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EXECUTIVE SUMMARY 2020 OASI REPORT

Observatory on Healthcare Organizations and Policies in Italy

Summary by Francesco Longo, Alberto Ricci, Patrizio Armeni, Alessandro Furnari, Michela Bobini, Clara Depalma, Stephen Imburgia.

This summary offers a synthesis of the broader 2020 OASI Report for the international audience. After an overview of Italy and the Italian Healthcare system (page 3) , the document reports the index (p. 5) and the core findings (p. 6) of the Report.

Every year, the research carried out by OASI (Observatory on Healthcare Organizations and Policies in Italy) aims to offer a detailed analysis of the Italian healthcare system, outlining its future evolution. In 2020, OASI pays special attention to the Covid-19 crisis and its repercussions on healthcare supply.

The OASI Observatory is a CERGAS - SDA Bocconi initiative. CERGAS (Centre for Research on Health and Social Care Management) is part of the SDA Bocconi School of Management, the top School of Management in Italy and one of the highest-ranking in the world[1]. CERGAS researchers apply principles, instruments and techniques from policy analysis and management to support public institutions, not-for-profit organizations and enterprises targeting collective needs for health and social care.

The full contents of the OASI Reports from 2000 to 2020 are available in Italian on the CERGAS website: www.cergas.unibocconi.eu → Observatories→ OASI.

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[1] SDA Bocconi is ranked 3rd in Europe according to the Financial Times.

An overview of Italy and Italian Healthcare

Demographic profile

Italy is the fifth most populous country in Europe, with 60.2 million inhabitants in 2020[2]. The population growth rate was already negative before the Covid-19 crisis (-0.21% in 2018 and -0.32% in 2019), one of the lowest in the EU. On one hand, with around 265,000 foreigners arriving in 2019, immigration played a key role in maintaining the population decrease close to zero. On the other hand, the balance of the resident population was deeply negative, (-214,262 inhabitants during 2019), mainly due to a very low fertility rate (1.29 children per woman).

In February 2020, Italy was the first European country to be dramatically affected by Covid-19. As of mid-December 2020, the epidemic amounts to 1.75 million cases and an ever-growing number of over 61,000 deaths: Italy is the sixth hardest hit country in the world in terms of fatalities, and the second in Europe after the UK.

Socio-economic profile

After years of recession, Italy has witnessed a tepid recovery since 2014, with annual GDP growth rates remaining below 1%. In addition to stagnation, public finances are constrained by tax evasion and high levels of government debt (134.7% of the GDP in 2019)[3]. Consequently, resources available for welfare expenditure are considerably lower than in other large European countries. According to Eurostat[4], Italian expenditure on social protection was about €8,455 per inhabitant in 2018, while Germany reached €12,000, France €11,900 and the UK €7,800 at PPS[5]. Italy is a decentralized state composed of 20 administrative regions, which are extremely varied in size, population and levels of socio-economic development, and which are responsible for managing a significant proportion of public expenditure. The well-known divide between Northern and Southern regions is still relevant. Italian per capita GDP is € 26,860 overall, while Northwest regions reach €36,200 (35% higher than the national average) and Southern regions only €19,000 (29% lower than the national average). According to EUROSTAT (2019)[6], the Gini Index in Italy is 32.8, slightly above

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[2] The Source of the demographic data is the Italian National Institute of Statistics (ISTAT):
https://www.istat.it/it/files/2020/02/Indicatori-demografici_2019.pdf. Last access December 2020.
[3] Source: EUROSTAT, lat access December
2020:https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=teina225&plugin=1
[4] Source: EUROSTAT, last access December 2020:
https://ec.europa.eu/eurostat/databrowser/view/spr_exp_sum/default/table?lang=en.
[5] Parity purchase standard. The UK data refers to 2017.
[6] Please consult the EUROSTAT database: http://appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=ilc_di12. Last access December 2020.

both the EU-28 value of 30.7 and many European countries: France is 29.2, Germany 29.7, while Spain registers 33.0. In addition to regional disparities, socio-economic hardship disporoportionally affects younger people and families with children, as the welfare state largely focuses poverty reduction efforts towards retired people (ISTAT, 2018)[7].

