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5.3 The Italian health care system and swab testing

Marta Rodeschini

5.3.1 The healthcare system in Italy

At a national level, differences in the management of the Covid-19 epidemic are determined by the setup of the Italian healthcare system, which covers a complex layering of functions, activities and care services managed and provided independently by individual Regions. It is a public system that guarantees health care through the provision of state and regional competences, in accordance with Article 32 of the Constitution of the Italian Republic\(^a\) which establishes the principle of subsidiarity.\(^b\) By virtue of this, the National Health Service (SSN) deploys its competences between the State and the Regions. More specifically: at a central level, the state is responsible for ensuring all citizens are entitled to health care via a solid system of guarantees, encoded as Essential Levels of Assistance (LEA). At the regional level, on the other hand, government bodies bear direct responsibility for implementation and expenditure, so as to achieve the country’s health objectives. LEAs cover performances and services that the SSN is required to provide to all citizens. A committee is responsible for monitoring LEAs annually, to verify that all regions maintain

\(^a\)It states that: “The Republic safeguards health as a fundamental right of the individual and as a collective interest, and guarantees free medical care to the indigent. No one may be obliged to undergo any health treatment except under the provisions of the law. The law may not under any circumstances violate the limits imposed by respect for the human person.”

\(^b\)This principle is based on the assumption that if a lower institution is able to perform a task well, the higher body should not intervene, but may possibly support local action. This principle is defined in art. 5, paragraph 3, of the Treaty on European Union (TEU) and in Protocol no. 2 on the application of the principles of subsidiarity and proportionality of the consolidated version of the Treaty on European Union. For more information see: https://www.europarl.europa.eu/factsheets/en/sheet/7/il-principio-di-sussidiarieta.
the agreed standards. It is therefore the regions that have exclusive competence in the regulation and organization of services and activities intended for the protection of health and of the funding of Local Health Authorities (ASL) and hospitals. The same applies to management control and quality control for all health services, in compliance with the general guidelines established by the laws of the State. The national health service therefore does not consist of a single administrative structure. Rather, it is a set of institutions and bodies which contribute to achieving the objectives of protecting the health of citizens. The Ministry of Health coordinates the national health plan, thanks to the constitutionally enshrined competences of the Regions.

In compliance with the public health service thus enshrined, on January 31, 2020 the Italian Council of Ministers approved a state of national emergency. A state of emergency in Italy may be decreed whenever critical junctures arise that may affect human health. Such emergency endows the government with “extraordinary” or “special” powers. Declaring a state of emergency therefore makes it possible to implement extraordinary interventions, with ordinances in derogation of normal legal provisions. For example, it is permissible to plan swift medical aid responses; to issue awareness-raising guidelines on behaviors to be adopted in the event of risk; to activate rescue procedures provided for in municipal, provincial and regional plans.

As for the state of emergency that was announced following the Covid-19 epidemic, the Government, in agreement with the Ministry of Health, took on the task of coordinating responses to the epidemic, and specifically the issue of swab testing. On February 25, 2020, the Ministry issued Ministerial Circular (Memorandum) no. 0005889, with the resolution that:

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\[c\] For further information regarding the monitoring system, the standing committee for verifying the provision of the Essential Levels of Assistance and the obligations to be observed for maintaining LEA requirements, you may consult the page of the Italian Ministry of Health at: [http://www.salute.gov.it/portale/lea/menuContenutoLea.jsp?lingua=italiano&area=Lea&menu=monitoraggioLea](http://www.salute.gov.it/portale/lea/menuContenutoLea.jsp?lingua=italiano&area=Lea&menu=monitoraggioLea).

\[d\] ASLs may be named differently throughout Italian regions, but refer to the same functions. Their key function rests in the organization and planning of the care system itself, as well as in the provision of services. As mentioned above, the deployment of healthcare services is allocated on the basis of different levels of responsibility and governance. The National Health Service consists of several bodies, whose main task is to help achieve the objectives of protecting the health of citizens. For more information see: [https://www.salute.gov.it/portale/ministro/p4_5_5_1.jsp?lingua=italiano&label=org&menu=organizzazione](https://www.salute.gov.it/portale/ministro/p4_5_5_1.jsp?lingua=italiano&label=org&menu=organizzazione).

\[e\] Title V of the Italian Constitution legislates on health matters, and may be consulted here: [http://www.governo.it/it/costituzione-italiana/parte-seconda-ordinamento-della-repubblica/titolo-v-le-regionile-province-e-i](http://www.governo.it/it/costituzione-italiana/parte-seconda-ordinamento-della-repubblica/titolo-v-le-regionile-province-e-i).

