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COVID-19 pandemic: an Italian single institution's experience and lessons learned by public health residents' workforce

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Parole chiave: COVID-19, didattica, management ospedaliero, sanità pubblica, ri-organizzazione, medici in formazione specialistica, formazione

Abstract

Background. *The Coronavirus Disease 2019 pandemic has posed incredible challenges to healthcare workers worldwide. The residents have been affected by an almost complete upheaval of the previous setting of activities, with a near total focus on service during the peak of the emergency. In our Institution, residents in public health were extensively involved in leading activities in the management of Coronavirus Disease 2019 pandemic.*

Methods. *We hereby provide a systematic description of the response actions in which the public health residents' workforce was pivotal, in a large tertiary hospital.*

Results. *The key role played by residents in the response to Coronavirus Disease 2019 pandemic is highlighted by the diversity of contributions provided, from cooperation in the rearrangement of hospital paths for continuity of care, to establishing and running new services to support healthcare professionals. Overall, they constituted a workforce that turned essential in governing efficiently such a complex scenario.*

Conclusions. *Despite the difficulties posed by the contingency and the sacrifice of many training activities, Coronavirus Disease 2019 pandemic turned out to be a unique opportunity of learning and measuring one's capabilities and limits in a context of absolute novelty and uncertainty.*

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Abbreviations: AOUI = "Azienda Ospedaliera Universitaria Integrata di Verona" [Integrated University Hospital of Verona]; COVID-19 = Coronavirus Disease 2019; INAIL = "Istituto Nazionale Assicurazione Infortuni sul Lavoro" [National Institute for Insurance Against Accidents at Work]; MDU = Medical Direction Unit; NP = nasopharyngeal; OP = oropharyngeal; PH = Public health; WHO = World Health Organization.

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Introduction

On 31 December 2019, the Municipal Health Commission in Wuhan City, Hubei province, Peoples' Republic of China, reported a cluster of 27 pneumonia cases (including 7 severe cases) of unknown etiology to the World Health Organization (WHO) (1). On 7 January 2020, the Chinese Center for Disease Control and Prevention reported that a novel coronavirus (later named SARS-CoV-2) had been detected as the causative agent for 15 of the 59 cases of pneumonia (2). On 31 January, after WHO declared this first outbreak of novel coronavirus a 'public health emergency of international concern' (3), the Italian Council of Ministers declared the state of 'health emergency' and suspended the flights to and from China (4). Due to the evolution of the epidemic and the first reported clusters of cases in Lombardy and Veneto regions (February 21), urgent measures were adopted on February 23 to contain and manage the epidemic emergency from Coronavirus Disease 2019 (COVID-19) (5). In the scenario of a concrete threat to public health, the Integrated University Hospital of Verona ("Azienda Ospedaliera Universitaria Integrata" - AOUI), in north-eastern Italy, started to implement the measures to counter the emergency. AOUI is the referral training hospital for the Public Health and Preventive Medicine Residency Program of the University of Verona. At the beginning of the outbreak, the residents enrolled in our 4-year program - 37 totals - were partially redeployed to the most critical services and 13 were specifically assigned to AOUI Medical Direction Unit (MDU).

During the time period February 23 – May 4, which in Italy has been identified as "phase one" of the pandemic, healthcare services underwent a heavy reconfiguration to face the emergency and public health (PH) residents were intensively involved in response activities, constituting a workforce that turned essential in governing such a complex scenario efficiently. We hereby provide a systematic description of the response actions in which the public health residents' workforce was pivotal, acknowledging the importance of their role by highlighting the diversity of contributions provided. This is also the opportunity to report some of the emergency measures that have been implemented by AOUI and allowed a prompt handling of the growing number of COVID-19 cases, while ensuring the safety of healthcare workers.

