

CONFERENCE ABSTRACT

Lessons to enhance integrated care by assessing between-hospital variation in mortality, readmissions and prolonged length-of-stay for cardiovascular diagnoses: results of a cardiovascular population analysis.

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Background: Unwarranted between-hospital variation is a persistent healthcare quality issue that can threaten healthcare equity. Despite the benefits of studying multiple patient outcomes together, research on between-hospital variation has often focused on single outcomes or disease-specific study populations. In this study we examined three important patient outcomes: (1) in-hospital mortality as a pinnacle measure of patient safety; (2) 30-day readmissions as an accountability measure for hospitals; and (3) prolonged length-of-stay, i.e. a length-of-stay above the All-Patient-Refined Diagnoses-Related-Group (APR-DRG)-specific 90th percentile (pLOS) because of its correlations with complications and costs of care. By tapping into the potential of administrative discharge datasets, that today are primarily used for financial purposes, we aimed to quantify between-hospital variation, allowing for priority setting for future quality improvement policies. As the level of between-hospital variation is unknown for cardiology patients, we set out to study a nationwide cardiology sample.

Who is it for: This study is highly relevant for both clinicians and policymakers on hospital and governmental level.

Methods: In this observational study, we used hierarchical mixed-effects logistic regression models to estimate hospital- and APR-DRG-specific risk-standardised rates. Between-hospital variation was assessed based on the estimated variance components. We studied 521,162 hospital admissions for cardiovascular pathologies, divided into 28 APR-DRGs, in 99 (98%) Belgian acute-care hospitals between 2016 and 2018.

Findings: Our analysis revealed notable between-hospital variation in mortality, readmission and prolonged length-of-stay for cardiovascular hospital admissions in Belgium, in particular for medical diagnoses. Seven medical diagnoses were found to have significant between-hospital variation across the three studied outcomes, among which heart failure, angina pectoris and hypertension. Lowering of mortality rates in upper-quartile hospitals to the median could potentially annually save 633 cardiovascular deaths or 26.4% of deaths occurring in these hospitals. Moreover, an overall prevention of 322 (11.8%) readmissions and 1578 (33.3%) long patient stays could be secured in those bottom-performing hospitals. The largest absolute gain could be made for heart failure patients with 122 deaths, 62 readmissions and 277 pLOS potentially avoided.

Interpretation: Our results are suggestive of larger inequalities in cardiovascular quality of care for medical than for surgical admissions. We would recommend future policies to target these diagnoses. Further investments and implementation of clinical guidelines and standardisation as well as systematic collation and benchmarking of outcomes and variation on national and international levels have proven valuable to ensure future focus on the right priorities. As we will demonstrate during this presentation, administrative data are useful for this longitudinal follow-up, as they require no additional workload, are readily available and reliable when applying adequate statistical modelling. Our findings have demonstrated that reducing variation in patient outcomes could be highly beneficial, at least for the cardiovascular patient population. The methods presented are easily transferrable to other disease groups besides cardiology, allowing for quality priority setting across the healthcare spectrum.