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Does the extension of primary care practice opening hours reduce the use of emergency services?

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ABSTRACT

Overcrowding in emergency departments generates potential inefficiencies. Using regional administrative data, we investigate the impact that an increase in the accessibility of primary care has on emergency visits in Italy. We consider two measures of avoidable emergency visits recorded at list level for each General Practitioner. We test whether extending practices' opening hours to up to 12 hours/day reduces the inappropriate utilization of emergency services. Since subscribing to the extension program is voluntary, we account for the potential endogeneity of participation in a count model for emergency admissions in two ways: first, we use a two-stage residual inclusion approach. Then we exploit panel methods on data covering a three-year period, thus accounting directly for individual heterogeneity. Our results show that increasing primary care accessibility acts as a restraint on the inappropriate use of emergency departments. The estimated effect is in the range of a 10–15% reduction in inappropriate admissions.

1. Introduction

Overcrowding in Emergency Departments (EDs) raises concerns, since it results in the inefficient allocation of resources and reduces the capacity to provide critically-ill patients with timely responses (Flores-Mateo et al., 2012; Pines et al., 2011). It also increases pressure on hospital resources, and the disruption in the continuity of care may adversely affect health outcomes. Such issues are especially serious in those cases where outpatient care could be equally as effective as emergency services.

The share of avoidable ED visits is estimated at around 25% in Canada (Afilalo et al., 2004), 30% in France (Lang et al., 1996), Sweden (Hansagi et al., 1987) and Spain (Sempere-Selva et al., 2001), and up to 50% in Taiwan (Chan et al., 2013). More recently, Thompson et al. (2013) found for the UK that 43% of patients who went to the ED could have been treated in primary care instead. Similar results were also found in New Zealand (Elley et al., 2007). In Italy, Bianco et al. (2003) estimate that non-urgent visits to EDs in the Calabria Region amount to 20% of total visits, while in the USA they range from between 5% and 13% (GAO, General Accounting Office, 2009). Figures vary depending on the institutional framework and on the criteria used to identify patients who could be treated in a primary care setting (Durand et al., 2011). In particular, non-urgent attendances may overestimate the avoidable episodes by relying on primary care services only, since a fraction of non-urgent visits may still require hospital care. An alternative approach focuses on the classification of ED admissions using a triage coding system based on clinical assessment, which suggests that the share of inappropriate ED visits ranges between 20% and 80% of all non-urgent cases (Afilalo et al., 2004). Despite these differences, researchers agree that a relevant fraction of emergency visits could be treated effectively in less intensive settings, and that ensuring improved access to family physicians may help contain the excessive use of EDs.

We investigate the determinants of inappropriate ED attendances in Italy's Emilia-Romagna Region, and study to what extent practice organization influences the use of emergency services. Our main goal is to assess whether differences in daytime accessibility to primary care are linked to ED utilization rates. We focus on a policy that extends the availability of GPs' primary care services to between 10 and 12 hours/day, and we test whether it reduces the number of ED visits that are not followed by hospitalization. We estimate count models for ED admissions from data for 2008–2010. Since participation in the program is voluntary, we first adopt an instrumental variable strategy: using two-stage residual inclusion (2SRI), we test for the potential endogeneity of the policy variable, and account for

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the GPs' non-random participation in the program. Thanks to the availability of data over three years, we further exploit variations in health outcomes and program participation, and explicitly account for individual unobserved time-invariant heterogeneity using panel data models.

Our paper contributes to the existing literature in several ways: first, we investigate the link between primary care and emergency services on a large scale, whereas most studies rely on survey data or case studies; second, we expand existing analyses of whether the greater role of primary care policies and GPs fosters the more appropriate use of hospital services (e.g. Dusheiko et al., 2011); third, we partly overcome the limitations associated with the use of imprecise measures of inappropriate ED utilization, since we identify avoidable ED visits on the basis of a comprehensive ex-post clinical assessment which considers the overall complexity of a patient's condition. Each episode is coded using color labels, whereby those episodes identified as inappropriate are given a *white code*. In this context, we can adopt alternative definitions of avoidable ED visits. A narrow definition includes only those episodes classified as inappropriate according to the on-site clinical assessment (*white codes*). A less restrictive definition uses information about the intensity of treatment received at EDs, and pools together white codes with those attendances but which are given minor attention at the ED (*potentially inappropriate visits*). This occurs when patients only undergo a general check-up with no diagnostic or specialist follow-up.

Our findings indicate that ED attendances are affected by the increased availability of practice-based care. An extension in practices' daytime opening hours results in a reduced use of ED wards. The results of the panel data analysis indicate that the estimated reduction in avoidable ED admissions is around 14% for white codes, and around 7% for potentially inappropriate visits.