Article 117 of the Italian Constitution also establishes that the State retains exclusive legislative competence in a series of specifically listed matters. Paragraph 3 of the same article decrees that the Regions can legislate in matters of shared competence, in compliance with the fundamental principles defined by the State.

\[g\] The resolution of the Council of Ministers of January 31, 2020, entitled “Declaration of the state of emergency as a consequence of the health risk associated with the onset of pathologies deriving from transmissible viral agents” may be accessed in a dedicated section of the Italian Gazzetta Ufficiale: [https://www.gazzettaufficiale.it/eli/id/2020/02/01/20A00737/sg](https://www.gazzettaufficiale.it/eli/id/2020/02/01/20A00737/sg).

\[h\] To cope with national-scale emergencies that require immediate intervention and must be dealt with extraordinary means and powers, the Council of Ministers approves a state of emergency declaration, upon proposal of the Prime Minister, once agreement with the region concerned has been reached.
“Swabs should be performed only for symptomatic cases of ILI (Influenza-Like Illness) and SARI (Severe Acute Respiratory Infections), as well as for suspected cases of Covid-19 according to definition given in Annex 1 of the aforementioned memo. In the absence of symptoms, therefore, the test does not appear to have adequate scientific grounds, since it falls short of providing indicative information for clinical purposes consistent with the definition of ‘case’.

It should be remembered that the procedure for definitive confirmation of a given case is entrusted to the Higher Health Institute (Istituto Superiore di Sanità ISS). Therefore, a case may not be defined as confirmed without the aforementioned validation by an ISS laboratory. For this reason, the need to always and promptly send suitable samples to the aforementioned ISS must be underlined."

This means that since February 25, Covid-19 swabs in Italy have been carried out solely on subjects who presented symptoms. And only those who tested positive were then classified as “suspect” cases.

Fig. 5.6 charts the tests’ space–time quantification and their outcomes from March 23 to May 20, 2020. The map ground indicates the absolute number of the total people infected by region as of May 20, 2020 and highlights the profound difference between the north and the south of Italy: in the north the number of infections reaches very high peaks; in the center infections are reduced but remain severe; in the south, instead, infections are limited. The graphs instead show the number of swabs carried out by region and chart their outcome (either positive or negative) for the seven dates our analysis has focused on to monitor the infection’s progress at regular intervals. In all regions, there emerges a progression of positive outcomes over time, albeit in a limited ratio relative to the number of swabs performed. The regions that carried out the most swab tests are Lombardy (607,863 as of May 20), followed by Veneto (536,798), then by Emilia-Romagna (274,362) and Piedmont (264,624). Lazio (217,849) and Tuscany (214,299) are the regions of central Italy with the

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1To look at the Ministerial Circular or Memorandum in full see: https://www.gazzettaufficiale.it/eli/id/2020/02/26/20A01300/sg.

1There are two tests for Covid-19 detection using pharyngeal “swabs”: the first, a molecular test, analyzes the amplification of viral genes in the course of infection. This type of tests has been carried out regularly since the beginning of the epidemic in highly specialized labs formally endorsed by the Italian health authorities. An average of 2 to 6 h is needed for a molecular test report. The second type of test is an antigen test, which has been in use in Italy since September 24, 2020. It is a rapid test based on the search for viral proteins (antigens). Response times in this case are very short (about 15 min). In addition, there are two other types of serological screening: an immunological test, and a rapid serological test, both of which look for specific antibodies in the blood in response to infection. The former establishes the presence, type and quantity of serum antibodies and is mostly carried out in specialized labs. The latter relies on a simplified procedure which only provides a simplified qualitative response. Both are in fact relatively easy to administer, have an average response time of about 15 min and may also be performed outside labs. However, since the reliability of this type of test is highly variable, the World Health Organization does not recommend it for the detection of antibodies in patient care (Ministero della Salute et al., 2020, p. 8–9). Furthermore, Ministry of Health Memo of September 29, 2020, protocol number 31400 underlines that molecular tests remain the safest ones for a SARS-CoV-2 diagnosis. These tests are collected by the regions and passed on to the National Institute of Health.