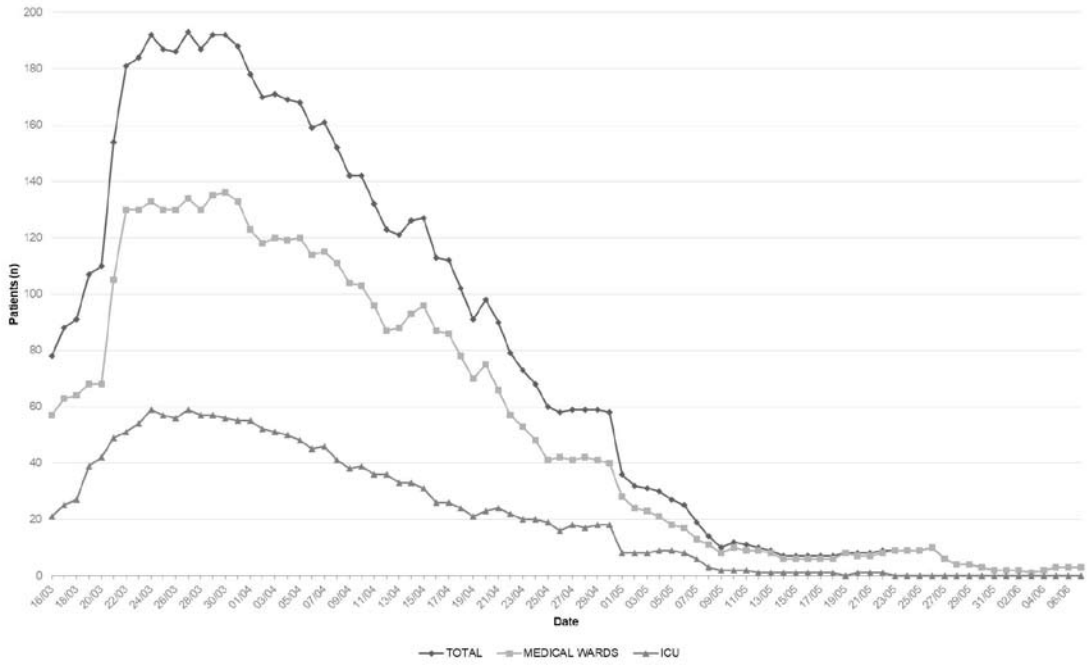
Methods

Setting

AOUI of Verona is the second largest hospital trust in Italy in terms of beds (1,215) and the fifth largest in terms of admissions (around 49,000 in 2019). It is a large tertiary hospital trust where all the specialties are available. The hospital staff is composed of 6,092 personnel (including nearly 1,200 residents of the University of Verona). Activities are split in two different facilities (Borgo Trento and Borgo Roma) located at the north-south opposites of the city.

With the record of the first case of SARS-CoV-2 infection in the province of Verona (February 22), AOUI established a crisis management unit in a timely manner to coordinate the appropriate measures and interventions to track and record all suspected cases. The unit took advantage of the cooperation with the Medical Emergency Service of the province of Verona (930,000 inhabitants), whose Operations Centre is located within one of the hospitals.

From March 17, the Veneto regional government converted part of the hospital into a "COVID-19 hospital". Thus, dedicated pathways for both suspected and confirmed COVID-19 cases were established and some specific hospital units, located in well-defined restricted areas, were specifically



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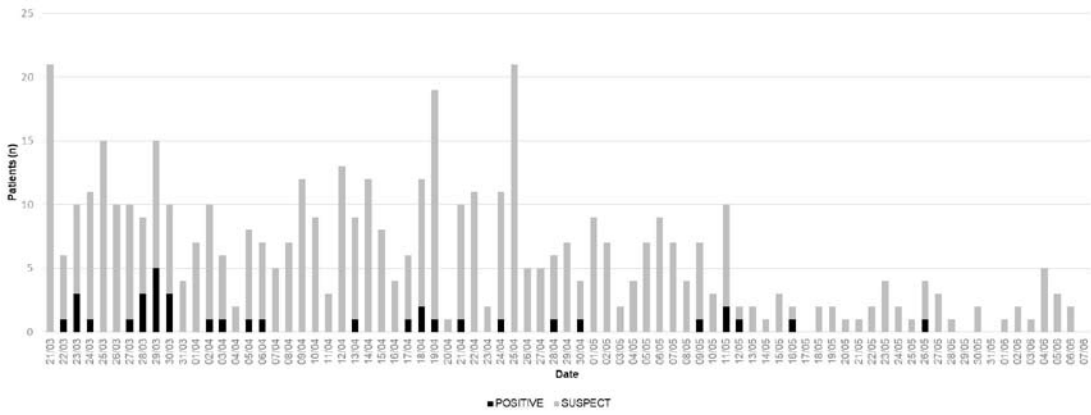

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Figure 1. Data regarding the burden of COVID-19 patients at AOUI. 1A: number of patients hospitalized for COVID-19; ICU=intensive care unit. 1B: number of patients admitted to the Emergency service.

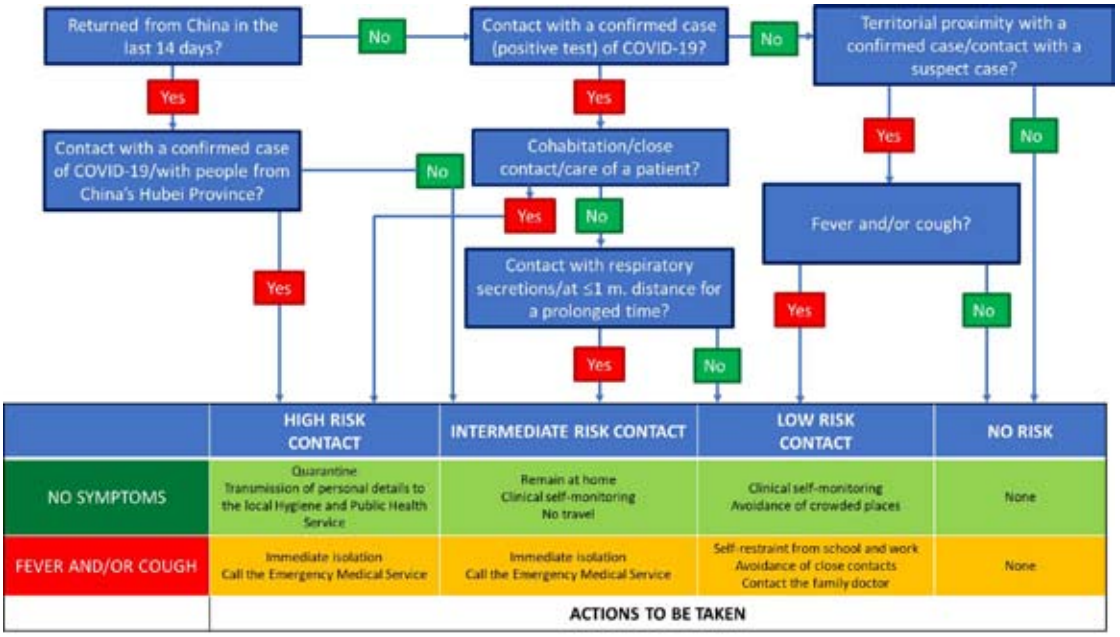


Figure 2 - Flow-chart prepared by the Emergency Medical Service of the Venetian Health District (Veneto Region, Italy) and distributed to all healthcare services of the Veneto Region on February 20 2020 (adapted from Italian language).

devoted to the treatment of COVID-19 patients. Data regarding the burden of COVID-19 patients at AOUI are presented in Figure 1A and 1B.

