



# The Italian NHS: What Lessons to Draw from COVID-19?

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## 1 Introduction

Italy was the first European country to be dramatically hit by the COVID-19 pandemic, recording the highest official number of victims in the world up to Easter 2020. Of course, this catastrophic event has put under pressure the Italian National Health Service (INHS), a Beveridge-type healthcare system characterized by universal coverage.

Here, we first summarize the main characteristics of the INHS at an institutional level. Then we focus on the three health services most affected by the pandemic: (1) general practitioners (GPs), who were put under intense pressure by the population as a front-line service; (2) accident and emergency services (A&Es) in hospitals, which were put under strain at the onset of the pandemic and were the sites of the first outbreaks; and (3) intensive care units (ICUs), which were overcrowded by severely ill patients at a later stage. Finally, we try to draw some lessons from this epochal experience, envisaging changes that could be potentially useful for improving the INHS performance, and hopefully that could be relevant to other European countries too.

## 2 Institutional Framework

Italy has around 60 million inhabitants and a population density higher than that of most Western European countries, although unevenly distributed throughout its very extensive landmass, which includes the two large islands of Sardinia and Sicily. Italy is geographically divided into 20 regions (Fig. 1) governed by elected politicians, which vary a lot in terms of both size—from 3261 (Aosta Valley) to 25,832

(Sicily) square kilometres—and population—from around 130,000 (Aosta Valley) to 10,000,000 inhabitants (Lombardy) [1].

Introduced in 1978, the INHS is a public service mainly funded by general taxation that provides universal coverage and comprehensive healthcare free at the point of use [2]. Unlike the UK NHS, the system is highly decentralized and the 20 regions are each legally responsible for planning services and allocating financial resources—health is by far the most important item of all regional budgets. Local autonomy implies financial accountability, which allows regions to develop substantially different health strategies without national endorsement [3]; it is a common view among experts that Italy has 20 NHSs. Conversely, a national policy is not necessarily applied by all regions homogeneously. So, the central and regional tasks have been intertwined in the last few decades on account of many piecemeal legislative measures issued by the quite numerous governments over time.

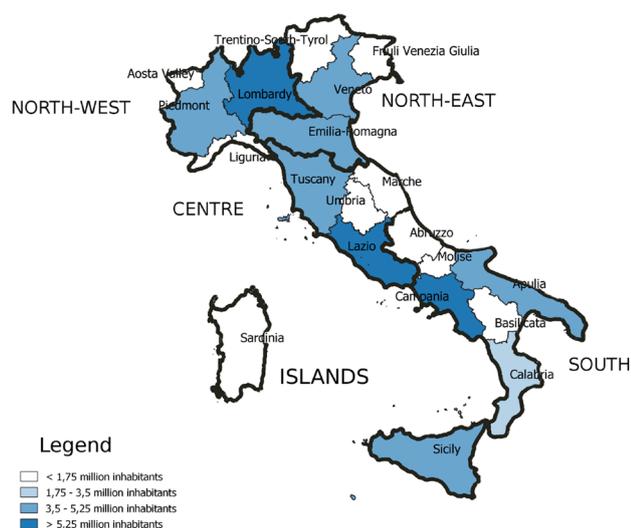
## 3 General Practice

Unlike in other Western countries, there are two kinds of GPs in Italy: one for adults and one for children. Altogether there are around 52,000 GPs fairly homogeneously distributed throughout the country's areas, ranging from 1.3/1000 inhabitants in the north-west area to 1.1/1000 in the islands [1]. As yet there is no national academic specialty in general practice in Italy, only 3-year postgraduate training courses that vary substantially in content by region [4]. Similar to the UK, GPs are self-employed physicians mainly paid on a capitation basis under national contracts, although additional financial incentives and fees for service can be agreed at a regional level. Unlike the majority of their British counterparts, many Italian GPs still work single-handedly, somewhat isolated within the INHS [4], despite several regional efforts to financially incentivize group practices since the late 1990s [5]. Patients are still registered with one GP, which is a major obstacle to them working in group practice.

