

RESEARCH ARTICLE

COVID-19 surveillance: Results of activities

Giuseppe Andrea De Biase^{1*} Alba Malara² Annamaria Ruberto³¹ Health and Health Policy Protection Department, Calabria Region, Italy² Scientific Committee of National Association of Third Age Residences (ANASTE) Calabria, Lamezia Terme (CZ), Italy³ Catanzaro Provincial Health Authority, Italy

Correspondence to: Giuseppe Andrea De Biase, Health and Health Policy Protection Department, Calabria Region, Italy;
E-mail: giuseppe.debiase@regione.calabria.it

Received: October 18, 2021;**Accepted:** October 25, 2021;**Published:** October 26, 2021.

Citation: De Biase GA, Malara A and Ruberto A. COVID-19 surveillance: Results of activities. *Adv Health Behav*, 2021, 4(1): 182-185.
<https://doi.org/10.25082/AHB.2021.01.005>

Copyright: © 2021 De Biase *et al.* This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by-nc/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



Abstract: Following the rapid spread of a new Coronavirus identified in China, on 30.01.2020, the World Health Organization (WHO) declares a state of public health emergency of international importance and in Italy health surveillance measures are promptly strengthened. The aim of the study is to describe the surveillance system for the spread of the epidemic and how the surveillance contributes to the monitoring system and to the regional weekly risk classification.

Keywords: COVID-19, surveillance, monitoring

1 Introduction

In late December 2019, Chinese public health authorities report an acute respiratory syndrome cluster in Wuhan city, Hubei province, China [1]. Chinese scientists soon identify a new Coronavirus as the main causative agent, the disease being referred to as “Coronavirus disease 2019” (COVID-19) and the virus that causes it “SARS-CoV-2” (Severe Acute Respiratory Syndrome Coronavirus 2), a new strain of Coronavirus never previously identified in man. Following the rapid spread of the new Coronavirus, on 30.01.2020, the World Health Organization (WHO) [2] declares a state of public health emergency of international importance. On 31.01.2020, in Italy, the Council of Ministers, as a consequence of the health risk associated with the new Coronavirus infection, declares a state of emergency for a period of six months and entrusts the Civil Protection Department, supported by a Technical Committee scientific (CTS) composed of representatives of the Ministry of Health and experts, the coordination of the interventions necessary to deal with the emergency on the national territory [3]. In Italy, health surveillance measures are promptly strengthened to prevent, contain and mitigate the spread of Coronavirus infection; air traffic from the areas affected by the epidemic is immediately banned, the evacuation of Italian citizens stranded in China is organized and the recruitment of additional health personnel to be used in surveillance and control activities is arranged. To this end, the surveillance system for serious and complicated forms of confirmed influenza already active in Italy is strengthened which, in the first phase of the epidemic, collects data on suspected cases of the new Coronavirus [4–6]. On 11.03.2020, the Director General of the WHO declares the COVID-19 pandemic [2].

2 Materials and methods

At the end of January 2020, starting from the surveillance system already in use in Italy for serious and complicated forms of confirmed influenza, a surveillance system for suspected cases of new disease was developed with the addition of some variables of Coronavirus [4–6]. Through a web platform, the system, coordinated by the Department of Infectious Diseases of the Higher Institute of Health, begins to collect all suspected cases of disease in subjects with a travel history in affected areas of China. From February 20, with the detection of the first autochthonous case and with the consequent increase in the number of cases, it is necessary to create a new ad hoc surveillance system of COVID-19 that collects the individual data of all cases confirmed in the laboratory. The Presidency of the Council of Ministers establishes the COVID-19 integrated surveillance system and entrusts its coordination to the Higher Institute of Health [4–6]. Through a web platform, the COVID-19 Integrated Surveillance System collects the individual data of subjects who tested positive for SARS-CoV-2 by means of a molecular test carried out on rhino-oropharyngeal sampling (known as a swab) and, in particular, personal information (name, surname, gender, date of birth, municipality of domicile and residence and

nationality), date of the first positive sample and of the diagnosis made by the regional reference laboratory, date of onset of symptoms for symptomatic cases, clinical status (asymptomatic, paucisymptomatic, mild, severe and critical), place of hospitalization (hospital and relative hospitalization ward, home or other facility), municipality and place of exposure, presence of some risk factors (comorbidities) and outcome of the disease. As the epidemic progresses and the need to collect additional information on confirmed cases, the surveillance form is supplemented with some new information such as, for example, the variable “origin of the case” (native, imported from another Region or from the abroad) which, introduced at the time of the reopening of the borders, made it possible to stratify the cases, or the variable “setting”, which made it possible to describe the place or community of acquisition of the disease. The COVID-19 case definition initially involves double laboratory confirmation by RT-PCR performed by a regional reference laboratory and subsequent confirmation by the national reference laboratory for SARS-CoV-2. The exponential increase in the number of cases and the consequent difficulty in confirming them all, together with the fact that 99% of the more than 5,000 samples received by the ISS are confirmed as positive, leads to a change in the case definition so starting from 09.03.2020 confirmation by the national reference laboratory is no longer required. From 22.02.2020 all the Regions / Autonomous Provinces (PA) send daily data to the ISS relating to all individuals infected with SARS-CoV-2 confirmed in the laboratory on the dedicated IT platform, created by the ISS, which allows the collection of data both through a web interface connected to the platform itself and by sending a dataset. The ISS Department of Infectious Diseases processes and analyzes the platform data on a daily basis and disseminates them to make known the progress of the epidemic throughout the country.