Results

Response actions against the pandemic and the role of public health residents

Medical Emergency Service

The Medical Emergency Service on the territory comprises an operative network that involves all the local health authorities of the province, including facilities, equipment, resources, and personnel, in order to handle the first aid on site for critical patients and the subsequent transfer to the most appropriate facility. The alarm system is ensured by the Operations Centre of Verona Emergency, which operates 24/7 and connects all requests for intervention for health emergency with the most appropriate response and service, through more than 80 dedicated lines.

The news of the first case led to a rapid and exponential increase in the number of requests for help from citizens to the local Medical Emergency Service. In order to manage the impressive flow of activities, collaboration between PH residents and operators of the Service was set. This decision allowed multiplying and optimizing the human resources available to deal with the sudden emergency. Two residents worked on a rotating basis at the Operations Centre daily from 8 a.m. to 11 p.m., each one working alongside an expert operator for the management of calls for symptoms potentially related to SARS-CoV-2 infection. The operator provided with an initial filter for the call, taking advantage of the experience to identify the scenarios which were worthy of further investigation or suspected, while the

resident intervened subsequently to stratify the risk of infection using a specific flow-chart made available on February 20 (Fig. 2). For cases identified at high and intermediate risk with the indication for isolation, the resident was instructed to collect personal information and to transmit them to the Public Health and Hygiene Service of the municipality, for subsequent surveillance of the individual. The cooperation remained active until March 14.

Hospital services

The reorganization of outpatient clinics

Phase one was characterized by interventions aimed at reorienting the health services' offer to counter the growth of infections in the territory. From this point of view, outpatient activities at AOUI were progressively remodeled through a dual track: on one hand, services that could not be postponed (urgent, 48-hour, and 10-day controls; emergent, urgent non oncological, and oncological admissions) were guaranteed; on the other hand, in order to provide safe care, specific tools were prepared to contain the spread of SARS-CoV-2 virus infection as much as possible.

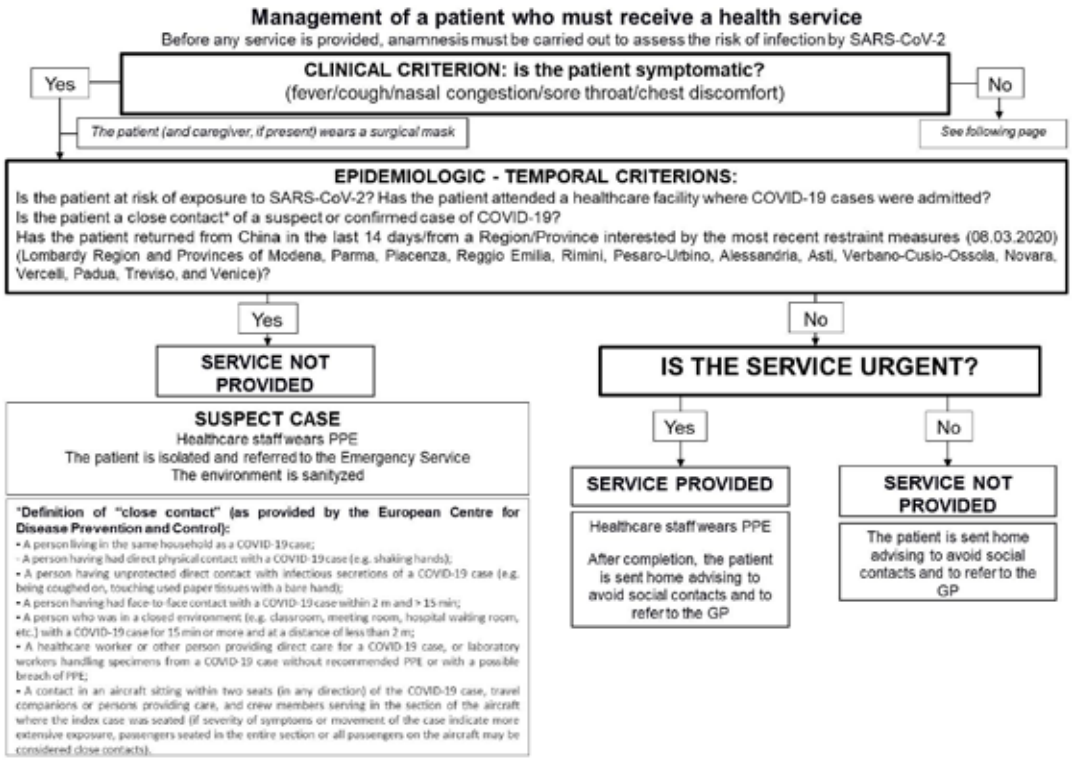
One of these tools was the flow-chart "Management of the patient who must receive a service from healthcare personnel", which was the result of a collaboration between PH residents and the Medical Direction. The instructions were transmitted to clinical and nursing leaders in the first version on March 8 (Fig. 3A and 3B) and then underwent a rapid update in the light of the provisions contained in the Decree of the President of the Council of Ministers (DPCM) issued on March 9 (6), which made the geographical criterion decay while declaring the entire national territory a "red zone".

Residents and Medical Direction also provided with special support to the regulation of access to "critical" services, such as pediatrics, where outpatient access was regulated through the administration of a "Self-assessment for COVID-19 infection risk" sheet, adapted from a form developed by the Italian Society of Infectious and Tropical Diseases (Appendix). The screening of caregivers was carried on alongside the triage of pediatric patients basing on clinical and epidemiological criteria; when detecting a suspect case, a facilitated access to the pediatric emergency room was guaranteed.

