

Redesigning doctor–patient relationship in the private health care during COVID-19 pandemic

Retrospective cohort study

Serena Bertozzi, MD, PhD^{a,b,c}, Roberta Taricani, ACCT^c, Irene Tulissi, DA^c, Fabio Patusso, CDT^c, Stefano Amura, QS^a, Ambrogio P. Londero, MD, PhD^{a,d,*} 

Abstract

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection is experiencing pandemic diffusion. The experience of an Italian private health care structure was reviewed.

We retrospectively collected data about services provided in a single medium complexity private health care structure. Furthermore, we classified specialties within 4 categories, based on the performance of urgent non-deferrable services and possible provision of services without a necessary contact with the patient.

The structure canceled/postponed almost every deferrable service, providing only 3% of services that could be performed without direct contact with patients. Regarding non-deferrable services requiring the presence of the patient, about 42% of booked services have been autonomously canceled/postponed by patients for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) fear. The administrative services have been remotely performed by smart working as far as possible.

Private health care structures may safely continue to provide non-deferrable services while respecting the restrictive measures imposed by the government, encouraging telehealth and smart working modalities.

Abbreviation: COVID-19 = severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).

Keywords: contagion containment, coronavirus, doctor–patient relationship, private health care, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)

1. Introduction

The dramatic trend in the cumulative incidence of notified cases of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) (COVID-19) at the time of this study suggested that the pandemic was rapidly progressing at a comparable speed in all European Union countries, with mild differences due to likely

variations in national public health responses, case definitions, and protocols for selecting patients to be tested for confirmation of COVID-19.^[1,2] By March 15, 2020, 22,512 cases of coronavirus COVID-19 infections have been assessed in Italy, 2026 of which among health care workers, and 1625 COVID-19-related death have been recorded.^[3] The number of cases that

Editor: Daryle Wane.

Where the study was carried out: Idea Medica.

Presented at meeting: none.

Ethics approval and consent to participate: The present article does not contain any studies with human or animal subjects performed by any of the authors. Since this article was based on anonymous administrative data, patient informed consent and Ethical Committee approval were not required in Italy.

Consent to publish: Not applicable.

Availability of data and materials: The data that support the findings of this study are owned by Idea Medica Basaldella and used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Idea Medica Basaldella.

The authors have no funding and conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

^a Ennergi Research (non-profit organisation), Lestizza (UD), Italy, ^b Breast Unit, ASUFC, University Hospital of Udine, Udine, Italy, ^c Idea Medica Basaldella, Campoformido (UD), Italy, ^d Academic Unit of Obstetrics and Gynaecology, Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Infant Health, University of Genoa, Genova, Italy.

* Correspondence: Ambrogio P. Londero, Academic Unit of Obstetrics and Gynaecology, Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Infant Health, University of Genoa, Largo Rosanna Benzi, 10, 16132 Genova GE, Italy (e-mail: ambrogio.londero@gmail.com).

Copyright © 2022 the Author(s). Published by Wolters Kluwer Health, Inc.

This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

How to cite this article: Bertozzi S, Taricani R, Tulissi I, Patusso F, Amura S, Londero AP. Redesigning doctor–patient relationship in the private health care during COVID-19 pandemic: Retrospective cohort study. *Medicine* 2022;101:6(e28781).

Received: 27 April 2020 / Received in final form: 3 December 2021 / Accepted: 20 January 2022

<http://dx.doi.org/10.1097/MD.00000000000028781>

resulted almost tripled 1 week later to understand the rapid diffusion of COVID-19 infection. In particular, on March 22, the number of COVID-19-positive cases was already 59,138. Moreover, these numbers were likely to be underestimated, as many individuals can carry the novel coronavirus without showing any of the typical symptoms of COVID-19, such as fever, dry cough, and shortness of breath.