The Covid-19 crisis has dramatically hit the Italian economy. In 2020, real GDP is expected to fall by 9% relative to 2019, while public debt is predicted to reach the unprecedented level of 158% of GDP. However, Italy will receive extensive funding from the "Next Generation EU" program: the most recent forecast outline € 210 billion from 2021 to 2026[8].

Healthcare System profile

The Italian National Health Service (INHS), a Beveridge-type tax-funded public healthcare system, covered about 74% of total healthcare expenditure in 2018 (please see the Appendix for more details on the governance of the INHS). Private, out-of-pocket (OOP) expenditure accounted for 23.5%, and the remaining 2% pertained to voluntary schemes like private insurance and mutual funds.

The INHS was introduced in 1978 with Law No. 833/1978, which founded a universal healthcare system for Italian citizens and foreigners legally residing in Italy. Decree 502/1992 introduced managerial principles into the INHS and marked the start of concerted efforts to devolve healthcare powers to the regions. The national government responsible for setting general objectives and the fundamental principles of the INHS. Regions are responsible for ensuring the delivery of a package of services through a network of population-based "local health authorities" (LHAs) and public and private, accredited hospitals. The national government defines the national healthcare budget, which is allocated to regions according to their demographic profiles (mainly age structure and sex ratio). Regions can add to their share of the National Health Fund with their own additional resources. Regions are responsible for guaranteeing financial equilibrium, as well as minimum standards of care. Serious deficits can result in Recovery Plans ("Piani di Rientro"). This kind of compulsory administration entails an automatic increase in regional taxation, while key policy choices are placed

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[7] Please see the report "La redistribuzione del reddito in Italia", http://www.istat.it/it/files/2017/06/CS_-Redistribuzione-reddito-in-Italia_2016.pdf.

[8] Official forecasts of the National Budget Law are reported by the Observatory on Italian Public Finance – Catholic University: https://osservatoriocpi.unicatt.it/cpi-archivio-studi-e-analisi-osservazioni-al-disegno-di-legge-di-bilancio-2021-2023. Last access Decembre 2020.

under the strict monitoring of the national government. Today, seven regions are under Recovery Plan schemes; they are mainly located in the south of the country[9].

The Italian NHS, alongside with the Social Security National Institute (INPS) has been the backbone of the national response to the Covid-19 epidemic, as detailed in the first chapter of the OASI report. In the most affected areas, like the northern region of Lombardy, over 40% of hospital beds were made available for Covid patients within a few weeks after the epidemic outbreak, showing great dedication of healthcare professionals and organizational flexibility. Such a response was supported by a relevant public budget effort. In 2020, pubic health expenditure is expected to grow by 4.7%, from € 115 to 120 billion. Between March and October, more than 36,000 healthcare professionals, including doctors, nurses and health asistants have been hired, abandoning previous, strict policies on hiring limitations. Health issues have undoubtedly gained a new centrality in public debate, but the amount of next Generation EU funds that will actually be dedicated to improve the NHS has not been defined as of December 2020.

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Please note that the OASI Report chapters are available in Italian at www.cergas.unibocconi.eu.

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[9]http://www.salute.gov.it/portale/pianiRientro/dettaglioNotiziePianiRientro.jsp?lingua=italiano&menu=notizie&p=dalministero&id=3516

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Chapter 2 examines the Italian SSN with regard to its institutional arrangements, infrastructure endowment, use of healthcare resources and overall satisfaction of patients' needs, aiming to embed the SSN in an international context.

With respect to institutional arrangements, after significant rearrangement processes occurred at the regional level between 2015 and 2017 and a two-year period of general stability from 2018 to 2019, the number of health authorities in 2020 (including Lombardy's ASSTs) decreased by two units. This occurred in the wake of the constitution of three different health authorities in Friuli Venezia Giulia; on the contrary, hospital organizations (Aziende Ospedaliere) totaled 43, a figure consistent with the previous year.

With respect to healthcare resources, the decrease in the number of hospital beds dates back to the 1990s. This trend resulted in an average of 2.9 beds per 1,000 inhabitants for acute care and another 0.6 beds per 1,000 inhabitants for long-term care in 2018, numbers consistent with the target endowment identified by DL 95/2012. In recent years, this decrease has been obtained through both the closure of hospital wards (reduced by 812 units between 2012 and 2018, a reduction of 5.7%) and a cutback in the average number of hospital beds in the wards still operative (from 16.2 to 15.7 hospital beds). Similar trends occur at the international level, with a decreasing number of hospital beds in the analyzed countries since 2005 and a strong heterogeneity in the distribution between acute and long-term care beds.