On the sidelines, we feel important to highlight how reorganization of the outpatient clinics, as well as of many other services, was characterized by a continuous and rapid reshaping of the indications provided to clinicians and of the documentation produced in support. This was due both to the evolution of the epidemiological framework and to the rapid production of new ministerial and regional provisions to which the activities had to comply.

The reorganization of the pre-operatory path

In view of the evolution of the epidemic and in order to preserve the highest number of beds in the intensive care area, on March 13 the General Director of the Health and Social Affairs Area of the Veneto regional government suspended all planned surgical activities with a program of post-operative hospitalization in the intensive care unit, with the exception of interventions that could not be postponed, particularly oncological (7). In compliance with these provisions and in order to provide safe care, AOUI reorganized the pre-operatory path. To do so, the activation of a dedicated service was displayed to collect oropharyngeal (OP) and nasopharyngeal (NP) swabs from patients before the intervention. Two services were operative simultaneously in the sites of Borgo Trento and Borgo Roma, respectively, and were entirely driven by residents. Activities run daily for five days a week, in order to reduce the time frame between collection of the specimen and hospital admission as much as possible.



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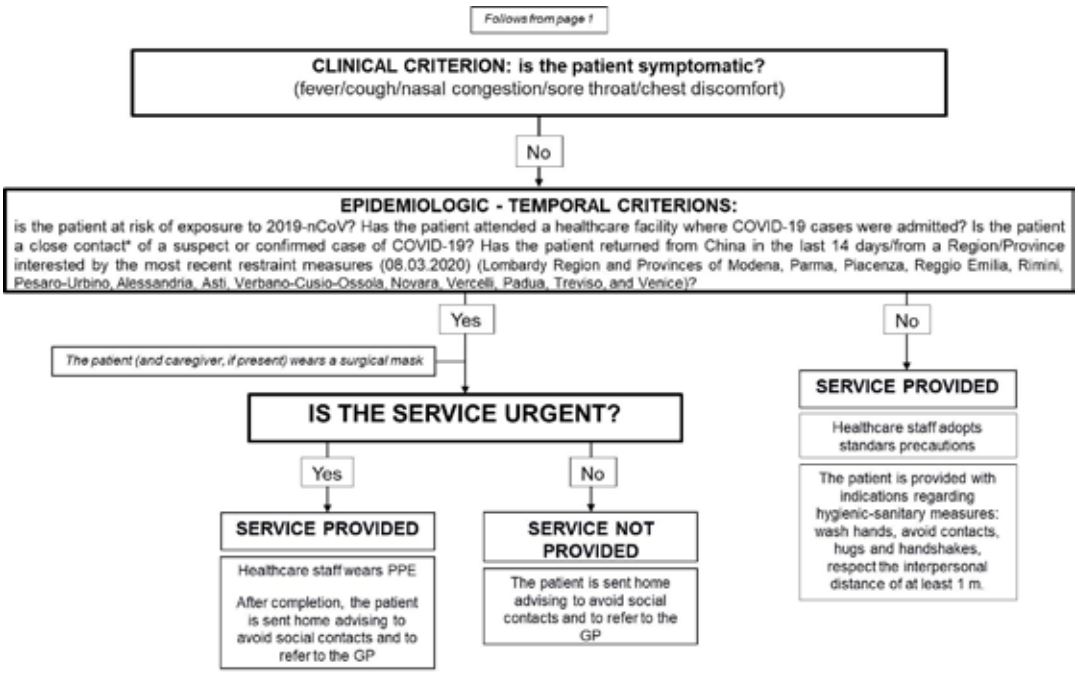

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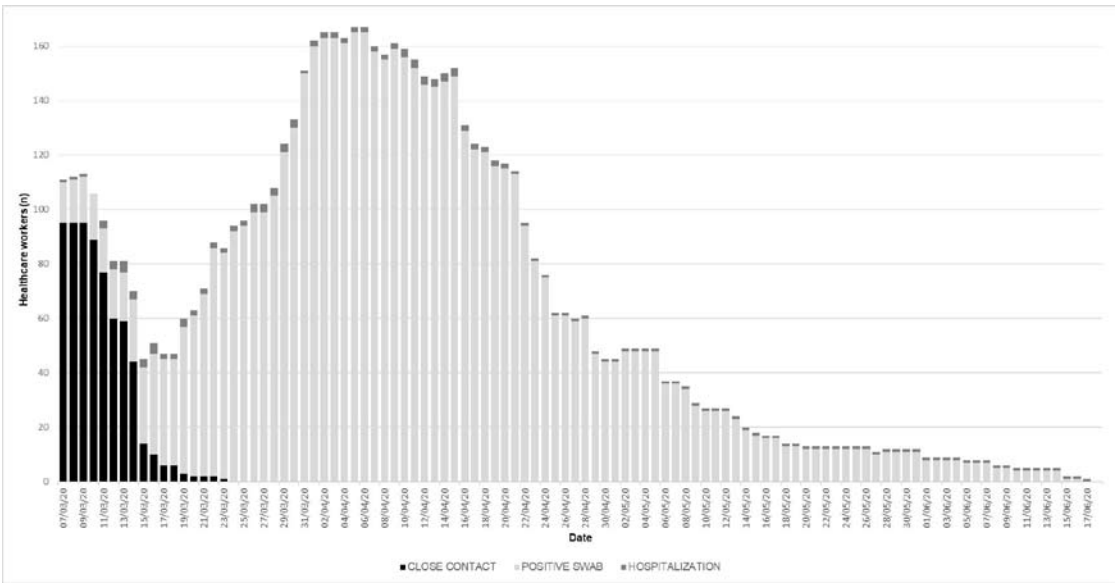
Figure 3 - Flow-chart "Management of a patient who must receive a service from health care personnel" prepared by the University Hospital of Verona in the context of the reorganization of outpatient services (adapted from Italian Language). The instructions were transmitted to all the hospital's personnel on March 8 2020. PPE=personal protective equipment; GP=general practitioner; m=meter; min=minutes. **3A:** page 1 of the document. **3B:** page 2.