The majority of cases involve people aged >70 years old, who are also the age group with the most significant mortality.^[3] Doctors in the affected regions of Italy described a situation in which about 10% of patients with COVID-19 required intensive care.^[4] In severe COVID-19 cases, the endothelium is an essential target, and mediators mainly cause the adverse effects.^[5–8] These effectors drive the endothelial disease responsible for coagulopathy, and the other complications.^[9]

In order to contain the COVID-19 infection contagion, many restrictive measures have been adopted by the Italian government, starting from the isolation of the population within their own homes. People were authorized to go out exclusively for work, food supply, health, or necessity reasons. Every commercial activity has been temporarily closed with the exclusion of supermarkets, pharmacies and para-pharmacies, banks, post, insurance, and financial services. All other activities have been dealt with only by smart working modality. A distance of at least 1m was suggested in any interpersonal relation, and no interpersonal contact was allowed including handshakes and hugs. Symptomatic people were discouraged from going to the hospital. Besides, they were first visited at home, eventually tested for COVID-19, isolated at home in the case of positivity, and hospitalized only in case of necessity.

In this new context, public and private health care institutions rapidly modified their prevention policies and the performance program in light of the new restrictive measures. Especially private healthcare facilities were intensely suffering the economic impact of the restrictions imposed by the government. However, private healthcare facilities can play anything but a marginal role in preventing and early diagnosis of new cases of COVID-19. This manuscript reviewed the rapid changes experienced by a medium complexity private health care structure. We discuss the various opportunities to improve patient management in different medical specialties.

2. Materials and methods

2.1. Study design

This manuscript presents a retrospective cohort study using administrative data.

2.2. Data collection

We retrospectively collected data about services booking in a single, Italian, medium complexity, private health care structure (Idea Medica). In particular, we evaluated bookings, cancellations, and postponements for every service of every different medical specialty from the very beginning of government restrictions (February 24, 2020) to March 22, 2020, due to both patient or structure choice.

2.3. Inclusion and exclusion criteria

All subjects referring to this health facility were included during the study period. No exclusion criteria were applied.

2.4. Classification of health care structure complexity

In Italy, based on the Decreto Giunta Regionale (Regional Council Decree) n.34/26 of October 18, 2010, 3 types of private medical centers exist. Low complexity structures, for which the operating authorization is issued by the municipality responsible for the territory, include:

- structures that carry out specialist outpatient activities and professional medical or surgical studies, single or associated, with the exclusion of motor rehabilitation, diagnostic imaging, and laboratory activities;
- single or associated outpatient clinics and dental practices;
- studies by non-medical health professionals (i.e., professional physiotherapy studies).

Medium complexity structures, on the other hand, include:

- structures that provide specialist outpatient assistance, including itinerant ones, those for motor rehabilitation, instrumental and laboratory diagnostics, and also those without their own legal subjectivity and managerial autonomy as they are structurally or functionally related to public or private hospitals or any other health services of higher complexity;
- structures exclusively dedicated to diagnostic and instrumental activities also carried out for third parties;
- territorial rehabilitation and psychiatric structures that provide daytime activities;
- structures intended for sterilization and disinfection services related to health activities located within the same buildings.

High complexity structures include:

- structures that provide continuously or daytime hospitalization services for acute or post-acute patients;
- residential and semi-residential health and social-health structures;
- Health sanitas per aquams.

This manuscript refers to a medium complexity private health care structure.

2.5. Classification of consultations

Consultations were classified within 4 categories, based on the performance of urgent non-deferrable services and the possible provision of services without a necessary contact with the patient (Table 1). Deferrable and non-deferrable consultations were classified according to the previous definition (non-deferrable consultations mainly underlie requests from the patient who complains of a disorder, i.e., perceived as an urgent problem).^[10] Consultations were also subdivided whether the physical presence of the patient was required or not (Table 1).^[11] A telehealth consultation was provided whether the patient's physical presence was not needed. In this perspective, the specialties of which it is frequently not possible to do without a physical examination and for which contact with the patient is

Table 1
Classification of consultations.

