



Larger is not necessarily better! Impact of HIV care unit characteristics on virological success: results from the French national representative ANRS-VESPA2 study



Luis Sagaon-Teyssier^{a,b,c,*}, Lisa Fressard^{a,b,c}, Marion Mora^{a,b,c},
Gwenaëlle Maradan^{a,b,c}, Valérie Guagliardo^{a,b,c}, Marie Suzan-Monti^{a,b,c},
Rosemary Dray-Spira^{d,e}, Bruno Spire^{a,b,c}, VESPA2 Study Group

^a INSERM, UMR912 "Economics and Social Sciences Applied to Health & Analysis of Medical Information" (SESSTIM), Marseille, France

^b Aix Marseille University, UMR_S912, IRD, Marseille, France

^c ORS PACA, Southeastern Health Regional Observatory, Marseille, France

^d INSERM, UMR.S1136, Pierre Louis Institute of Epidemiology and Public Health, Team Research in social epidemiology, F-75013 Paris, France

^e Sorbonne Universités, UPMC Univ Paris 06, UMR.S1136, Pierre Louis Institute of Epidemiology and Public Health, Team Research in Social Epidemiology, F-75013, Paris, France

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ABSTRACT

Objectives: To determine the impact of hospital caseload size on HIV virological success when taking into account individual patient characteristics.

Methods: Data from the ANRS-VESPA2 survey representative of people living with HIV in France was used. Analyses were carried out on the 2612 (86.4% out of 3022) individuals receiving antiretroviral (ARV) treatment for at least one year. Outcomes correspond to two definitions of virological success (VS₁ and VS₂ respectively) and were analyzed under a multi-level modeling framework with a special focus on the effect of the caseload size on VS.

Results: Structures with caseloads <1700 patients were more likely to have increased the proportion of patients achieving virological success (59% and 81% for VS₁ and VS₂, respectively) than structures whose caseloads numbered ≥1700 patients. Our results highlight that patients in the 11 largest care units in the sample were exposed to a context where their VS was potentially compromised by care unit characteristics, independently of both their individual characteristics and their own HIV treatment adherence behavior.

Conclusions: Our results suggest that – at least in the case of HIV care – in France large care units are not necessarily better. This result serves as an evidence-based warning to public authorities to ensure that health outcomes are guaranteed in an era when the French hospital sector is being substantially restructured.

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* Corresponding author at: Faculté de Médecine, 27 Bd Jean Moulin, 13285 Marseille Cedex 5, France. Tel.: +33 4 91 32 47 65.

E-mail addresses: luis.sagaon-teyssier@inserm.fr (L. Sagaon-Teyssier), lisa.fressard@inserm.fr (L. Fressard), marion.mora@inserm.fr (M. Mora), valerie.guagliardo@inserm.fr (V. Guagliardo), marie.suzan@inserm.fr (M. Suzan-Monti), rosemary.drayspira@inserm.fr (R. Dray-Spira), bruno.spire@inserm.fr (B. Spire).

1. Introduction

The important number of mergers observed in the hospital sector of western countries during recent decades has mainly been driven by both economic reasons and for improving clinical outcomes. Existing literature on the issue primarily focuses on the effects of hospital mergers on organizational performance and on efficiency. The few studies which examine the impact of mergers on patient welfare, quality of care and clinical outcomes [1–4] mainly use aggregated indicators (such as length of stay, waiting time, mortality and readmission rates). Furthermore, results from these studies provide contrasting results. This may in part be due to the different criteria used to define welfare. Moreover, despite many studies concerning economic outcomes, evidence about hospital mergers on health outcomes is lacking especially for HIV positive patients. There is some evidence that in the short-term, hospital mergers give rise to financial/organizational problems, and although improved efficiency is reported in some cases. Economies of scale have also been observed a few years after hospital mergers [5] but this would seem to be reserved to small hospitals [6,7]. Indeed, although there is evidence for both improved efficiency and economies of scale in some European countries [8] where mergers have taken place, some healthcare professionals involved are skeptical about the resulting expected improvement in quality [9]. While there is a vast literature establishing the relationship between caseload and patients' outcomes, none of the identified articles deal with HIV outcomes. In this literature the variability of the results concerning the caseload/patients' outcomes relationship according to different populations and/or pathologies [10,11] points out the importance of focusing on HIV positive patients. While some authors working on other pathologies (e.g. cancer, cardiovascular problems, etc.) find no significant effect of caseload volume on clinical outcomes for patients [12–14], or that clinical outcomes evolve positively with the size of caseloads [15]; others find that clinical outcomes are better in hospitals with small caseloads [16,17].