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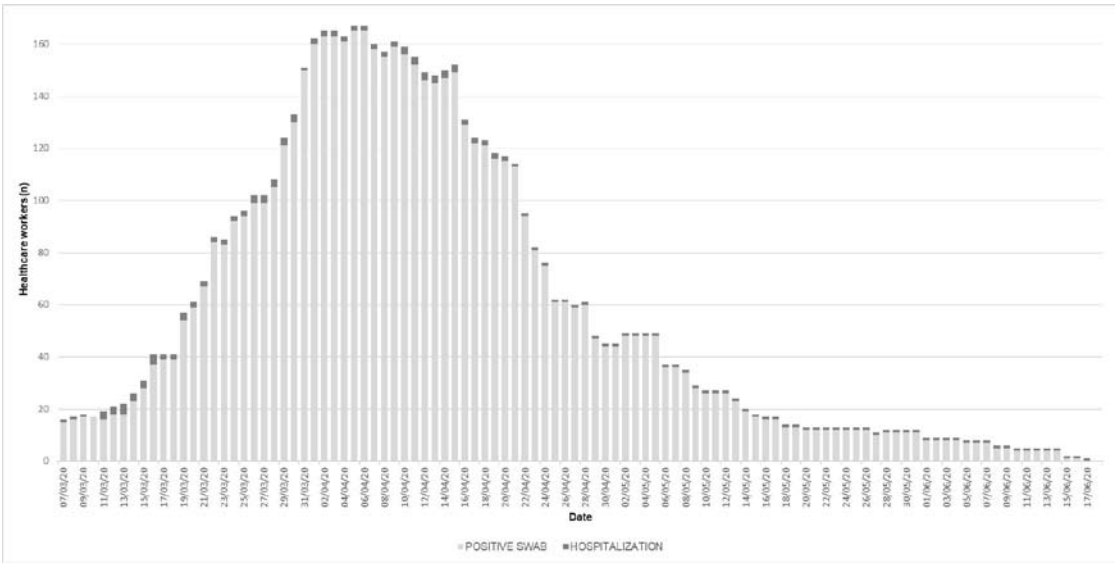

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Figure 4 - Data from healthcare workers who underwent isolation measures from March 7 to June 17 2020. Until March 9, health professionals identified as close contacts of a confirmed case had to comply with isolation measures; individuals reporting flu-like symptoms and administrative staff completed the 14-day quarantine before returning to work. **4A:** Overall data. **4B:** Data without the group of subjects isolated for being contacts.

New services

Surveillance of healthcare workers

Since the beginning of the pandemic, AOUI adopted an a*d hoc* program of surveillance in order to contain the spread of the infection amongst the hospital's employees. The aims of this program were to ensure the safety and well-being of the staff, as well as the maintenance of vital services. The plan of active surveillance was implemented according to national recommendations (6) and entailed testing all healthcare workers who had been in close contact with confirmed cases or were showing signs of respiratory symptoms and/or fever. If asymptomatic, close contacts were allowed to remain in service, but had to repeat swabs every 5 days for 2 weeks and to closely self-monitor respiratory symptoms, cough and/or fever. OP and NP (both nostrils) swabs were collected in two dedicated clinics (in Borgo Trento and Borgo Roma) that were established on March 9 and progressively implemented. The clinics were entirely run by residents in public health, occupational medicine, and legal medicine, with the support of dedicated nurses. At the activity's maximum, activities run for 13 hours a day, 7 days a week. The surveillance was integrated with information regarding place of work, presence of symptoms, and, in case of close contact, details on the circumstances (such as the use of personal protective equipment, timing, and whether the contact took place at work).

Taking swabs, wearing and removing personal protective equipment, storing samples, and sanitizing the clinic were performed in accordance with WHO Interim Guidance (8). At full range, the volume reached was around 500 swabs per day. Results from the swabs (made available 24–36 h after testing), as well as any additional data (personal, clinical, and epidemiological), were collected in a dedicated database. Reports were sent daily from the Microbiology Service and a resident was deputed to manually update the database (the process was automated in May).

Residents also cooperated closely with the Medical Direction in managing the confirmed cases of SARS-CoV-2 infection. In order to guarantee a centralized and rational management, dedicated communication channels (mailbox and phone line) were created and managed by residents to serve as a unique reference for the whole personnel. The following activities were carried out:

- contact tracing*;
- scheduling swabs for: a) close contacts of a confirmed case; and b) general screening program (see below);
- addressing questions and concerns raised by employees;
- coordination with the National Institute for Insurance Against Accidents at Work ("Istituto Nazionale Assicurazione Infortuni sul Lavoro" - INAIL).