2. Background literature

Patients requiring timely medical care may turn to an ED or to a primary care practice: while this choice reflects patients' assessment of their own medical needs, it is also influenced by the relative accessibility of alternative solutions. Financial and geographical barriers may affect access to ED and primary care differently. As financial costs of access vary depending on institutional conditions, the type of treatment required or the patient's insurance status, their impact on ED service use is highly context-specific and patient-specific. In some countries, primary care services are free at the point of use, whereas in others GPs charge fees for visits. As with the ED, the copayment is usually of a limited amount, and may be limited to inappropriate attendances (Sabik and Gandhi, 2016). There is evidence that cost sharing significantly reduces admissions, although the size of the copayment has little effect on ED utilization (Roberts and Mays, 1998). Similarly, geographical barriers depend on the density and location of GP practices compared to EDs. GP practices are usually located closer to patients' homes, thus rendering the use of EDs relatively less attractive. However, individuals in remote areas may be more subject to complications if they lack regular access to community care (Booth et al., 2005), and may thus use emergency services more frequently.

The propensity to use emergency care also depends on a patient's preferences, and may be influenced by characteristics such as age, cultural background and health literacy. For instance, poverty and minority status increase the likelihood of people attending EDs for non-urgent care (Lang et al., 1996), although some studies show that ED attenders are often middle or upper class (Lee et al., 2000; Shah et al., 1996).

Furthermore, the different types of care may be important. While ED visits might be occasional, GP care entails a personal relationship, which is especially valuable for chronic patients for whom continuity of care may reduce hospital utilization in the long run (Ansari et al., 2002). On the other hand, EDs may appeal to patients who seek more direct access to hospital diagnostic and specialist services, and thus use the ED to "jump the queue" (Agarwal et al., 2012). Differences in expected waiting time at the ward is another potentially relevant factor, as substitution between ED and GP visits may occur in response to lengthy waiting times to see local GPs (Puig-Junoy et al., 1998).

As regards physicians' organizations, in the US, Lowe et al. (2005) estimate that overall ED use by Medicaid patients would fall by 13% if all GP practices opened 12 or more evening hours a week, and by a further 5% if they also opened at weekends. Moreover, the integration of primary care with hospital-based services may reduce utilization of ED services (Feachem et al., 2002). In the UK, practices' organization seems to have a limited impact, as patients' characteristics account for most of the variation in the use of EDs (Calderòn-Larranaga et al., 2011; Saxena et al., 2006). Harris et al. (2011) test whether ED attendance can be explained by varying accessibility to GP practices proxied by total opening hours per week. This proxy turns out to be not significant, suggesting that ED use is mainly driven by patients' characteristics. Focusing on the introduction of out-of-hours primary care services, Thompson et al. (2010) find little change in ED attendances, whereas the introduction of Pay-for-Performance programs reduces emergency admissions, but only for the incentivized conditions (Harrison et al., 2014). The Netherlands' reorganization of primary care in favor of large-scale GP cooperatives providing out-of-hours assistance appears more successful. Moll van Charante et al. (2007) show that the cooperatives treat the vast majority of out-of-hours requests, whereas only a small group of patients self-refer to the ED, mainly for appropriate reasons.

Overall, the literature shows that the reasons for high ED attendances vary and often reflect perceived problems with primary care: they include frustration with scheduling appointments and lengthy waiting times, the perception of long waits before gaining access to secondary services, and greater trust in hospital care. Our work is intended to provide new insights into the potential reduction in inappropriate ED utilization through the increased accessibility to primary care services represented by longer opening hours.

3. Primary care in the Italian National Health Service

3.1. The institutional framework and GPs' payment scheme

The Italian National Health Service (NHS) established in 1978, introduced a Beveridgian system based on universalism, comprehensiveness and equity. In the 1990s, a series of reforms led to the progressive regionalization of the NHS, giving regions political, administrative and financial responsibility for the organization and delivery of health care; public health expenditure in 2013 amounts to 6.8% of GDP, whereas total health expenditure accounts for 8.8% of GDP (just below the OECD average – OECD, 2015).

Primary care is organized on a list system, and family physicians are independent contractors with the NHS acting as gatekeepers. Access is free of charge and registration with family physicians is compulsory[1]. Capitation is the main income source for GPs, and is negotiated at national level. This is then topped up by a variable and an additional part. The variable part consists of fee-for-service payments for specific types of treatment (minor surgery, post-surgery follow-up, etc…). The additional part rewards high quality, appropriate care or participation in organizational innovations (Fiorentini et al., 2011; Lo Scalzo et al., 2009), but GPs are not directly rewarded for containing ED admissions.

[1] Each GP has a maximum list size of 1500 patients. Citizens can freely change their GP, although the turnover rate is very low and is mostly due to changes in residence rather than any dissatisfaction with the GP (Italian Ministry of Health, 2010).