	Non-deferrable services	Deferrable services
Patient presence necessary	Category 1	Category 3
Patient presence not necessary	Category 2	Category 4

frequently necessary are, among others, the following: any surgery, emergency medicine, anesthesiology, interventional radiology, interventional cardiology, or obstetrics and gynecology.

The specialties it is not possible to do without in this period but which less frequently require direct contact with the patient are, among others, the following: preventive medicine, family medicine, diagnostic radiology, laboratory medicine, pathology, or cardiology.

Thanks to telemedicine and dematerialized prescriptions, the majority of services of these specialists may be provided even without the patient's physical presence. Obviously, in the case of radiological imaging or cardiological examinations, a technician must acquire the images or the electrocardiogram to be evaluated by the specialist in another place.

Among specialties that may be considered less frequently necessary in this uncommon period, we listed the following, which often cannot provide their services without an objective examination of the patient: ophthalmology, gastroenterology, esthetic surgery, sports medicine.

While esthetic surgery and sports medicine in this situation had entirely suspended their activities, gastroenterology and ophthalmology remained active only for very urgent services, such as neoplastic diseases or endoscopy for gastrointestinal bleeding.

Finally, the specialties that do not provide urgent services but can, however, frequently offer their services without the patient's presence are the following: medical genetics, endocrinology, dermatology, psychiatry, rheumatology, or legal medicine.

Also, in this list, the performance of services for cancer patients is admissible, especially for urgent problems, such as the diagnosis of skin tumors in the case of dermatology or the treatment failure in the case of rheumatology.

2.6. Statistical analysis and ethical aspects

Data were analyzed using R (version 3.6.2). Additionally, this article does not contain any studies with human or animal subjects performed by any of the authors.^[12] Since this article was based on anonymous administrative data, patient informed consent and Ethical Committee approval were not required in Italy.^[12] Moreover, this study was conducted during the first phase of the COVID-19 outbreak, and it could not be planned in advance. Hence, this study was designed as a descriptive pilot study, and the sample size was not predetermined upon hypothesis testing. Furthermore, all the subjects in the study period were included in the analysis. Moreover, all statistics are descriptive and exploratory (hypotheses making), not confirmatory, and are evaluated accordingly.

3. Results

During the considered period, 533 subjects were referred to our healthcare facility. Table 2 shows the subdivision among categories.

3.1. Cancellation or postponement of non-urgent services

For what concerns deferrable services (category 3 and 4), the structure canceled or postponed almost every booking (Table 2), providing only 3% of the services that could be performed without direct contact with the patient (i.e., schedules Holter electrocardiograms) during the first week at the beginning of the restrictive measures.

For what concerns the non-deferrable services requiring the presence of the patient (i.e., dental care procedures, skin diagnostic biopsies, articular infiltrations against pain), the structure tried not to cancel bookings. Anyway, about 42% of booked services have been autonomously canceled or postponed by the patients for the COVID-19 infection fear.

Finally, since the beginning of the first restrictions, the structure decreased non-deferrable services that do not require the patient's presence (category 2).

3.2. Precautions to reduce COVID-19 contagion in the case of non-deferrable services

In this structure, all the government restriction rules have been strictly followed, which basically reflect the main recommendations available on the web for the prevention, mitigation, and containment of the emerging COVID-19 pandemic.^[13] In detail, services have been spaced over time so that patients do not meet even in the waiting room. From acceptance to payment of the service, the patient has been guaranteed the minimum distance of 1 m from the staff, obviously except for medical services that require direct contact with the patient himself (i.e., objective examination, surgical, or dental care procedures).

Patients have been invited to wash their hands with alcohol-based gel before and after accessing the outpatient room. All medical and non-medical staff have been wearing surgical masks throughout the procedures.

The service had been postponed until the end of the emergency period, whether respiratory symptoms occurred before the booking until the act of the service.

3.3. Telehealth for services which do not require any physical contact

Already before the COVID-19 emergency, the structure started to adopt some telehealth facilities. In particular, examinations that the specialist can remotely evaluate through common technologies (i.e., electrocardiogram reporting) have become the routine during the restrictions period. The prevalence of telehealth consultations during the studied period was 10.43%.

