Van Wilder A et al, 2023 Population analysis of temporal trends and between-hospital variation in mortality, readmission and prolonged length-of-stay between 2008 and 2018: improving integrated care by knowledge sharing of hospitals' care progress. *International Journal of Integrated Care* 23(S1):407 DOI: doi.org/10.5334/ijic.ICIC23407

POSTER ABSTRACT

Population analysis of temporal trends and between-hospital variation in mortality, readmission and prolonged length-of-stay between 2008 and 2018: improving integrated care by knowledge sharing of hospitals' care progress

23rd International Conference on Integrated Care, Antwerp, Flanders, 22-24 May 2023

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Background: 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 the study we would like to present, we examined nationwide temporal trends and between-hospital variation in 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.

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 made use of a large administrative dataset that is today primarily used for financial purposes (Minimum Hospital Data). We modelled 13,660,187 admissions between 2008 and 2018 in 90 (89%) Belgian acute-care hospitals using APR-DRG-specific logistic regression. We studied temporal trends in outcomes, hospital-level associations between outcomes, associations of outcomes with hospitals characteristics, and evaluated how many and which APR-DRGs explained between-hospital variation.

Findings: Between 2008 and 2018, average standardised mortality decreased from 3.4% to 3.1% and pLOS from 10.6% to 8.1%, with significant decreases observed for 181 (out of 243) and 216 (out of 247) APR-DRGs respectively. Readmissions, however, increased from 4.8% to 5.2%. Pearson correlations between rates in 2008 and 2018 were 0.53, 0.49, and 0.74 for mortality, readmission, and pLOS, respectively. Apart from the positive correlation between mortality and pLOS (ρ =0.46), no associations between outcomes were observed in 2018. For many APR-DRGs, the odds of mortality and pLOS were higher in Brussels and Wallonia than in Flanders and higher for general than for academic hospitals, whereas the opposite was observed for readmissions. We discovered that hospitals that performed well in 2008 continued to outperform other hospitals in

2018. Finally, we found that the significance of standardised outcomes seemed to be driven by a considerable number of APR-DRGs. For instance, hospitals with pLOS higher than expected had on average (range) 61 (25-142) APR-DRGs with significantly elevated pLOS.

Interpretation: Between-hospital variation in outcomes is likely due to systemic hospital factors, rather than due to specific clinical groups. This urges a healthcare policy reform wherein longitudinal follow-up and benchmarking of outcomes should become the starting point towards targeted quality improvement interventions. As we will demonstrate during this presentation, using administrative data can be a valuable tool for this longitudinal follow-up, as it requires no additional workload, is readily available and reliable when applying adequate statistical modelling.