

## Impact of COVID-19 Pandemic on Telehealth and In-Person Visits: Implications from an Emergency Department in Argentina

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### Abstract

Since Argentina's government declared a national emergency to combat the COVID-19 pandemic with a lockdown status, it has produced consequences on the healthcare system. We aimed to quantify the effect on the Emergency Department (ED) visits at Hospital Italiano de Buenos Aires. Our electronic health data showed that ED in-person visits declined 46% during the COVID-19 pandemic, from an overall of 176,370 visits during 2019 to 95,421 visits during 2020. Simultaneously, there was a telehealth visits boom when mandatory quarantine began (March 20, 2020): from a median of 12 daily in February 2020 to a median of 338 daily in April 2020; reaching a maximum daily peak of 1,132 on March 26 2020. For a while, teleconsultations replaced ED visits. Then, when face-to-face visits began to increase, teleconsultations began to decrease slowly, as the phenomenon reversed.

### Keywords:

Emergency Medical Services, Hospital Information Systems, Telemedicine.

### Introduction

We already know that telecommunications represent a potential strategy to reduce some face-to-face visits [1, 2]. In the Emergency Department (ED) setting we previously developed a virtual care program for patients with Upper Respiratory Tract Infections during outbreaks in 2018 [3]. And in 2019 we implemented a pilot study of the Triage Program, as an unscheduled synchronous encounter (refers to the delivery of health information in real-time) between physicians and adult patients with other non-urgent problems and clinical consultations [4]. They were useful and safe strategies to resolve patients' needs, representing innovative and feasible experiences for our institution.

On March 13, 2020 the WHO Director General announced COVID-19 as a pandemic [5]. Immediately, Argentina's government declared a national emergency to battle it with a lockdown status and begin mandatory quarantine [6]. People must stay home, separate themselves from others, monitor their health, and follow directions from their state or local health department.

In this context, the CDC issued a guide advising persons and health care providers to adopt social distancing practices, specifically recommending that health care facilities and providers offer clinical services through virtual means such as telehealth [7]. That occurred in our institution from March 20, 2020. In fact, the aim of the present project was to quantify the

effect of COVID-19 on face-to-face ED visits, as well to estimate the frequency of use of telehealth services.

### Methods

#### Design

Observational, descriptive, cross-sectional study, with ED visits between January 2019 and December 2020.

#### Setting and data collection

Our study took place at Hospital Italiano de Buenos Aires, a community-based tertiary care hospital located in Buenos Aires, Argentina [8]. It has an ED that provides attention for unscheduled consultations 24 hours a day, 365 days a year; and usually attends about 500 consultations daily or 160,000 annually. We included all consecutive consultations from January 2019 to December 2020, face-to-face or teleconsultations of the Triage Program.

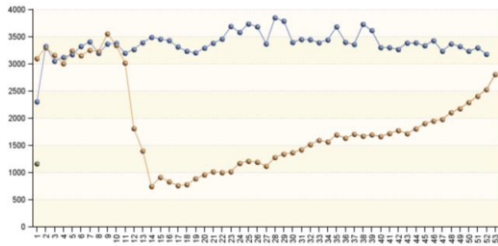
We used secondary databases from the hospital electronic health record (EHR) and the institutional ED dashboard. All patient health information is stored in a single Clinical Data Repository (CDR) fed by the EHR. The CDR stores clinical documents for each patient, with the highest quality standards worldwide.

### Results

#### ED face-to-face visits

A total of 95,421 visits occurred during 2020, which was 45.90% lower than during the same period a year earlier (176,370 visits occurred during 2019). Trends in visits are shown in **Figure 1**. The lowest number of visits occurred during April 4-10 (corresponding to epidemiological week 14). Then, as quarantine measures were relaxed, they began to rebound toward historic stability.

**Figure 1.** Face-to-face ED visits during 2019-2020 period. X axis represents epidemiological weeks. Y axis represents the number of visits per EPI week. Incident lockdown: March 20, 2020. Opening up of lockdown (to be gradually loosened in several stages to lead to the return to normality): July 17, 2020.



### Telehealth ED visits (from Teletriage Program)

The decrease in face-to-face visits was accompanied by an increase in telehealth visits. While there were 330 consultations in January and February 2020 (115 per month), with a daily median of 12 consultations (pre-pandemic); since March 8, 2020 the volume of these visits increased, reaching intra-pandemic a maximum daily peak of 1,132 on March 26, 2020 (Figure 2).