3.4. Smart working for the administrative staff

The non-medical staff has been left at home as far as possible in order to reduce their risk of contagion. The secretary's

Table 2
Services management during COVID-19 emergency.

Services management	Category 1	Category 2	Category 3	Category 4
Number	249	100	152	32
Cancellation/postponement	42%	95%	100%	97%
- By the structure	0%	29%	9%	8%
By the patients	42%	66%	91%	89%
Confirmation	58%	5%	0%	3%

administrative functions and the management of bookings have been performed through smart working. The only non-medical staff present in the structure during services was employed to accept patients and payment procedure management.

4. Discussion

Our data demonstrate that, despite the strict application of the restriction measures imposed by the Italian government against COVID-19 infection spread, many non-deferrable booked services have been canceled by the patients anyway. On the other hand, the structure itself has canceled or postponed almost the totality of deferrable services. All services that can be remotely provided and administrative and secretary functions have been remotely performed through smart working.

With applying the restriction measures imposed by the Italian government to stem the spread of coronavirus infection, medium complexity structures represent one of the most economically affected realities. In this paper, we tried to investigate the impact of these novel restriction measures on both the quantity and the quality of services provided by a single, Italian, medium complexity, private health care institution, and the techniques adopted to face up to this new condition.

Actually, the percentage of canceled or postponed services was very high among routine services,^[14] especially among services considered deferrable,^[15] also because the structure policy placed the patient safety ahead of the service performance. However, also the patients' fear played a crucial role in booking cancellation or postponement, independently by the service urgency or by the strict respect of the current restriction rules.^[15] In fact, even 42% of non-deferrable services have been autonomously canceled by the patients in our setting. Recently, the word "coronaphobia" has been coined to describe the syndrome caused by high levels of health anxiety that a part of the population is experiencing following the COVID-19 pandemic. This syndrome is characterized primarily by catastrophic misinterpretations of bodily sensations and changes, dysfunctional beliefs about health and illness, and maladaptive coping behaviors.^[16,17]

The compliance without exception to the current restrictive rules (minimum distance of 1 m, frequent hand washing, and use of masks, exclusion of patients with respiratory symptoms) has been probably very effective in containing the infection within the structure. In fact, all medical and non-medical staff result at the moment health. Obviously, this observation cannot exclude any COVID-19 positivity because little knowledge exists about paucisymptomatic cases. Only symptomatic people have been systematically tested for COVID-19 positivity during this emergency period.

The classification we adopted for the different medical consultations should be helpful in order to distinguish those services which can be safely delayed (i.e., sports eligibility visit, preventive dental hygiene, skin excision for esthetic reasons, etc) from those for which a month of delay could be unsafe (i.e., articular infiltration for pain and loss of function, treatment of dental abscess, skin biopsy for a suspicious cutaneous lesion, etc). Along with the specialties that perform almost non-deferrable services (i.e., anesthesiology, emergency care, obstetrics, etc), some other specialties may provide equally deferrable and non-deferrable services (i.e., surgery for benign lesions vs surgery for suspicious or malignant lesions). In this case, only non-deferrable services should be confirmed, postponing all deferrable ones.

In medium complexity, health care structures, no emergency care unit or intensive care unit are expected, as these wards

require a high complexity structure, as well as infectious and pulmonary disease specialties, which play a crucial role in this peculiar situation and are probably overworked at the moment.^[18] On the other hand, family medicine is usually practiced in clinics considered of low complexity. As the general practitioner represents the first professional the ill patient encounter within the national health system, together with the continuity care doctors operating throughout the country, the role he plays within the system in the early identification of suspect patients is of fundamental importance. As a consequence, of course, the caregiver must also be appropriately protected against the greater risk of contagion. Hence the caregiver should be well equipped with individual protection systems.