2.1 Medical records of decided cases

To evaluate the characteristics of the deceased patients positive for SARS-CoV-2 infection, in addition to the information in the surveillance form, the Regions are required to provide medical records and Istat forms of the deceased cases. The sending can be done in two different ways: the first through the integrated surveillance portal, the second through a specially created online form.

2.2 Flow of data from the ministry of health and civil protection

From the beginning of the emergency, the Ministry of Health, in collaboration with the Civil Protection, establishes a daily flow of aggregate data, parallel to that of the integrated surveillance. The data collected are: the cumulative number of new positive cases for the molecular test for the determination of SARS-CoV-2, deaths, recovered patients, patients hospitalized and cases admitted to intensive care, these data are used by the Protection civilian to update a specially designed dashboard. Although the data collected is the same as the surveillance set up by the ISS, the main objective of this flow is to obtain a timely update of the evolution of the epidemic to be communicated to the CTS, health workers and the population (updated data was communicated at CTS even twice a day in the first phase of the epidemic, the communication was reduced to only one daily release during the waning phase of the epidemic). In June 2020, to simplify the work of data entry by the Regions, the ISS creates an online form for data collection and includes it in the COVID-19 integrated surveillance platform. The system, after a series of consistency checks, automatically sends the collected data to a Civil Protection repository for updating the dashboard and produces a summary table that the Ministry of Health, after further checks and validations, publishes on its portal.

2.3 Analysis of surveillance data

The individual data of the subjects who tested positive for SARSCoV-2 reported to the COVID-19 integrated surveillance system are collected through a dedicated web platform developed with Microsoft ASP. Net technology and the relational database is created in an SQL server environment. The categorical variables are summarized with absolute and percentage frequencies, while the quantitative variables with mean or median, depending on the distribution of the variables considered. For the calculation of the incidence rate, the Istat population as of 01.01.2019 is used. The data are analyzed with the STATA and R software.

3 Results

The initially adopted surveillance system of serious and complicated forms of confirmed influenza made it possible to monitor the first suspected cases of COVID-19 in Italian citizens

or foreigners returning from affected areas of China. The first three confirmed cases were reported to this surveillance system, two of which in Chinese citizens on vacation in Italy and one in an Italian boy who returned from China. After the first autochthonous case reported on 20.02.2020 (symptom start date 10.02.2020), the new COVID-19 integrated surveillance system begins to record an exponential increase in the number of laboratory-confirmed cases, initially in Lombardy and Veneto, then on the whole national territory. The epidemic curve, after a rapid increase in the number of cases, reaches its peak in mid-March, with about 6,000 cases in a single day, and then decreases, first slowly in April and then more drastically in May, above all thanks to the containment measures (lockdown) implemented by the Italian government. The months of June and July, on the other hand, are characterized by small and medium-sized outbreaks fueled above all by the entry of citizens returning from trips abroad and by aggregations in nightlife venues, especially of young people. This latter aspect is also demonstrated by the marked decrease in the median age of cases, which goes from about 62 years in the epidemic period to about 40 years in July. The epidemic curve (by date of diagnosis and onset of symptoms) shown in the figure below shows, in addition to the trend of the epidemic over time, also the containment measures gradually adopted, including individual spacing starting from 23 February and the first nationwide closure measures starting on March 4th.