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**Fig. 1** Population of Italian regions (2017). Source: ISTAT. *Annuario Statistico Italiano (ASI)* (2017) [1]

As a consequence, the weekly access to GP practices is limited. According to a survey we conducted 5 years ago on 731 GPs in three large northern regions [6], the average opening hours to the public were 3.5 per weekday, confirming the disappointing results of a previous survey conducted a decade before throughout the country [7]. So, the political slogan “24-h access target” of a recent reform—drawn from the British experience—proved unsurprisingly unrealistic [4]. Last but not least, since around half the Italian GPs are over 55 years old, an aging workforce is a further barrier to change in the culture of care.

In addition to GP practices, many other facilities provide primary-care services in local health districts [6], i.e., the operational units of the local health authorities (the third tier of the INHS). Although their mix can vary a lot at the point of delivery even within the same region, the most important health services are: outpatient specialist consultations, infant vaccinations and population screenings, counseling for family planning, and home-care services. In general, this fragmentation makes primary care hard to manage, and its piecemeal delivery still disorients patients and their caregivers.

#### 4 Accident and Emergency Services

Accident and emergency services (AEs) are the “pillar” of emergency care in the INHS, as in the UK NHS [8]. Around 80% of public hospitals have AEs [1], which generate a high rate of trust by Italian people and are perceived as the most appropriate place to attend for receiving reliable emergency care. However, overcrowding has increasingly become a major issue for the Italian AEs in the new millennium [9].

Because of the aforementioned weaknesses, GPs have great difficulty in playing their “gate-keeping” role in primary care, a crucial limitation in the aim of minimizing unjustified access to AEs for problems that could potentially be treated in the community. According to a recent INHS survey [10], more than 70% of the total access to public AEs was inappropriate, and empty AEs after the outbreak (for fear of contagion) may be considered indirect evidence of usual inappropriate use.

Another crucial issue for Italian AEs is that they are located in many public hospitals that are of a small size—around 30% with < 120 beds, and only 15% with > 600 beds [1]. Many efforts to make public hospital networks more rational have failed, eventually leading to questionable reorganizations at local level [11]. For instance, the two AEs in which the first and second outbreaks started in Lombardy are both located in very small hospitals. Lacking alternatives in primary care, a widespread (justified) sentiment in people living outside big cities is that increasing the distance to acute hospital services undermines easy access to healthcare, especially to emergency care [6]. This feature has traditionally fostered the political resistance to closing AEs in local hospitals despite their limited spectrum of clinical competences and technological equipment.

Few private hospitals (less than 10%) have AEs in Italy [1], just like in other European countries [12]. This is not surprising, since private hospitals concentrate on profitable services, a real challenge for AEs, which are very expensive services where many health professionals have to be available full-time regardless of daily demand.

#### 5 Intensive Care Units

Intensive care units (ICUs) are historically relatively recent departments introduced into acute hospitals for critical care [13], involving dedicated teams and equipment specialized in treating very vulnerable patients. The major goals of ICUs are monitoring and supporting vital functions in critically ill patients, who may present very different pathologies but share the potential for reversibility of their life-threatening conditions [14]—a very demanding challenge for the ICU health professionals, as highlighted by the media during the COVID-19 pandemic.

The density of ICU beds is quite homogeneous throughout Italy, ranging from 9.4/100,000 inhabitants in the central area to 7.8/100,000 in the islands (national mean value 8.7) [1]. The majority of beds are in public hospitals (92%), with an occupancy rate of around 50%—slightly lower than that in private hospitals (around 60%). Similar to AEs, the reason for the overwhelmingly high public proportion seems to be the low profitability of ICU beds, characterized by high costs involving both personnel and equipment [15].