kThe following seven dates are analysis addressed: March 23, March 30, April 6, April 16, April 28, May 14 and May 20, 2020.
highest degree of swab-testing. However, if we take the data not in absolute terms, but as a percentage (Fig. 5.7) both as regards the testing and as regards results, it becomes obvious that in various regions, especially in Northern Italy, the percentage of positive swabs is high, to the point that it even exceeds a quarter of the total tests performed until mid-April. The regions that administered more swab tests to infected people are Lombardy, Piedmont, Emilia-Romagna, Liguria, and Marche. In these regions, especially in the first weeks of the epidemic, nearly 25% of the tests were positive. Aerograms for infection percentages are sized with respect to the total number of swab tests administered. Lombardy stands out as the region that performed the greatest number of swab tests, but also as the region recording the highest number of infections. The map ground shows the incidence of Covid-19 infection as of May 20, that is to say the number of infected people calculated against the total population.

Lack of consistency in the administration of swab tests throughout the nation suggests that even the dataset that charts the average age of infected persons, and the evolution of such

\[1\] Lombardy and Aosta Valley are the regions with the highest infection incidence, followed by the northern regions of Piedmont, Trentino-Alto Adige and Emilia-Romagna. Liguria and Marche are listed before Veneto, Friuli-Venezia Giulia and the other regions of central Italy. Conversely, southern Italy has a low incidence of contagion.
dataset over time, ought to be taken with caution. This is due to the fact that data are drawn from testing that was carried out without a representative sampling of the entire population, and based on a selection dependent on the contingency of the epidemic. Accordingly, Fig. 5.8, which shows a breakdown of infected persons by age group as of March 23, indicates that Lombardy has the highest contagion rate in the age group between 70 and 79 years of age, just like Aosta Valley, Emilia-Romagna, Piedmont, and Liguria. In Veneto, Trentino-Alto Adige, Friuli-Venezia Giulia, and Tuscany, on the other hand, the most affected age band was that between 50 and 59 years of age. The map represents contagion data for March 23 and May 20, which makes it possible to chart the contagion’s development. This map confirms the initial trend also over the following weeks: for nearly all regions, the age band with the highest contagion rate goes from 50 to 59 years of age, except for Lombardy, Aosta Valley, Piedmont, and Liguria, which show a prevalence of infection both in the 50 to 59 age range and in the higher ranges. Contagion in the 80 to 89 age range is in fact considerably higher than in other age groups in Lombardy, Piedmont, and Liguria. These data may be taken to suggest that there exist different contagion modes for different regions and that in some areas the elderly may be more affected while in others the adult population is. However, such data

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Sampling plays an essential role in epidemiological analyses, since the purpose of sampling is to extract a representative sample of features for the target population (Franco and Di Napoli, 2019, p. 171). Carrying out an epidemiological analysis on a representative sample of the population is a prerequisite for such analysis to produce reliable results.
depend on the population sample that was swab-tested, which varies from region to region, and thus yields different, non-comparable datasets which are influenced by external and non-homogeneous factors.

To corroborate this hypothesis, research conducted by the epidemiological service of the Azienda per la Tutela della Salute (Health Protection Agency) in Bergamo classifies by age and sex the whole population of individuals who tested positive for Covid-19 during the observation period from February 17, 2020 to September 3, 2020. The study confirms that, in the case of the Bergamo area, swab-testing policies reached specific population groups, thus producing an oscillation in the records of the most affected age groups. As a result, the most infected age groups are found to change according to the phases of the epidemic. In the most acute epidemic phase, it was the subjects who requested hospital treatment that were almost exclusively tested, that is only a fraction of the fragile population in terms of chronic diseases, which on average correlate to age.

For the purposes of comparing Covid-19 impact across regions, it is therefore more reliable to analyze mortality in each region, which may provide a consistent overview of Covid-19 virulence in Italy. For an in-depth treatment of this issue see Chapter 2 of this volume.

In the period of March–April, which had median ages even higher than those recorded in the acute phase, RSA residents were also subjected to massive swab-testing. In the weeks that followed, numerous serological screening programs were set up over the population of active working age, with subsequent swabs and the consequent effect of reducing the median age among those who swab-tested positive (Zucchi and Ciampichini, 2020).
### 5.3.2 The epicenter regions of the epidemic

In order to assess the claim whereby regional health systems have produced dissimilar monitoring strategies for Covid-19 infection, we will compare the regions of Lombardy and Veneto. Regional differences in the management of Covid-19, and therefore also in the administration of swab-tests, did depend on a range of factors, such as regional setup of health services, contagion’s impact and virulence, regional ordinances, availability of medical equipment (such as personal protective equipment or suitable reagents for swab analysis).