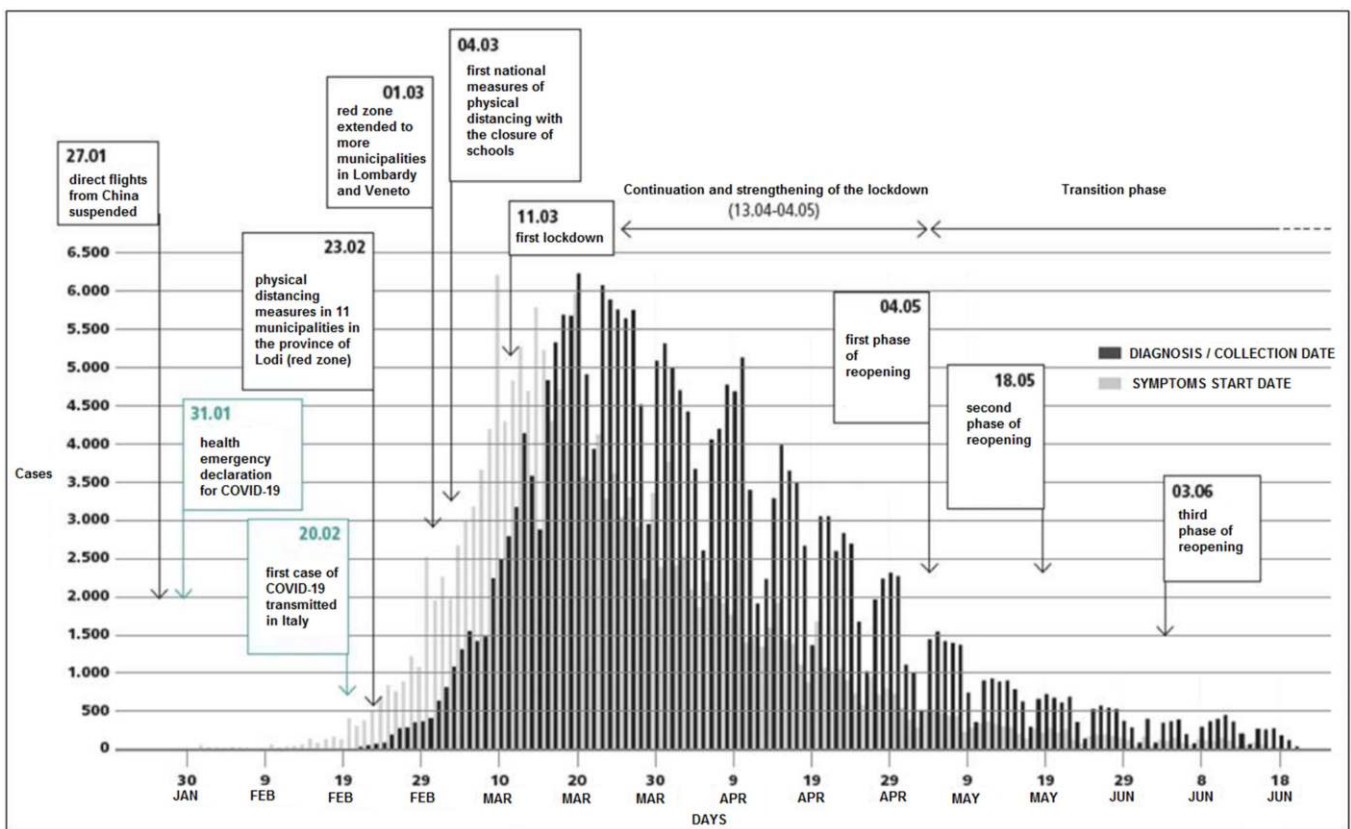


Figure 1 Epidemic curve of cases in Italy by date of diagnosis and of symptoms start. January-June, 2020

Overall, from the beginning of the epidemic to 30.06.2020, 241,550 confirmed cases of COVID-19 are reported to the integrated surveillance system, of which 54.2% are female. 39.3% of cases concern people over the age of 70, 31.2% between 50 and 69, and 2.5% young people between the ages of 0 and 19. Deaths amounted to 33,911, with a total lethality of 14%. The Region with the highest number of cases is Lombardy (94,410 cases), followed by Piedmont (31,591 cases) and Emilia-Romagna (28,637 cases). Among health workers, 29,476 cases are reported. The data collected by the surveillance system also made it possible to outline the “three Italies” in terms of spread of the virus and impact on the resident population: Regions with high incidence, concentrated mainly in Northern Italy, Regions with medium incidence in Central Italy and Regions with low incidence represented above all by the Regions of Southern Italy.

References

- [1] Ministero della salute. Direzione generale della prevenzione sanitaria. Prevenzione delle malattie trasmissibili e profilassi internazionale. Polmonite da nuovo coronavirus (2019-nCoV) in China.
- [2] Organizzazione mondiale della sanità. WHO Director-general's remarks at the media briefing on 2019-nCoV on 11 February 2020.
- [3] EpiCentro. Sorveglianza integrata Covid-19: i principali dati nazionali. Roma, ISS, 2020.
<https://www.epicentro.iss.it/coronavirus/sars-cov-2-sorveglianza-dati>
- [4] European centre for disease prevention and control. Strategies for the surveillance of Covid-19. Tech. rep. 7.
<https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-surveillance-strategy-9-Apr-2020.pdf>
- [5] Organizzazione mondiale della sanità. Global Surveillance for Covid-19 caused by human infection with Covid-19 virus: interim guidance. Ginevra, OMS, 20.03.2020.
- [6] Organizzazione mondiale della sanità. Covid-19: health system response monitor Policy responses for Germany. Ginevra, OMS, 2020.
<https://www.covid19healthsystem.org/countries/germany/livinghit.aspx?Section=1.4%20Monitoring%20and%20surveillance&Type=Section>