It is difficult to compare the supply of ICU beds between different countries [16]. Since the demand for ICUs is greatly affected by the organization of the other hospital services, such as the high-dependency beds as an interim facility, the density of ICU beds can vary a lot from one country to another, and an international standard is difficult to establish [17]. According to the last European survey [18], the variation in number of ICU beds was really substantial between countries. Of the main Western countries, the lowest figures were recorded in Sweden and the UK, the highest in Austria and Germany. Since both the former countries also have a low density of total acute care beds, whereas the latter two have a high density [18], the idea that the number of ICU beds is tightly related to the domestic planning and funding of the other acute hospital services is strongly supported [19].

## 6 Future Prospects

In line with our analysis, we think it is time to radically address the major INHS issues so glaringly highlighted by the COVID-19 pandemic.

The first issue is institutional, which needs a political reform, since Italy can no longer afford to have 20 different regions. There are too many regions, which are too heterogeneous, with populations varying from an average-sized European country down to a modest-sized county. This makes it impossible for all of them to be equally organized for managing and providing the same kinds of health services. Moreover, the regional institutional autonomy makes the INHS too open to influence from local politics, undermining its technical governance [3]. In practice, regions can launch local policies without national endorsement. Besides working out a few but clear-cut “rules of the game” at a central level to coordinate regional health authorities, the first bold and inevitable step to harmonize the INHS is to drastically reduce their number. For instance, assuming a minimum threshold of 5,000,000 inhabitants and taking account of the Italian geography, the number of regions could easily be halved or even reduced further – two each (West and East) for Northern, Central, and Southern Italy in addition to Lombardy (by far the most populated) and the two major islands (isolated by definition). Although politically challenging, this reform cannot be considered an insurmountable hurdle, especially after the catastrophic event we have just witnessed. For instance, Denmark achieved this kind of reform 13 years ago—moving from 13 counties to five (new) regions—despite tough political resistance [20]. The management of the Danish health service has benefited a lot from this reduction.

The second issue is mainly organizational and concerns the “upstream” piecemeal situation of primary care in the

community and the “downstream” (partly consequential) overcrowded access to emergency care in hospitals. Improving the consistency of non-hospital healthcare services at a local level is vital, starting from general practice. An initial rational step would be to merge all the existing sites providing different services in districts into single “health services” open at least 12 h per week day [4]. These single facilities should bring together all the health professionals who work in primary care, GPs as well, who should become employees of the INHS like their colleagues in hospitals. Much easier to plan and supervise, these organizations would extend daily access to services in the community and appropriately filter minor ailments away from AEs in hospitals. A co-location of a wide range of health professionals in large-scale organizations open on a daily basis would also improve the provision of home services for elderly people who are unable to travel [6], besides facilitating their informal care-givers (e.g., relatives). Moreover, this would help people appreciate that the INHS does not consist only of hospitals, the hitherto easily identifiable health facilities that they often inappropriately attend as a consequence. It is not by chance that low levels of AE crowding are reported in countries with strong outpatient healthcare services, such as in the Scandinavian case [9]. Last but not least, this should help politicians close small and inefficient acute hospitals, as the above-mentioned Danish reforms have done successfully [20], and as occurred with the closure of cottage hospitals many years ago in the UK.

The third and final issue concerns critical care, on the forefront of pandemics, and should be easier to tackle once the two previous issues are addressed. The outfit of ICUs in public hospitals is rather homogeneous throughout Italy and their average occupancy rate is acceptable during “normal” times, so an increase of public beds could lead to long-term inefficiencies. Conversely, the sudden influx caused by a pandemic like COVID-19 quickly puts under strain any critical-care capacity. Therefore, the best strategy in such circumstances is an emergency national plan, which should allow prompt central intervention, and coordination of regions, and involve the national network of civil volunteers and the army for building up new ICU beds if necessary. Finally, it seems obvious to recommend assigning the management of pandemics to a special unit of a national health authority charged with ensuring national preparedness. This has not been the case for COVID-19.

In conclusion, COVID-19 has tested the fabric of the INHS and highlighted the importance of rational planning and coherent national and regional strategy. These findings may not be surprising, but other countries may learn from them.

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## Compliance with ethical standards

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