France is not exempt from the search for cost reduction in the hospital sector and the improvement of clinical outcomes. Since 1996 a reform of public hospitals has been progressively implemented. One of its objectives is to reduce hospital inequalities between regions through financial and organizational regionalization of hospitals [18]. When the process of hospital sector restructuring was formalized with the 2003 public health law (2003–850), 380 hospitals had already been restructured or closed with the consequent reduction of more than 80 000 beds. By 2005, almost 1200 hospitals had been restructured [19]. This restructuring process was accentuated by the publication of the 2009 public health law (2009–879) confirming the wish of public authorities to modify health care supply. In the same year, the Paris Public Hospitals Organization announced the reorganization of 37 hospitals restructured into 12 groups with vertical and horizontal merging, the main purpose being to create common governance. More recently, public health authorities restructured 2 large hospitals in southern France

to create one large facility [20]. Hospital mergers have however had negative consequences for some health professionals [22]. For example, mergers tend to give rise to multiple working sites. Related problems have been described in one multi-site public hospital in southern France, where the difficulties highlighted were principally related to work reorganization, including workload increase, lack of communication and increased travel times [23]. For patients, hospital mergers may also mean reorganization, with substantial consequences on health outcomes especially for those requiring close follow-up (Gaynor et al. [1]). This is the case for people living with HIV (PLWH), whose care is very dependent on public health organization [24]. Given the large proportion of vulnerable PLWH in France [25], hospital mergers and the potential inefficiencies resulting from organizational restructuring (such as increased waiting times, longer distances for visits etc.) have an impact on their health outcomes. We argue that clinical outcomes, such as virological success, do not only depend on patients' characteristics and behavior (e.g. adherence to treatment), but also on the characteristics of the care units where they are followed up.

From this perspective, we performed a study based on the information provided by the ANRS-VESPA2 survey, representative of PLWH followed in French hospitals in 2011. The objective of the present paper is to determine the impact of hospital caseload size on HIV virological success when taking into account individual patient characteristics.

2. Data and empirical model

We used data from the ANRS-VESPA2 survey, representative of PLWH followed up in 2011. The sample frame included 605 metropolitan French hospitals with an HIV activity. Among them, only 118 had a caseload of at least 100 patients and were stratified in three classes according the caseload size: 36 “small” (100–300 patients), 52 “medium” (300–800 patients), and 30 “big” (>800 patients). Eighty-six care units were randomly selected and 73 accepted to participate to the survey. Fig. 1a and 1b show both the department and the caseload associated to the selected care units.

To be eligible, patients had to be >18 years old, diagnosed HIV+ for at least 6 months and living in France for at least 6 months. Patients were randomly selected at the time of consultation proportionally to the size of the caseload of the care unit. The 3022 patients included in the sample provided information about their living conditions, including socio-demographic, economic, psychosocial and behavioral aspects, in a face-to-face interview. A self-administered questionnaire was also provided to collect patient information in order to assess quality of life, and self-perception of both health status and quality of the HIV care received. Medical patient-related information about HIV key-indicators, comorbidities, treatments and hospital-related characteristics was provided by the HIV care staff (see Dray-Spira et al. [26] for more details about the methodology of the ANRS-VESPA2 study). The subsample for this study was selected according to the French guidelines indicating that an individual is considered in

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