The current COVID-19 emergency is reminding us of the importance of using telehealth for care delivery in acute, post-acute, and emergencies, alongside conventional service delivery methods.^[19,20] In fact, in the case of services that do not require close contact with the patient, the specialist may continue to work through telehealth by remotely evaluating laboratory and instrumental examinations and consequently providing his remote advice (i.e., diagnostic radiologist, rheumatologist, endocrinologist, hematologist, nephrologist, laboratory physician, cardiologist). In this case, only technicians contact the patient (i.e., during blood sampling or radiological images acquisition), who once again must be well equipped with the necessary protections. In our setting, telehealth prevalence during the study period was 10.42%, similar to other settings it was increased during the COVID-19 crisis.^[15,21,22]

Also, specialists may continue to work who can take care of patients using technology to obtain a remote interview (i.e., logopedist, psychiatrist). However, this condition poses numerous problems from the professional and ethical point of view. For example, for what concerns the vocal evaluation by the laryngologist or the logopedist, there is only initial experience, and still, not convicting evidence of the efficacy of the remote service.^[23] In fact, technology is recognized to alter sounds by magnifications of some tones or minimal metallic modification of most sounds. Regarding psychotherapy and psychoanalysis, verbal and non-verbal communication may be strongly limited or even polluted by technological barriers. In this case, technological facilities may be helpful but also dangerous at the same time.

Last but not least, it is of great importance to reduce the contagion risk also for the non-medical staff, which commonly support medical personnel in their daily activities. Therefore, secretary, managerial, administrative, and financial services should be remotely performed as far as possible, making good use of the current opportunities offered by modern technology, also for what concern online payments.

Some limitations are also worth recognizing. The main limitation of the present study is the retrospective design. Another significant limitation is the limited number of patients. Furthermore, using only administrative data had limited the available information to be analyzed. Despite all these limitations, the present analysis offers insight into an independent structure's response and adaptation procedures in the first pandemic period. This experience could be beneficial for other structures with similar characteristics.

5. Conclusions

In our opinion, private health care structures may safely continue to provide non-deferrable services while respecting the restrictive

measures imposed by the Italian government and favoring the smart working modality for non-medical staff to reduce the contagion risk far as possible.

Acknowledgments

The authors would like to thank the whole staff collaborating in clinical practice.

Author contributions

Conceptualization: Serena Bertozzi, Irene Tulissi, Stefano Amura, Ambrogio P. Londero.

Data curation: Serena Bertozzi, Roberta Taricani, Fabio Patusso.

Formal analysis: Irene Tulissi, Serena Bertozzi, Ambrogio P. Londero.

Methodology: Serena Bertozzi, Roberta Taricani, Stefano Amura, Ambrogio P. Londero.

Project administration: Serena Bertozzi, Fabio Patusso.

Supervision: Ambrogio P. Londero.

Writing – original draft: Serena Bertozzi, Roberta Taricani, Irene Tulissi, Fabio Patusso, Stefano Amura, Ambrogio P. Londero.

Writing – review & editing: Serena Bertozzi, Roberta Taricani, Irene Tulissi, Fabio Patusso, Stefano Amura, Ambrogio P. Londero.