In Veneto, for example, by initiative of the Director of the Department of Molecular Medicine at the University of Padua, Professor Andrea Crisanti, the region’s health management was informed as early as January 20 that the University laboratory would be making a large purchase, in order to ensure a sufficient supply of reagents for analyzing nearly 500,000 swabs for SARS-CoV-2 identification in patients.\(^p\)

The first cases attributable to Covid-19 in the Veneto region were detected on February 20 in Vo’ Euganeo, a municipality with just over 3000 residents. The area was declared a “red zone” and placed under isolation on February 24. Between February 24 and March 2, 2020, Covid-19 cases in Veneto increased by 8.5 times, going from 32 to 271 (from 0.6/100,000 to 5/100,000). At that point, the Veneto health authorities identified hospitals and convalescent homes to be allocated for dealing with Covid-19 cases. They also doubled the region’s intensive care capacity and ensured an adequate supply of ventilators. Non-Covid-19 patients were gradually moved from epidemic-allocated hospitals to smaller community facilities. In addition to strengthening patient care capacity, regional health authorities in Veneto developed and implemented public health measures: in coordination with local managers, they implemented a complex regional strategy, which included extensive contact tracing, rapid case testing and an extended contact network, supervised quarantine and isolation, minimization of contact between healthcare professionals and the public, IT tools for rapid communication on diagnosis and case management and for monitoring bed availability. All non-essential public health activities were swiftly suspended and a labor force of over 750 public health workers was mobilized across the region.\(^q\)

As for Lombardy, the first case was identified on February 20 in Codogno,\(^r\) a town of 15,000 inhabitants located near the city of Lodi. Codogno was placed under isolation by the national government on February 24. In the space of 7 days, from February 24 to March 2, the number

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\(^p\)This information is attested by multiple media sources and interviews with Prof. Crisanti. Among these: https://www.ilpost.it/2020/04/16/coronavirus-veneto-modello/; https://www.wired.it/scienza/medicina/2020/04/20/coronavirus-vo-euganeo/?refresh_ce=.

\(^q\)With regional council decree no. 269 of March 2, 2020, the Veneto region reorganized healthcare activities in order to preserve intensive care beds. Also, on March 14 Veneto launched a specific Public Health Plan, which aimed to break all possible transmission chains of the Covid-19 virus by pinpointing all possible suspect, probable and confirmed cases and carrying out an in-depth epidemiological investigation with a view to identifying all possible contacts. To that end, it was decided to broaden swab-testing to include also occasional contacts, with the intent to isolate asymptomatic positives as well, and to consider the possibility of focusing on specific categories that might be particularly exposed (Veneto Region press release, March 14, 2020, available at: https://www.regione.veneto.it/article-detail?articleGroupId=10136&articleId=4377232).

\(^r\)For an informed discussion of reticularity in viral spread and the localization of first outbreaks, see Chapter 5.1. in this volume.
of cases in Lombardy went from 166 to 1077 (from 1.6 to 12/100,000 inhabitants). The initial efforts of the regional health system focused on three primary objectives: (i) gathering data in order to understand epidemiological trends and to model intervention; (ii) boosting diagnostic capacity; (iii) promoting hospital care. Efforts were made to isolate and trace contacts and, in the meantime, the solid regional ICU—Intensive Care Unit network that was already in place was strengthened (Binkin et al., 2020, p. 6).

The Region issued guidelines for primary care physicians regarding diagnosis, testing and hospital referral. As per the national directive of 25 February cited above, the tracing of infections in Lombardy was focused on persons with symptoms and the tracking of their contacts. Home-administered swab tests, care and diagnosis were hampered by the rapid outburst in the number of Covid-19 cases. For lack of other options, patients in Lombardy were sent to hospital, straining human resources and the availability of hospital beds. Wards entirely dedicated to Covid-19 were set up inside existing health facilities. Due to the virulence of contagion, adequate ward segregation proved impossible, especially for virus-positive patients whose conditions did not require intensive or sub-intensive care. In fact, convalescence centers for those who did not need intensive care but required continuous monitoring were only made available weeks after the outbreak onset.