In terms of INHS employees, in 2018 we observed the first overall increase since 2009, driven by increases in the number of physicians (+769 units) and in the number of health personnel (+2,990 units).

Hospital admissions show a downward trend as well, with a significant decrease between 2001 and 2018 (-32.9%), in line with the trend observed for healthcare resources. Furthermore, the national hospitalization rate in Italy remains below the OECD average, with an average length of stay that is comparable with that of the largest European countries. Days of hospitalization confirm a decreasing trend (-0.7% between 2017 and 2018) and, similarly, the incidence of day hospital admissions in 2018 registers its lowest value (10.5%) since 2001, demonstrating a continuous trend towards the transformation of DH recoveries in ambulatory procedures.

Finally, need satisfaction can be analyzed through indirect measures only: traveling for care appears to be essentially stable, while waiting times, which are physiologically longer for procedures and interventions that do not directly impact patient survival, grew significantly between 2018 and 2019 for all observed procedures.

Chapter 3 illustrates data on the financing, health expenditure and operating results of the Italian National Health System (NHS), integrating with them both international comparison and regional insights.

Evidence shows that, on the international stage, Italy has a limited health expenditure with public coverage of 73.9%, in line with other European countries but has recently experienced an increase. Unlike what happens in most of these countries, however, the private component is predominantly out-of-pocket (about 24% of total expenditure), while the use of complementary insurance is still marginal.

At the national level in 2019, the current healthcare expenditure paid by the NHS increased 1% compared to 2018, amounting to around 120.3 billion euros. This increase in total healthcare

expenditure relative to the previous year was due to the growth in contractual hospital care (+3.4%), contractual specialty care (+2%) and other contractual assistance (+2.5%).

In 2019, as in the previous four years, there is a tendency towards a balanced trend, with modest deficits totaling 69 million. This evidence, an apparent symptom of an economically healthy system, takes on more critical connotations if framed in relation to the economy as a whole or if analyzed at regional and hospital levels.

This signal demonstrates the ability of Italy's NHS to not consistently exceed the availability of overall resources, but it is also a dissonant signal with respect to the expectations that one may have in investigating trends of the determinants of health needs or the current health emergency in progress.

Although the expenditure data for the current year are not yet available, it is important to emphasize that a significant increase in health spending is expected for the year 2020 following the measures implemented to confront the COVID-19 emergency. This period has further highlighted the importance of structural considerations, as well as the inevitable trade-off in the choice of extraordinary management between allocating for the ability to respond to phenomena (such as a pandemic) within the health system or outside it.

Chapter 4 examines the role of private entities that provide healthcare services on behalf of the Italian NHS ("accredited" providers). In 2018, the overall expenditure for assistance provided by accredited private entities amounted to €405 per capita, 21.0% of the total INHS expenditure. This level has risen slightly compared to the previous year (€392, amounting to 20.3% of the INHS expenditure) and exhibits pronounced inter-regional differences. Overall, private hospitals provide 30.5% of INHS beds, mainly concentrated in small-sized "private clinics" which contain 67.6% of accredited beds. The proportion of accredited private providers is lower than public providers in acute care (23.1% of total INHS beds), compared to the inpatient long-term care sector (53.0%) and particularly the rehabilitation sector (74.0%), where private providers are dominant.

Admissions to private hospitals represent about 25.8% of the total INHS hospitalizations, with a regional maximum observed in Lazio Region (51.8%). On the territorial side, the accredited private sector manages 60.4% of outpatient clinics, 82.3% of residential facilities, and 82.3% of semi-residential facilities, with the usual, significant interregional variability.

In the four Regions that were affected most harshly by the Coronavirus pandemic (Lombardy, Piedmont, Emilia and Veneto), the amount of intensive care units and beds devoted to Covid patients has been proportional to, or has exceeded, the role of accredited providers in those regional healthcare systems. The input from accredited providers has proven to be a fundamental part of the INHS, due to the great re-focusing pace, showing a deep attitude towards public service. This re-

focusing has taken place in a highly financially uncertain scenario, moderated only in May by the legislative decree "Rilancio".Nevertheless, impactful economic losses may appear, and concentration dynamics at industry level might accelerate.