References

- [1] Kinross P, Suetens C, Gomes Dias J, et al. Rapidly increasing cumulative incidence of coronavirus disease (COVID-19) in the European Union/ European Economic Area and the United Kingdom, 1 January to 15 March 2020. *Euro Surveill* 2020;25:2000285.
- [2] Arshad Ali S, Baloch M, Ahmed N, Arshad Ali A, Iqbal A. The Outbreak of Coronavirus Disease 2019 (COVID-19)-an emerging global health threat. *J Infect Public Health* 2020;13:644–6.
- [3] Livingston E, Bucher K. Coronavirus disease 2019 (COVID-19) in Italy. *JAMA* 2020;323:1335.
- [4] ESICM. COVID-19 ICU Network; 2020. Library Catalog: www.esicm.org
- [5] Quinaglia T, Shabani M, Breder I, Silber HA, Lima JAC, Sposito AC. Coronavirus disease-19: the multi-level, multi-faceted vasculopathy. *Atherosclerosis* 2021;322:39–50.
- [6] Pearce L, Davidson SM, Yellon DM. The cytokine storm of COVID-19: a spotlight on prevention and protection. *Expert Opin Ther Targets* 2020;24:723–30.
- [7] Sardu C, Gambardella J, Morelli MB, Wang X, Marfella R, Santulli G. Hypertension, thrombosis, kidney failure, and diabetes: is COVID-19 an endothelial disease? A comprehensive evaluation of clinical and basic evidence. *J Clin Med* 2020;9:E1417.
- [8] Qin Z, Liu F, Blair R, et al. Endothelial cell infection and dysfunction, immune activation in severe COVID-19. *Theranostics* 2021;11:8076–91.
- [9] Fodor A, Tiperciuc B, Login C, et al. Endothelial dysfunction, inflammation, and oxidative stress in COVID-19-mechanisms and therapeutic targets. *Oxid Med Cell Longev* 2021;2021:8671713.
- [10] Magni A, Lapi F, Ventriglia G, Aprile PL. The epidemiology of non-deferrable disorders in general medicine. *Riv Soc Ital Med Gen* 2016;2016:31–6.
- [11] Angstman KB, Rohrer JE, Adamson SC, Chaudhry R. Impact of E-consults on return visits of primary care patients. *Health Care Manag (Frederick)* 2009;28:253–7.
- [12] Valent F, Deroma L, Cocconi R, Picierno A, Sartor A. Hospital discharge diagnoses in patients with positive blood cultures in an Italian Academic Hospital. *Ann Ist Super Sanita* 2019;55:19–25.
- [13] Basile C, Combe C, Pizzarelli F, et al. Recommendations for the prevention, mitigation and containment of the emerging SARS-CoV-2 (COVID-19) pandemic in haemodialysis centres. *Nephrol Dial Transplant* 2020;35:737–41.
- [14] Borgstein ABJ, Brunner S, Hayami M, et al. Safety of esophageal cancer surgery during the first wave of the COVID-19 pandemic in Europe: a multicenter study. *Ann Surg Oncol* 2021;28:4805–13.
- [15] Isautier JM, Copp T, Ayre J, et al. People's experiences and satisfaction with telehealth during the COVID-19 pandemic in Australia: cross-sectional survey study. *J Med Internet Res* 2020;22:e24531.
- [16] Asmundson GJG, Taylor S. Coronaphobia: fear and the 2019-nCoV outbreak. *J Anxiety Disord* 2020;70:102196.
- [17] Asmundson GJG, Taylor S. How health anxiety influences responses to viral outbreaks like COVID-19: What all decision-makers, health authorities, and health care professionals need to know. *J Anxiety Disord* 2020;71:102211.
- [18] Zhang HF, Bo LL, Lin Y, et al. Response of Chinese anesthesiologists to the COVID-19 outbreak. *Anesthesiology* 2020;132:1333–8.
- [19] Smith AC, Thomas E, Snoswell CL, et al. Telehealth for global emergencies: implications for coronavirus disease 2019 (COVID-19). *J Telemed Telecare* 2020;26:309–13.
- [20] Beran RG. Using technology to improve patient care. *Med J Aust* 2020;212:254. doi: 10.5694/mja2.50536.
- [21] Snoswell CL, Caffery LJ, Haydon HM, Thomas EE, Smith AC. Telehealth uptake in general practice as a result of the coronavirus (COVID-19) pandemic. *Aust Health Rev* 2020;44:737–40.
- [22] Thomas EE, Haydon HM, Mehrotra A, et al. Building on the momentum: sustaining telehealth beyond COVID-19. *J Telemed Telecare* 2020;1357633X20960638. doi:10.1177/1357633X20960638.
- [23] Bryson PC, Benninger MS, Band J, Goetz P, Bowen AJ. Telemedicine in laryngology: remote evaluation of voice disorders-setup and initial experience. *Laryngoscope* 2018;128:941–3.