**Figure 2.** Telehealth ED visits from Teletriage Program during March 2020. X axis represents every day. Y axis represents cumulative number of visits, per day. Incident lockdown: March 20, 2020.



From March to July, there were 50,885 telehealth visits, with a daily median of 338. In contrast, when face-to-face visits began to increase, teleconsultations began to slowly decrease as the reverse phenomenon, staying stable in the last quarter. During December 2020, the maximum daily value was 437 on 12/28/2020 and the minimum value was 171 on 12/06/2020.

Between 12/01/2020 and 12/31/2020 a total of 7,898 telehealth visits occurred, with a mean of 254 daily (21 times higher than the pre-pandemic number). Regarding the status of teleconsultations (from December 2020): 93.31% (7,367) were attended without inconvenience (no any failure with video, audio, chat, or interruptions to the communication), and 6.69% (529) had some failure (remained as assigned or present status or was resolved by phone-call).

### Discussion

Our electronic health data showed that ED visits declined 46% during the COVID-19 pandemic, from 176,370 visits during 2019 to 95,421 visits during 2020. Simultaneously, there was an unprecedented telemedicine boom from a median of 12 daily, in February 2020; to a median of 338 daily, in April 2020.

Consistent with our findings from Argentina, the U.S. reported a 42% lower rate of ED visits, compared with the same period a year earlier [9] We already know from evidence that choosing telemedicine was associated with technology access (RR 1.10; 95%CI, 1.06-1.14) and in-person visit barriers (RR 1.70; 95%CI, 1.41-2.05) [10] Physical barriers probably became the

most relevant reason during the pandemic, when telemedicine represented a mandatory way for patients due to fear of getting infected, and also for physicians due lack of choice. This could be explained by the inverse phenomenon of the drop in the number of teleconsultations, once the face-to-face ED visits were restarted and quarantine measures were relaxed. During January 2021 this daily number of teleconsultations remained stable, and we had a mean of 270 per day. However, the decrease in the number of face-to-face visits brought the benefit of providing medical care in ED without delay, because waiting times (from the time the patient is admitted until he is seen by a doctor) and time of care (until the patient is resolved: home discharge or unscheduled hospitalization) decreased both. All of these probably was the consequence of the decentralization phenomenon of healthcare and decreases of the crowding that usually affects the ED [8].

Previous reports from Austria [11] and Hong Kong [12] showed a decline of cardiovascular admissions. This suggests that efforts were required to ensure delivery of services that, if deferred, could result in patient harm. Even during the COVID-19 pandemic, persons with medical emergencies should be able to be provided care without delay [13]. Medical care delay or avoidance might increase morbidity and mortality risk associated with treatable and preventable health conditions and might contribute to reported excess deaths directly or indirectly related to COVID-19 [14].

We have to consider at least three limitations of our study. First, the data in this analysis are from a sample of a single center. Second, it is a retrospective analysis of secondary data, and it would have been interesting to measure other variables (examples: physicians' satisfaction, patient satisfaction, effectiveness in connection, user characteristics). This was not possible, and is pending for future studies. Third, associations are implied as interpretations of results, but the study lacks causal investigation to imply cause and effect.

Probably, the regulatory waivers in place during COVID-19 might have helped increase adoption of telehealth services along with public health guidance encouraging virtual visits [7]. However, we wonder about the role of telemedicine in the long term, based on regulatory uncertainty, and not definitive regulatory policy. That's why changes might continue after a pandemic, or not.

### Conclusions

Telehealth was an important tool in caring services while keeping patients and health providers safe during COVID-19 outbreak. There was an unprecedented telemedicine boom, probably when it was a mandatory way for patients (due to fear of getting infected), and also for physicians due to lack of choice (due the mandatory quarantine and lockdown status). Once the ED in-person visits were restarted and quarantine measures were relaxed, we found the drop in the number of teleconsultations, as an inverse phenomenon.

Therefore, the use of telehealth should improve the provision of health services. However, we wonder about the role of telemedicine in the long term, based on regulatory uncertainty, without a definitive regulatory policy. We think that changes might continue after a pandemic, or not.

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