In addition, the analysis of the six case studies has pointed out the specific contribution of the accredited providers system during the crisis. The Italian NHS has taken advantage of both their abundant spaces that could be devoted to Covid-19 assistance, notably operating rooms and intensive care units, and their highly specialized competencies in specific medical disciplines (e.g. rehabilitation, cardiology). The system benefitted from the flexible procedures of private procurement, the external relations of many providers, and their newly renovated facilities and information systems. Finally, the chapter highlights the need to create, for the INHS, and to strengthen, for accredited providers, innovative and effective solutions at the territorial level, especially in the fields of screening, home treatment, and telemedicine.

Chapter 5 discusses the major weaknesses of Italian Long Term Care (LTC) that were exacerbated in this time of crisis and that elucidate the discontent with which the sector has been confronted over the past decade: (i) the fragmentation among different LTC services; (ii) policy makers' greater focus on the healthcare sector than the LTC sector; (iii) workforce management, in particular that of care workers; and (iv) the uncertainty over the role the LTC sector should play in system and the mission its services should pursue.

The analysis is composed of three parts: first, the chapter discusses the main features of the Italian LTC sector before the Covid-19 outbreak to investigate the origins of the sector's weaknesses; second, it delves deeply into what happened in nursing homes at the peak of the emergency to investigate the role that the aforementioned weaknesses played. Last, authors analyse regional policies for the LTC sector enacted during the peak of the crisis to assess the institutional attitude towards the sector from the perspective of the public authorities in charge of regulating LTC, namely regions. The chapter presents and analyses data on: LTC services distribution in the country; the spread of the Coronavirus among the elderly in Italy and in nursing homes; a mapping of norms enacted in nine regions on LTC during phase 1 and phase 2 of the emergency. Last, the chapter discusses the main managerial issues stakeholders and policy makers should work on to solve the sector's major weaknesses: providers' economic and financial sustainability; the management of human resources; measures to ensure proper coordination among LTC and healthcare services, and among the public and private world; the mission the LTC sector should pursue, along with its services.

Chapter 6 provides an up to date overview of recent trends and drivers of private healthcare consumption (PHC) in Italy. PHCs play a relevant role in universal healthcare systems, both in terms of resources involved and also for what they represent in the increasingly complex consumption processes experienced by users. Healthcare consumption and healthcare systems are becoming hybrid and the conceptual schemes distinguishing public from private spheres are becoming less meaningful.

In Italy, private healthcare expenditure comprises 26% of total health expenditure, mainly in the form of out-of-pocket (OOP) payments (23%). When comparing public per capita expenditure and private voluntary insurance (PVI) per capita expenditure, Italy shows significantly lower figures than other European countries. On the other hand, per capita out-of-pocket expenditure is more aligned with respect to other European countries. Official estimates from national and international institutions show that private health expenditure amounts to about 40 billion euros, evenly distributed between goods (35%) and services (65%). The former component is mostly related to the purchase of pharmaceutical products (8.8 billion Euros), while the latter includes a basket of items, including dental care (8.5 billion Euros), outpatient services (11.8 billion Euros) and hospital services (2.1 billion Euros).

Across regions, annual household healthcare expenditure shows notable variation. Per capita values range from less than 450 Euros in Campania to more than 750 Euros in Lombardy. This pattern confirms that there is a positive association between per capita healthcare expenditure and per capita income. It also suggests that regional spending may be positively associated with the quality of regional systems: low-spending regions are also at the bottom of regional public healthcare rankings and vice versa.

Although the potential impact and consequences of the Covid-19 outbreak on private healthcare spending and consumption are partially discussed, the available data do not allow firm conclusions to be drawn regarding how the industry has gone through 2020. However, some insights are provided about those variables related to the pandemic that will potentially impact the future of PHC in Italy: the evolution of national and per capita income and employment levels, the limitations to production capacity and their consequences on pricing policies, the renewed centrality of health protection in the political and public debate, and, finally, the choices of the public system which will consequently affect the dynamics of private spending and consumption.

Chapter 7 provides an overview of the main health outcomes indicators and measures of performance for the Italian setting, using data from national and international sources. In addition, the chapter proposes (i) a reflection on the newly introduced tool to monitor the performance of the

Italian system ("New Guarantee System" - "Nuovo Sistema di Garanzie" - NSG) and (ii) an in-depth analysis on excess mortality by geographic area due to the COViD-19 pandemic.