As part of the health surveillance program, another action taken was to carry out a daily monitoring of all employees who were on quarantine or hospitalized for COVID-19. Being constantly updated on the state of the staff was necessary to decide whether to recruit new professionals and/or to transfer

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* A person living in the same household as a COVID-19 case, a person having direct physical contact with a COVID-19 case (e.g., shaking hands), a person with unprotected direct contact with infectious secretions of a COVID-19 case (e.g., touching used tissues with bare hands), a person with face-to-face contact with a COVID-19 case within 2 m for over 15 min, a person who was in a closed environment (e.g., classroom, meeting room, waiting room) with a COVID-19 case within 2 m for over 15 min, a healthcare worker providing direct care for a COVID-19 case and laboratory workers handling specimens from a COVID-19 case without recommended personal protective equipment or with a possible breach, A contact in an aircraft sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated (9).

resources to departments that were mostly affected by the pandemic.

The report was managed by a PH resident and sent daily to the Medical Direction, starting from March 7 and throughout all the phases of the emergency. Monitoring took in consideration the numbers of employees:

- in isolation because of a close contact with a confirmed case;
- in isolation because of a positive swab test;
- admitted for COVID-19.

The report provided also updated information on the professionals involved, i.e. occupation and place of work, in order to have the most precise picture.

Initially, in accordance with the Decree-Law issued on February 23, all subjects, including healthcare workers, who came in contact with confirmed cases of infection, were obliged to respect the quarantine for 14 days before resuming work (5). With the subsequent Decree-Law of March 9, instead, the rule was amended for "healthcare workers and … essential public services. The operators shall suspend their activity in case of respiratory symptoms or a positive test result for COVID-19" (6). This change in the regulation can be seen in the double curve displayed in Figure 4A, as initially much more subjects were isolated at home just for being a close contact of a confirmed case. Starting March 10, a gradual decrease in the first curve was observed as people returned to work, going from 95 subject on quarantine on March 7 to 60 subjects on March 12; by mid-March, staff still on quarantine had fallen to only 10 individuals. People who reported flu-like symptoms and administrative staff completed the 14-day quarantine before returning to work. Considering the data without the group of subjects isolated for being contacts (Fig. 4B), the curve reflects a normal type distribution with a gradual increase in the number of positive subjects from March 7, reaching the peak on April 6 with 167 positive healthcare workers. After this point, the curve began to progressively fall to reach 0 positive cases on June 18.

Screening of healthcare workers

In a document issued by the Veneto Region on March 17, "Approval of the plan concerning COVID-19 epidemic: urgent public health interventions" (10), indication was provided to "screen all employees of the regional health system, including general practitioners, family pediatricians, pharmacists, and operators in facilities for non-self-sufficient" patients, in order to interrupt the chain of transmission of SARS-CoV-2. All the staff at AOUI was then progressively screened, extending tests to administrative personnel, in order to carry out a capillary monitoring action. The campaign started on March 26.

The procedures adopted and setting to carry out the program were the same as for the surveillance system. The residents were in charge of scheduling the appointments and providing the regular functioning of the clinics. Professionals were appointed following their risk profile, with priority given to those operating on the front line (intensive care units, emergency medicine services, infectious diseases units, and COVID-19 units). The first round of screening was completed on April 15: 3,819 employees were tested, of which 2,123 were identified as close contacts of a confirmed case and 26 turned out positive.

After the new document "New coronavirus SARS-CoV-2 operating instructions for the surveillance of the regional health system staff" was released on April 22 (11), we started a second round of screening. The regional protocol differed from the previous one, as the proposed swab schedule was officially differentiated basing on the healthcare workers' risk profile. People working in high-risk services (see above) were subjected to screening every 10 days,

while low-risk workers were monitored every 20 days and administrative staff every 30 days. The second round of screening was completed on May 15. The final number of participants was 5,942 (97.5% of the target population).

Management of employees under the insurance point of view

As reported above, until March 9 all staff that came in contact with a confirmed case, had to stop working and observe a 14-day quarantine. After that date, only healthcare workers testing positive were subject to isolation. For each individual, the absence from work was covered by an occupational accident file, in accordance with the INAIL local office. Due to the huge amount of files to manage, a PH resident was specifically trained by professionals dealing with this procedure in the ordinary context (professionals from the Emergency Medicine Service), but not being able to take care of the specific task during the COVID-19 period. The whole process of filing was carried out through software which allowed to record all the professionals' details on the event, draw the certificate of occupational accident, and send it electronically to the local INAIL office.

At the beginning, some criticalities were encountered in the procedure, especially concerning the retrieval of all the necessary information (e.g. precise date of contact). In order to ameliorate the process, a fruitful cooperation was established between AOUI Personnel Service, MDU, and INAIL Verona that led to a more punctual and precise filing activity.

The files were updated daily on the basis of the results of the NP swabs. It is worth remembering that, in accordance with international regulation, an individual who had tested positive could be admitted again to work at the end of the quarantine period only with complete resolution of symptoms and if results are negative from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens) (12). As of June 5, 333 occupational accident files had been managed at AOUI. Data from hospital's personnel who underwent isolation measures (n=177) are shown in Table 1.

Updating data on the regional monitoring platform

A regional platform was set up by the central regional health management service to monitor the regional epidemiological trend of COVID-19 through the record of cases. For each new case, the following data were registered:

1. personal informations and contact details for monitoring;
2. clinical status, stratified into asymptomatic, mildly, severely symptomatic and critical. For critical patients, the intensity of care was detailed, e.g. whether the patient was supported by mechanical ventilation or extra corporeal membrane oxygenation;
3. exposure, in order to monitor the cluster and epidemiological links;
4. results of NP and OP swabs and serological tests (IgG and IgM assays);
5. hospital admission of the patient and any transfer both within the same hospital and to different facilities;
6. contact details of the referral family doctor and track of records.

