant p values <0.01 .

Results:

We analysed 35,742 cardiovascular procedures. We observed the following variation rates: Percutaneous coronary angioplasty (48.08%), cardiac pace-maker implantation/replacement (40.38%), vein ligation and stripping (38.46%), other circulatory system procedures (38.46%), coronary by-pass (17.31%), amputation for circulatory disorders (13.46%), major cardiovascular procedures (9.62%), cardiac valve procedures (7.69%), other cardiovascular procedures (5.77%), heart transplantation (0%). These variations were determined by a prevalence of overuse in the northern Health Authorities, whereas in the southern Health Authorities prevailed the underuse. We found a significant correlation between the underuse and overuse levels of the Health Authorities ($r = -0.756$; $p = 0.002$). The multivariate models explained up to 58% of the observed variations. We identified as possible determinants of variation in cardiac and vascular surgery: the different supply of Health Services, population's socio-economic factors, passive mobility to the bordering Regions and professional behaviours. In particular for overuse areas the rates of percutaneous coronary angioplasty were related to public and private medical offer ($b = 0.902$, $p < 0.05$; $b = 0.585$; $p < 0.01$), the rates of cardiac pace-maker implantation/replacement were related to public and private medical offer and to the level of urbanization of the area ($b = 0.513$, $p < 0.01$; $b = 0.514$; $p < 0.05$; $b = 0.334$; $p < 0.05$) and for underuse areas the rates of amputation for circulatory disorders were related to the economic conditions of the population ($b = -0.474$, $p < 0.01$).

Conclusions:

The findings of this study suggest that the use of cardiovascular procedures is related to medical resources, access, selection for care, demography and physician practice patterns. Heterogeneity of these factors ensures that uniform delivery of health care rarely holds. Moreover we measured the highest levels of variation for discretionary procedures and there is little evidence that the incidence of surgical disease is the main source of these variations. Rather, variations could reflect differing medical opinion on appropriate use and in our study we observed that variation was related to the medical care offer. We think that we still need to analyse our results in relation with the real level of the appropriateness and of the outcomes of the analysed procedures to understand better the impact of this phenomenon on the quality of the care provided. The challenge is to identify and explain variations and to find strategies fit

to control them. However our findings suggest that the greater efforts must be directed toward defining care for patients with discretionary indications.