At the international level, life expectancy in Italy (83.4 years) is the fourth highest in the world, and it has grown steadily since 2000. The percentage of premature deaths due to non-communicable diseases is lower than in the United Kingdom, Spain, the USA, Germany and France. However, shifting our attention to the Italian context, a strong inter-regional gap clearly persists: healthy life expectancy at birth is relatively higher in northern regions (i.e. 70.0 years in Bolzano) as opposed to southern regions (i.e. 52.9 years in Calabria). Moreover, the gap between life expectancy and healthy life expectancy at birth has increased over the years and reached 24.7 years in 2018.

The chapter also shows the extent to which local healthcare organizations' adhere to the outcome thresholds prescribed by the MD 70/2015. For most regions, we report good results and an overall improvement in the outcomes between 2010 and 2018. However, critical situations exist for specific medical procedures, such as primary Cesarean sections, where adherence varies between 34% (for birth centers with fewer than 500 births) and 65% (for those with more than 1,000 births). For this reason, this indicator is also included in the NSG, the new system to monitor the performance of the Italian NHS. The NSG modifies the previous mechanism for evaluating, monitoring and verifying regional healthcare systems' trends, in place since 2001. It encompasses scores assigned across three dimensions: (i) prevention, (ii) hospital care and (iii) community care. Scores are normalized on a 0-100 scale, and regional compliance is reached with a minimum score for each dimension equal to 60.

Finally, the chapter analyses the excess mortality during COViD-19 pandemic. The excess mortality between March and April 2020 was estimated up to 300% more when compared to previous years in some Lombard provinces. On the contrary, areas less affected by the pandemic registered a reduction in mortality, probably due to a reduction in deaths for accidents. From a centralized point of view, the "National Plan for Preparedness and Response to an Influenza Pandemic" was outdated and lacking. At the regional level, in a decentralized system such as the Italian one, a variation in the management of the response was observed locally. This last consideration could partly explain the differences in excess mortality observed among neighbouring municipalities which belong to different regions in the northern part of the country.

Chapter 8 focuses on the governance of regional systems and, in particular, on the relations that link hospital organizations (Aziende Ospedaliere) to the supra-ordinate level of regional group leaders. It uses the classic distinction of forms that the theme of coordination can take, applying it to to system governance (Rhodes, 1997), and thus moving beyond the context of corporate

organisation (Mintzberg, 1996). The chapter analyses the governance systems of Emilia-Romagna, Lombardy and Veneto, thus placing emphasis on two distinct elements: (i) the structures of the healthcare systems, both on the regional level and of the public and private hospital organizations; and (ii) the prevailing methods of coordination and the instruments used to regulate the interactions between the centre and the periphery of the systems.

The analyses identify three fundamental archetypes of coordination in the different case studies: Veneto is identified as a hierarchical system, Lombardy as a market system, and Emilia-Romagna as a network. The systems are strongly coherent within each archetype. However, in the three regional healthcare systems, as in any governance system, elements of the three different archetypes coexist. The analysis aims to illustrate the prevailing modes of distribution of responsibilities and interaction between the region and companies, in the awareness that the different approaches are not mutually exclusive.

The chapter does not see any theoretical or practical superiority of one of the mentioned models over the others, but recognizes that all can be structured and used effectively for their purpose. However, the analysis highlights the internal coherence of the identified archetypes, both in terms of structures, tools and people, which are necessary to achieve their maximum potential for coordination.

Chapter 9 offers an analysis of the overall configuration of the Italian acute-care hospital network included in the emergency-urgency network, with reference to the parameters set by Ministerial Decree 70/2015 and its evolution over the last three years available. A heterogeneous configuration of the network is observed in the different regions with a concentration of Hubs in the northern regions (22.51%; southern regions: 12.28%) similar to what happens for Spokes. Moreover, more than a quarter of the network (170; 27%) is made up of what can be defined as "small hospitals", i.e. hospitals with less than 200 beds and less than 50 appropriate daily accesses to the emergency department. From this count, the 40 hospitals located in rural and remote areas have been separated, as they are located in mountain areas or smaller islands.