The platform was activated early at the beginning of the emergency and a PH resident was responsible for the daily addition of new positive cases detected at AOUI. The manual update was set to take place every three hours. Four daily data extractions were carried out from the Microbiology reports (at 7 a.m., 11 a.m., 3 p.m. and 8 p.m.).

Collaboration with the Local Health Authority

Throughout the emergency, AOUI provided with operative support to the Local

Health Authority, which serves a population of about 930,000 in the province of Verona. Between April and June, residents carried on special sessions to perform swabs to family doctors and pediatricians, primary care physicians, operators of the special COVID-19 primary care units, and citizens under special health surveillance. At the end of the activities, a total of 4,033 swabs were reported to the Local Health Authority.

Discussion and Conclusions

The pandemic caused by the emergence of the new pathogen SARS-CoV-2 has had a major impact on health organizations. It forced professionals to respond quickly and effectively to something totally new and that no one, either on duty or retired, could claim to have direct experience of. In particular, the first phase of the outbreak was characterized by dramatic aspects, such as the increase, not always sustainable, of requests for assistance to health facilities and the heavy involvement of professionals, in terms of workload and exposure to risk. Unfortunately, Italy still stands as one of the countries in the world which has been most impacted by the new coronavirus, with more than 860,000 infected and more than 40,000 deceased as of November 1 2020, and increasing daily.

The rapid reorganization of hospital services has been one of the key aspects of the first phase, particularly in northern Italy. Several facilities, especially tertiary ones, have already published reports on their experience and exposed the strategies adopted, including administrative team establishment, infrastructure modifications, and special arrangement for clinics, hospitalizations, and surgeries. The decisions taken by the various task forces can be summarized in three key actions: operations; procedures; and training. The lessons learnt from these reports are, above all, the absolute necessity to adapt to new conditions on a daily basis and to always find a balance between the indications contained in the guidelines and the drives of the healthcare staff. Good communication between different services and professional groups plays a fundamental role in these cases. Clear and open communication channels from a central command task force allow unfiltered instructions and words of encouragement to be directly disseminated.

As far as our hospital is concerned, setting out all the structural reorganization strategies and implementation of new services was not the main aim of the article. Nonetheless, the actions we described found resonance in similar reports from our country, confirming our experience as an example of good hospital management (13-15). During the first 70 days of the COVID-19 pandemic, the hospital management worked constantly to inform, update and educate hospital staff; discussed the latest evidence and guidelines with clinical and nursing leaders to implement updated and shared hospital policies; and always maintained maximum transparency and availability for any request or clarification on decisions to be taken or procedures to be adopted.

Residents have been affected by a different sort of disruption of their activities, with a near total focus on service rather than learning during the peak of the pandemic. In few months, a number of articles have been published reporting the experiences of trainees from diverse specialties and different countries: a recent review by Tolu et al. (16) analyzed 13 documents reporting on residency education during pandemics, including articles, 5 short or special communications, and the rest editorials and perspectives. These publications reflect the strong impact this experience has had on medical students and young doctors and the incredible challenges that SARS-CoV-2 pandemic has posed. The most significant disruption in the activities were recorded

in resident surgical education (hands-on training), due to the dramatic reduction of case volume and operating room exposure time; in resident research activity, with some programs trying to overcome such factors by using alternative ways of continuing research program by virtual meetings; and in graduation and board certification tests, due to unmet minimum case requirements, with impact on subsequent onboarding time for incoming residents.

In general, trainees and students experienced very complex and mixed feelings, being anxious and vulnerable to COVID-19 but also feeling "lucky to be working during this time" (17-19). Safety concerns were complicated by the recognition that their decisions had implications for their loved ones. The most often reported work issues were resident training under tenuous and uncertain conditions, barriers to communication, deployment-induced anxiety, social isolation, stress, and burnout (20-23).

The results reached by our residents during the emergency were the fruit of commitment, intelligence, and energy of professionals being rapidly able to adapt to new services and make a sudden jump in their autonomy and responsibility. The contributions, though less visible than that of clinical services, have been continuous. At the moment, experience reports from public health residents are not available in the literature, so it is not possible to make direct comparisons with other programs. However, when our residents informally described what unique challenges they had experienced as a result of the COVID-19 pandemic, the statements were very similar to those of colleagues on the pandemic's front lines (17). Our group faced a number of difficulties in responding to the needs posed by the events and by demanding social, institutional, and individual requests. Unfortunately, residents are an at-risk population for burnout syndrome, as recently highlighted by a cross-sectional survey conducted in an Italian cohort in 2019. The study reported a mean burnout prevalence of 69.7%, with higher prevalence in the second year of residency (76.9%), in women, and in residents reporting unhealthy habits (fitful sleep, scarce physical activity, unbalanced diet, binge drinking, and poor social life) (24). In the near future, we plan to further investigate the impact of phase one on public health residents, from the tasks performed, to leadership and interdisciplinary collaboration experiences, not forgetting clinical risk during the activities. For the moment, the central role played by human resources and the need to strengthen their potential has clearly emerged.

Nonetheless, we feel to state how the COVID-19 pandemic also turned out to be a unique learning opportunity. The absolute novelty of the situation for all, the uncertainty, and sometimes the chaos that dominated the first phase of the pandemic have brought out the quality, altruism, and attention to safety of health professionals. Bioethical issues, which previously seemed theoretical, were brought to life during this crisis. The training and education of residents was taken to another level. Educators guided young trainees through uncertainty and at the same time trained them in contingency planning on the field. The early involvement of residents allowed them to experiment a variety of innovative solutions and out-of-the-box thinking, participating in discussions of how various scenarios could impact the hospital, and how different services would adapt. The unique preparation gathered from this experience allowed the trainees to equip themselves with the tools and skills to handle future challenges.

