CONFERENCE ABSTRACT

Impact of vertical integration on frequency of hospital readmissions

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Sílvia Lopes[1], Óscar Brito Fernandes[1], Rui Santana[1]

1: Centro de Investigação em Saúde Pública, Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Portugal;

2: Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Portugal

Introduction: Readmissions are a relevant measure of healthcare outcomes, with a negative impact on patients and their families. Frequency of readmissions is excessively high and can be reduced, namely by better discharge planning and follow up. Therefore, vertical integration may reduce readmissions, through better communication and coordination between inpatient care and care after discharge. In Portugal, vertical integration was promoted by creating new institutions (Local Health Units) which included existing hospital and primary care providers. Empirical evidence on the impact of vertical integration on frequency of readmissions is sparse and contradictory, so further studies are needed. This study aims to evaluate the impact of vertical integration on frequency of hospital readmissions.

Methods: Me studied the evolution of unplanned readmissions within 30 days before and after vertical integration in two groups of hospitals [LHU and control group (CG)]. We used inpatient claims data from 2004-13 of public hospitals from Portugal mainland, which allowed to include six LHU. The CG includes six similar hospitals. Unplanned readmissions were identified with methodology from Horwitz et al (2012).

We used a difference-in-differences technique to assess the independent effect of vertical integration, adjusting for patients' individual risk, and hospital and time fixed-effects. Since vertical integration occurred throughout several years, we ran the analyses for each LHU in the period (n-3; n+2), where "n" was the year of integration. Two models were considered, one assessing the annual effect after integration, and the other the global effect. To test the impact of choice of CG, a sensitivity analysis with a different CG was performed.

Results: Population in study included 1,268,531 episodes. Mean age was 50.1 (± 28.7) and 43.4% were men. LHU accounted for 49.2% of all episodes. Global readmission rate was 5.1%.

There was a significant improvement in readmissions in two LHU after integration [LHU1: odds ratio (OR), 0.84; 95% confidence interval, 0.76-0.92; LHU5: OR, 0.86; 95% CI, 0.78-0.94], but improvements were already visible in the year before integration for LHU5 [OR reduced from 1.12 (year n-1) to 1.03 (year n)]. There was a slight improvement in two LHU (LHU2: OR, 0.93; 95% CI, 0.84-1.02; LHU6: OR, 0.95, 95% CI, 0.89-1.01), but the positive evolution in year n+1 was not visible in the subsequent year (LHU2: OR stabilized, 0.82 and 0.83; LHU6: OR increased, 0.94 and 1.00). In the years after integration, LHU4 had a consistent improvement

in readmissions [1.12 (n), 0.95 (n+1), 0.89 (n+2)]. There was no clear pattern of evolution for the remaining LHU. Sensitivity analysis showed that, in general, these results were robust to changes in CG.

Discussion: Vertical integration has been promoted worldwide as a solution for fragmentation of care and its negative consequences, including readmissions. Our results indicate that in some situations there was a reduction of readmissions after vertical integration, but there was not a clear pattern of improvement.

Our study considered a long period (2004-13), an outcome modifiable by integration (risk-adjusted readmissions) and a control group to account for changes other than integration. However, our findings must be borne in light of several study limitations. First, we relied on inpatient claims data, with known limitations for risk adjustment. Second, individual data about socioeconomic status and patients discharged to homes was not available. Third, effects occurring after three years of integration were not considered. However, available data suggested that effect was decreasing with time. Fourth, we accounted for differences in patients' risk, system-level changes and year and hospital fixed effects, but differences in confounding factors may remain. Finally, hospitals were not vertically integrated to reduce readmissions, so changes in this outcome alone cannot provide a measure of health policy effectiveness.

LHU are in a privileged position for adopting measures to reduce readmissions, sharing information systems, reconciling medications and using effective channels for communication. Our results suggest that further improvements in these areas are needed in LHU, so that a visible reduction in readmissions may be accomplished. At a national level, lessons learned from this experience should be taken into account in future initiatives to reduce fragmentation of care, so that positive outcomes are reinforced and negative outcomes are minimized.

Conclusion: Vertical integration has potential for reducing readmissions. After comparing the evolution of readmissions between integrated hospitals and a control group, we found that in some situations there was a reduction of readmissions after vertical integration, but there was not a clear pattern of improvement. This calls for even more effort in common information systems, medications reconciliation and effective channels for communication, so that positive outcomes of vertical integration can be maximized.