Despite a phenomenon of timid and gradual concentration of the acute-care hospital network with first aid (-2% of the total number of establishments in 2014-2017), the analysis confirms the low average size of acute-care establishments with emergency department and proposes a description of these small facilities. In particular, there are 115 hospitals with a structural size below 96 PL, which are characterised by a high fragmentation of production lines: 42.8% count between six and nine; finally, 14.5% count more than ten. These hospitals show a reduced capacity of alignment with both volume and outcome standards (where monitored) with reference to the performance identified by

the MD 70/2015. For example, 50% of the hospitals are inadequate on both fronts, but the cases of emergency cardiology and laparoscopic cholecystectomies are also particularly critical. After having highlighted the wide scope for redesigning the hospital network, the chapter re-launches some evolutionary perspectives, including unification and hospital specialisation as a prerequisite for strengthening the resources and activities carried out, and the conversion into a territorial structure.

Chapter 10 identifies the main managerial issues faced by Emergency Departments (ED) during the Covid-19 health emergency and analyses the solutions and transformations implemented during the first wave of the epidemic in Italy. The study is based on semi-structured interviews conducted with the heads or coordinators of ED and the top managers of three public health authorities: AUSL Modena, ASST Santi Paolo e Carlo, Milano and AULSS 8 Berica, Vicenza. The case studies are characterized by large ED regarding the volume of patient admissions (more than 50,000 per year) and have been selected in areas of the country severely hit by Covid-19 during the first outbreak. The analysis provides a framework to categorize priorities and associate solutions and initiatives regarding EDs. Four main priorities have been identified: (i) gatekeeping demand and limiting access to EDs, (ii) sorting admissions and separating patient flows, (iii) allocating scarce resources (such as PPE, personnel, and beds), and (iv) managing hospital capacity (i.e. avoiding unnecessary hospitalizations, favoring monitored discharges). To pursue such objectives, the three case studies have adopted a wide range of solutions and initiatives, from communication to logistics, that have been explored in detail within the chapter. Health organizations used different combinations of tools and solutions but overall the three case studies appear to be coherent with each other, in line with the aforementioned objectives and consistent with their backgrounds (i.e. available space, institutional context, organization models). The analysis highlights how these organizations managed the crisis reconsidering the importance of patient logistics and its association with demand segmentation, overcoming professional silos and establishing a sound relationship with the overall institutional and organizational environment. In this perspective, the research confirms that EDs are an ideal setting to observe and explore some of the most relevant managerial topics related to healthcare organizations and health systems.

Chapter 11 aims at outlining the heterogeneous definition of outpatient services for the management of chronic cases within the assumption thatan asset management approach should be combined with the analysis of the healthcare needs of the population and the professional rationalities underlying it.The lessons learned take into consideration also the impact of Covid 19 on the delivery of outpatient services to chronic patients.. The chapter analyzes seven different case

studies that enable identification and comparison of various models of outpatient service management of chronic patients before, during and after Covid 19. Analysis of these cases reveals that even in the face of general apprehension and focus on the emergency, local health authorities have been clear about the strategic and operational need to ensure continuity of care for chronic patients during both phase 1 and phase 2. However, the actions implemented have been developed with different degrees of inclusion, intensity, speed and effectiveness, depending on the strengths of the systems already in place and inherent or contextual resistance. The acute phase of the pandemic accelerated several transformative processes, such as telemedicine and the frequent use of the telephone for patient management; consideration is now being given to the development of multichannel models, digital unity and the interoperability of the technological solutions that have emerged. In addition, the changes in supply and demand made even more evident by the pandemic reveal that (i) the boundaries of outpatient activities are widening and softening ii) there is a need for more timely and unified planning of care pathways for chronic and comorbid patients, which brings with it a need for operational management and reconciliation with clinical governance approaches; and (iii) as evidenced by the experience of the Special Continuity Care Units (USCA) everywhere, greater coordination between local services in the national network is essential.