The first phase of the COVID-19 pandemic was a challenging time for all, health professionals and not. Our residency program responded promptly to the new challenge through internal reorganization, identification of referral persons, assignment

Table 1 - Data from hospital's personnel who underwent isolation measures (n=177). Until March 9, all staff that came in contact with a confirmed case had to stop working and observe 14-day quarantine. After that date, only healthcare workers testing positive were subject to isolation. For each individual, the absence from work was covered by an occupational accident file.

Institution	Service	Occupation	Occupational accident(s) (n)	Days in isolation (n)
Hospital	Hospital Direction	General manager	1	16
		Health manager	2	14
	Allied-to-Medicine Services	Nurse	106	2698
		Laboratory technician	5	105
		Radiology technician	3	103
		Physiotherapist	2	43
		Prevention technician	1	57
		Nursing coordinator	1	8
	Medical Services	Physician	52	246
		Resident	49	1095
	Administrative Services	Administrative assistant	9	236
		Professional employee	9	141
		Administrative coadjutor	7	155
		General assistant	3	58
		Manager	1	14
	Technical Services	General assistant	37	1029
		Technical collaborator	12	332
		Technical assistant	5	85
		Technical operator	3	106
		Statistician	2	20
		Engineer	1	41
		Analyst	1	4
		Software designer	1	4
	Other	Nursing manager	2	113
		Pharmacist	1	2
		Psychologist	1	6
University		Physician	14	246
		Biologist	1	15
Other		External collaborator	2	25
TOTAL			333	7866

of specific tasks, and maintaining open communication. Reviewing the first 70 days of the pandemic, we realized how contributing to the development of diverse and challenging activities in an effective way was made possible by a transversal cooperation between residents and mentors rather than a one-man action. Also, an approach of empowerment and autonomy of each individual resident has allowed us to govern rapidly-changing scenarios, without missing a qualified support when needed. The lessons learned from this experience were to involve residents in the decision-making process, and to encourage a culture of open and transparent communication. Pursuing these goals will lead to the success of any program and enable it to address even the most challenging scenarios.

Appendix

"Self-assessment for COVID-19 infection risk" sheet, adapted from a form developed by the Italian Society of Infectious and Tropical Diseases.

PERSONAL INFORMATION Name:……. Surname:……..... Gender: ☐ M ☐ F Date of birth:…….…… Mobile number:…….. E-mail:…….
EPIDEMIOLOGIC CRITERIA 1. In the last 14 days, did the person travel to a country where confirmed cases of pneumonia from new coronavirus have been detected? ☐ YES ☐ NO ☐ UNKNOWN If yes, where: ……. date of arrival: …… date of leave: ……... Date of arrival in Italy: …… 2. In the last 14 days, has the person been in close contact with a case of pneumonia from new coronavirus? ☐ YES ☐ NO ☐ UNKNOWN
CLINICAL INFORMATION If symptomatic: date of onset of symptom(s): …… Respiratory signs/symptom: ☐ cough ☐ sore throat ☐ breathing problems Systemic signs/symptom: ☐ fever ☐ headache ☐ muscle soreness ☐ malaise ☐ fatigue ☐ loss of weight ☐ lack of appetite ☐ confusion ☐ vertigo Chronic disease: Tumor: ☐ YES ☐ NO ☐ UNKNOWN; Cardio-vascular: ☐ YES ☐ NO ☐ UNKNOWN; Diabetes: ☐ YES ☐ NO ☐ UNKNOWN; Immune deficit: ☐ YES ☐ NO ☐ UNKNOWN; Respiratory: ☐ YES ☐ NO ☐ UNKNOWN; Renal: ☐ YES ☐ NO ☐ UNKNOWN; Metabolic: ☐ YES ☐ NO ☐ UNKNOWN; Obesity: ☐ YES ☐ NO ☐ UNKNOWN. Other: …….
In case at least one epidemiologic criterion is met + at least one respiratory and/or systemic sign/symptom, contact the General Practitioner/the Emergency Service (in severe cases).

Riassunto

La pandemia COVID-19: l'esperienza di un Centro italiano e le lezioni apprese dai medici in formazione in Sanità Pubblica

Premessa. La pandemia di malattia da Coronavirus 2019 ha posto sfide incredibili ai lavoratori della sanità in tutto il mondo. I medici in formazioni specialistica sono stati colpiti da un sovvertimento pressoché completo delle attività formative, con un reindirizzamento quasi univoco verso la pratica durante il picco dell'emergenza. Nel nostro Centro, i medici in formazione in Sanità Pubblica sono stati coinvolti estensivamente in azioni di punta nella gestione della pandemia di malattia da Coronavirus 2019

Metodi. In questo articolo viene fornita una descrizione sistematica delle azioni di risposta nelle quali la presenza dei medici in formazione si è rivelata decisiva, in un'Azienda Ospedaliera di riferimento. Risultati: Il ruolo chiave giocato nella risposta alla pandemia di malattia da Coronavirus 2019 è messo in luce dalla diversità dei contributi prestati, dalla cooperazione alla riorganizzazione dei percorsi assistenziali al fine di garantire la continuità delle cure, alla predisposizione e mantenimento di nuovi servizi essenziali per i professionisti sanitari.

Conclusioni. Nonostante le difficoltà poste dalla contingenza e il sacrificio di molte attività formative, la pandemia di malattia da Coronavirus 2019 si è rivelata un'opportunità unica di apprendimento e di misurazione delle proprie capacità e dei propri limiti in un contesto di assoluta novità e incertezza.

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