From an economic point of view the two regions we have analyzed are similar. Yet, they present notable differences as regards population density, relational density and above all, the management of the health care system.

With Regional Law no. 19/2016, Veneto set up a new regional instrumental and centralized body named “Azienda Zero,” which took over the planning, control and management of regional functions. In addition, the previous 21 Local Social Health Units (ULSS) were merged into 9. The decision to establish Azienda Zero was taken with the aim to promote
savings and boost efficiency, leaving local health units (ULSSs) free to provide quality health care and services to citizens. The aforementioned law provided for a 15% increase in the number of beds in community hospitals and a 60% increase in general practitioners. Such structural arrangement positively impacted regional performance, so much that Veneto was at the top of the LEA Grid, which classifies Italian regions based on their ability to guarantee essential care levels. It was probably this governance model that, at a time of emergency, placed less strain on the hospital system, favoring first-hand care via what is named “proximity medicine,” that is the availability, throughout the region, of facilities and care professions able to support the medical, social, and care needs of citizens, with special attention to those who are not self-sufficient. Veneto’s governance model seems to have responded well even during the Covid-19 epidemic.

In Lombardy, Regional Law no. 23/2015 established an organizational system based on three levels. The Region itself maintained central planning, direction and control functions. The 15 ASLs (Local Health Authorities) were merged into eight new ATS entrusted with health planning, commissioning and monitoring functions. At the local level, the 27 Territorial Social Healthcare Companies (ASST) and the four Scientific Hospitalization and Care Institutes, were exclusively entrusted with operation management and therefore also the provision of hospital and territorial services. By simultaneously keeping alive both health agency models (ATS and ASST), Lombardy strove to approach a pattern of “integrated” governance. However, such integration has yet to be fully achieved. In fact, there is an at least partial overlap between the functions performed by the three levels of the regional health system; in particular, it is still partly undetermined whether agencies and ATS share some functions between planning and strategy. Furthermore, it is not yet clear whether ATS bear the same coordination responsibilities as ASSTs or whether they cover instead the role of arbitrators for a competitive contest between ASSTs. Ultimately, the regional health system of Lombardy seems indeterminate (Cantarelli et al., 2017, p. 374). Its setup has converged key activities such as health screening and acute pathology care onto large hospital complexes, relieving territorial facilities of these tasks and thus favoring an outpatient approach.

For more information on the territorial setup of the Veneto system, you may consult the Region’s website at: https://www.regione.veneto.it/web/guest/aziende-ulss-e-ospedaliere.

The regional layout consists of the Unified Welfare Department (Assessorato Unico al Welfare) and its numerous agencies, such as the Control Agency, the Epidemiological Observatory, the Agency for the Promotion of the Lombardy Health Care System in the World, ARCA (Regional Central Purchasing Company), LISPA (Lombardia IT Services SpA), EUPOLIS (training and research agency), Finlombarda, Lombardia Infrastructure and Health Research Foundation (Cantarelli et al., 2017, p. 368).

Excellence hospitals which pursue research, mainly clinical and translational, in the biomedical field as well as in the field of the organization and management of health services and carry out specialty care and treatment or conduct other excellence-related activities. For more information, you may consult the Ministry of Health’s webpage at: http://www.salute.gov.it/portale/temi/p2_6.jsp?id=794&area=Ricerca%20sanitaria&menu=ssn.

The term “integrated” governance refers to the fact that a single agency is both a lender and a producer of services. As a matter of fact, ATSs (Health Protection Agencies) in Lombardy do not provide health services directly, but manage contractual terms with health service providers (be they ASSTs or private agencies). De facto, this places public and private health care on the same level (Cantarelli et al., 2017, p. 369).
In the Covid-19 epidemic phase, this meant that local facilities throughout the region could not possibly contribute to an effective management of contagion. All infection cases converged instead onto hospitals, which were rapidly overburdened and thus also obliged for months to forgo scheduled interventions for other pathologies (Gardi et al., 2020, pp. 61–64).