Chapter 12 analyses the development and the mode of operation of Breast Units (BU), which represent a way to deliver highly specialized services and manage an integrated offering along the different phases of the disease. The research aims at recreating some service models typical of pathology units, by the examination of the relationship between their organizational configuration and their performance. This objective is pursued through the study of norms on Italian BU, the analysis of characteristics and performance of SenoNetwork's BU through the Programma Nazionale Esiti, and the study of four cases that represent the three configurations of BU (concentrated, multi-hospital intra-LHA, and inter-LHA). The results show 190 BU active in Italy, with a volume of activity greater than 150 cases per year. Volumes of activity differ within the same configuration and, on average, they are higher in the concentrated BU (which also have a higher case mix). The different configurations are not linked to different performances in terms of effectiveness. Thanks to the study, it is possible to define Units as the result of different forms of specialization of: (i) specialized competencies of professionals and operators, (ii) responsibilities on the management of interdependences among services, and (iii) an explicit and dedicated service model. Moreover, the elements that influence BU activities are the physical allocation of places of care, the institutional nature of the local health authorities, the diversification of services' portfolio, and the extension of the care path. The case analysis questions the perception that only hierarchical

configurations of pathology units lead to effective and efficient results; moreover, it is concluded that the choice of BU configuration it is not an operational issue, but rather depends on the context and functioning of the local health authority.

Chapter 13 aims to provide an overview of the HR function in Italian public health organizations and to discuss its role during the Covid-19 pandemic. Indeed, the Covid-19 crisis massively impacted all health professionals and required companies to make significant commitments in terms of coordination and reconfiguration of the existing organizational system. To this aim, we carried out a mixed methods (quantitative-qualitative) analysis. Firstly, we mapped the structure of the HR function in a sample of 50 public health organizations in order to understand the prevailing organizational structure within the system. Secondly, we run in-depth interviews to better understand the HR management activity during the pandemic; to do this, we explored five case studies (ASL Cuneo 1, ASST Lodi, AUSL Piacenza, ASL Rome 1, AOUI Verona), selected according to the criterion of the representativeness of differentiated situations (both on the organizational level and in terms of the local impact of the crisis). The emerging insights highlighted rather homogeneous personnel policies from the point of view of recruitment and economic recognition during the emergency, but significant differences in terms of management of internal and external relations. In general, the study shows a role of the HR function that is strongly aligned with the top management strategy, but often not as integrated horizontally, i.e. between the units involved in the HR management activities throughout the organization. The results suggest a need for public health organizations to develop and empower the brokering role of the middle management between the top of the organization and the line units.

Chapter 14 presents the main evidence collected by the MaSan Cergas - SDA Bocconi Observatory on the governance and impacts of the procurement centralization process in the NHS during the 2019-20 period. In particular, the chapter discusses the heterogeneity of the institutional and organizational structures that regional purchasing agencies are gradually assuming as well as their ability to manage centralized procurement processes. The chapter also examines awarding times and litigation affecting tender procedures. The analyses carried out are therefore useful for providing a systematic overview about strengths and weaknesses of the procurement centralization process and for drawing some primary lessons, which represent the basis for an organic set of proposals for improving the system. These proposals are particularly oriented around better qualifying regional governance of purchasing activities in order to refocus these processes from a conventional logic to a more strategic one. The appendix presents some reflections on healthcare procurement and the lessons learned following the Covid-19 emergency.

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Centro di Ricerche sulla Gestione
dell'Assistenza Sanitaria e Sociale

SDA Bocconi
School of Management

Chapter 15 explores the topic of anti-corruption policies and its (managerial and organizational) implications in the Italian NHS. During the last decade, Italy has expanded its anti-corruption measures, e.g. public hospital and local health authorities each have to appoint an anti-corruption officer in charge of updating and implementing an annual anti-corruption plan.

The chapter analyzes which elements the Italian legislative framework offer contrast to this phenomenon. Then, it investigates the impacts of the anti-corruption tools in terms of effectiveness on the one hand, and organizational "costs" and burdens on the other.

The study follows a two-step methodology: first, a desk analysis of the legislative framework, in order to identify the most relevant anti-corruption tools, and second, the evaluation of primary data, collected through an online survey, that has been sent to the Administrative Directors (AD) of the 200 Italian public healthcare organizations. Respondents were 52 in total, from 12 regions.

ADs tend to divide corruption tools into four different clusters: cost-effective measures, producing added-value for the organization (i.e. digitalization, education and competence development for personnel); those that are neither effective nor impactful (i.e. whistleblowing regulation and the adoption of anti-corruption objectives in the organization's performance plan); tools perceived as effective, but also costly (i.e. transparency and disclosure measures); and lastly, measures that are considered, in relative terms, poorly effective but quite impactful for the organization's workflow (i.e. personnel rotation, civic access and the adoption of the three-year anti-corruption plan). Generally speaking, anti-corruption measures appear to be mainly effective in increasing internal disclosure and clarity over managerial responsibilities, while the additional administrative workload is perceived as the most significant burden.

To improve the general framework of anti-corruption, it is necessary to build better integrated informative systems on one hand and to strengthen and increase technical competences in those fields where corruption risk is higher on the other. The majority of respondents also agree upon the necessity to give wider responsibilities and more resources to anti-corruption officers, possibly unifying the position with the audit supervisor. They also propose downsizing the role of external authorities as the national anti-corruption authority (ANAC).

Chapter 16 investigates the current capability of management accounting and control systems of Italian public healthcare organizations to innovate in the direction proposed by the value-based healthcare (VBH) paradigm. Health needs have been increasing in the Italian context, due to multiple epidemiological and demographic reasons. In the last twenty years, INHS faced complex systemic

dynamics and, in recent months, an important crisis caused by the Covid-19 pandemic. In this context, traditional operating mechanisms, typically based on organizational units, hamper patient control, especially if they have a chronic disease. Following the VBH paradigm, the adoption of an integrated approach to production platforms for the health services delivery could be a solution.

In doing so, the authors applied a mixed-method approach: an electronic survey addressed by controllers of healthcare organizations and a focus group composed by six respondents to the survey.

The chapter shows that management accounting and control systems of healthcare organizations are not ready to incorporate innovations that can better support decision-making processes and capture the emerging value drivers in the healthcare sector. They are still oriented towards traditional objects and measures, built on single organizational units. Among causes of this phenomenon, for example, authors underline (i) specific regulatory indications slowing down the adoption of more sophisticated logic and principles of management accounting and control, (ii) the current fragmentation of organizations' information systems, and (iii) the relevant level of turnover in top organizational management.

Furthermore, the chapter evaluates controllers' perception with regard to the innovations proposed by the ongoing scientific debate. A widespread awareness of need for change is observed, specifically because of the necessity of stimulating greater orientation to and alignment with emerging care models (e.g. care pathways). It still remains unclear which organizational actor should catalyze this change process and how it should be implemented: i.e. which operationalization methods or operating mechanisms can be effectively used and which time frame can be considered consistent with emerging organizational needs.

Chapter 17 aims at investigating the main technological solutions introduced or boosted during the early months of the Covid-19 health emergency, which have also contributed to the fight against it. The study pursues three intertwined objectives: (i) to map the various initiatives on the basis of the areas of application and the goals served; (ii) to classify them according to their technology cluster and innovativeness, employing established frameworks available in the international scientific literature; and (iii) to provide insights about their usefulness during the pandemic, their diffusion potential, and the possible barriers they might face.

As far as the employed methodology is concerned, the study is based on the contribution of some key opinion leaders (KOLs), who have been interviewed to complement and confirm the interpretation of the body of evidence collected through the mapping process conducted from March to September 2020 and to support the building of frameworks meant to organize various technological solutions.

Among the main results of this work is a systematization of the most promising innovations and technological applications, which demonstrates how the different technological clusters have been employed to (i) support social distancing, (ii) strengthen response capabilities and/or (iii) develop and share knowledge, within all the phases of the continuum of care (prevention, diagnosis, care and monitoring). The potential for implementation exhibited by the assorted solutions varies. Some can be considered incremental and endowed with a high diffusion potential (e.g. telemedicine services), while others appear to be disruptive (e.g. AI) and, although presenting high usefulness levels, still need considerable investment to reach full technological maturity. Other initiatives are, instead, based on breakthrough innovations (such as Covid-19 diagnostic devices), which are currently experiencing the fastest development and diffusion trend.

Selected data sources for the Italian Healthcare System

- Italian Ministry of Health, Open Database

  http://www.salute.gov.it/portale/documentazione/p6_2_8.jsp?lingua=italiano

- Italian Ministry of Health, Report on Hospital Admissions (Rapporto SDO)

  http://www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=1237&area=ricoveriOspedalieri&menu=vuoto

- Italian Ministry of Health & National Agency for Regional Health Systems, National Outcomes Program

  https://pne.agenas.it/

- Italian National Institute of Statistics, Health statistics,

  https://www.istat.it/it/salute-e-sanit%C3%A0;