The two regions are very similar in terms of the number of hospital beds for acute cases per 1000 inhabitants (3.05 in Lombardy versus 3.01 in Veneto). Per capita health expenditure is comparable, while the number of adults per GP is slightly higher in Lombardy (1400) than in Veneto (1342). In the public health sector, differences between the two regions are much greater: Lombardy has three public health laboratories (about 1 for every 3 million inhabitants), while Veneto has 10 (about 1 for every 500,000 inhabitants). Lombardy has eight public health prevention departments (1 for every 1.2 million inhabitants) against nine in Veneto (1 every 500,000 inhabitants). This unbalanced ratio between regional facilities and citizens results from the policies adopted by the two regions. Thus, in Lombardy, territorial medicine fails to play a mediation role between patient and hospital. Home care, which is meant to provide home services to the elderly, people with disabilities and people with chronic diseases, was extended to 3.5 people in Veneto (as of 2017) per 100,000 inhabitants and only half of that in Lombardy (1.4/100,000).

With regard to swab-testing in the two regions, the graphs in Fig. 5.9 and in Fig. 5.10 record data provided by the Ministry of Health regarding positive and negative swab tests in Lombardy and Veneto, thanks to which it was possible to chart daily data starting from February 24 until May 4, 2020.

Key provisions adopted in order to stem the spread of Covid-19 among the population are represented here along swab-testing. The policy adopted by the Veneto Region went immediately in the direction of monitoring the entire population and not only symptomatic cases, as shown by graph data. The outlook in Lombardy, on the other hand, featured marked variability, a slight upsurge trend and weekly cycles. Positive cases initially exceeded negative swab tests, which implies a chronic lack of total swab tests in virus monitoring. The graph shows that, at least initially, a large number of infected people were swab-tested in Lombardy.

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**ac** By “public health laboratory” (LSP) we mean a facility that operates in the following fields: (i) chemical research in food, drinking water, or drugs; (ii) preventive microbiology; (iii) microbiology of food and water; (iv) biochemical human-matrix tests for preventive purposes and oncological screening; (v) epidemiological and biosafety investigations. The LSP is a specialized multifunctional facility which complements the tasks of ATS-provided services, with particular reference to the Services of the Department of Hygiene and Health Prevention, and covers the skills needed to carry out prevention-related tasks which involve laboratory interventions of considerable technical and professional complexity.

**ad** Data are provided by the latest “Monitoring of LEAs via the LEA Grid” of 2017, available at the link: [http://www.salute.gov.it/imgs/C_17_pubblicazioni_2832_allegato.pdf](http://www.salute.gov.it/imgs/C_17_pubblicazioni_2832_allegato.pdf).

**ae** Since, however, in nearly all cases swab-testing was carried out repeatedly on the same individuals, such data was included here solely as a distributive trend.
FIG. 5.9 Swabs carried out in Lombardy from February 24 to May 4, 2020.

FIG. 5.10 Swabs made in Veneto from February 24 to May 4, 2020.
5.3.3 Conclusions

After an overview of fragmentary healthcare competences between State and Regions in Italy, our study has exemplified the consequences of such fragmentation in two Italian regions. Regional health systems do differ at several levels. They rely on different organizational setups and have dissimilar territorial impacts. The present study has addressed such issues with regard to the management of the Covid-19 epidemic. The Higher Health Institute\textsuperscript{af} argues claims that the organization’s role was crucial in monitoring new infections and breaking the Covid-19 chain of transmission. Based on their solid and effective presence on the territory, regional services were able to ensure key procedures such as contact tracing, management of reports, and home-administered swab testing assistance. The effectiveness of Covid-19 pandemic control measures cannot disregard the resources of tracking systems for promptly identifying and isolating contagious people and their contacts (Di Bari et al., 2020, p. 2). The organization of each regional health system and the policies that have been adopted since the onset for Covid-19 monitoring are therefore fundamental. Ultimately, excessive fragmentation of the National Health System has not eased the adoption of shared policies, which in turn affected data collection, prior to the planning of Covid-19 containment policies.

The Covid-19 emergency has exposed the shortcomings of a model based on a rigid separation of competences between the various levels of government involved in the management of a health crisis. A general lack of consistency in the applicability and application of national provisions eventually emerged. In the case of highly infectious contagion, the differences between the Italian regions have turned out to have a negative impact, because they hampered coordinated action for containing the Covid-19 epidemic.

\textsuperscript{af}These statements may be found on the web page of the Higher Health Institute (Istituto Superiore di Sanità): https://www.epicentro.iss.it/en/coronavirus/sars-cov-2-ipc.

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