

# Organization of a reference haemophilia unit and its change of activity during the COVID-19 pandemic

Dear Editor,

In January 2020, with the increase in COVID-19-infected cases affecting more than 170 countries, the WHO declared this outbreak a public health emergency of international concern; on March 11, it was declared a pandemic.<sup>1,2</sup> The first case in Spain was diagnosed in 1 February 2020 and in Catalonia in 25 February 2020.<sup>3,4</sup> Since then, different protocols were issued to prevent exposure to the new virus and to improve management strategies.

The first national guidelines for the prevention of occupational hazard against the novel coronavirus were issued by the Ministry of Health on March 5, establishing a series of preventive measures which included reducing face-to-face visits and on-site staff, limiting exposure at workplaces such as hospitals.<sup>5</sup>

At Vall d'Hebron Hospital in Barcelona, the first protocol regarding COVID-19 was issued on March 11, the same day that schools and other educational centres were closed down in the city. On March 15, a national lockdown was established after declaring the state of emergency.<sup>6</sup>

The Haemophilia Unit (HU) at Vall d' Hebron Hospital provides comprehensive and dedicated care to patients with bleeding disorders. It has a multidisciplinary team lead by haematologists, 2 on weekdays and 1 on call for nights and weekends. The nursing staff is divided in 3 shifts to guarantee 24/7 attention, having 2 nurses during weekday mornings to guarantee better coverage during the busiest shift. The HU also includes orthopaedic trauma surgeons, a physical rehabilitation specialist, a hepatologist, an infectious disease specialist and a dentist who visit the patients at the HU once or twice a week. The hospital's pharmacy department supplies the haemostatic treatment to the patients and guarantees a proper supply and traceability of the clotting factor concentrates. To do so, patients need to book an appointment with the hospital's pharmacy, in order to pick up their monthly medication prescribed by the haematology team.

With the COVID-19 outbreak, the Unit searched for a new system to continue providing the same medical attention without putting the patients or staff at risk.

We analysed the organization and activity of the HU during the 73 days of the state of emergency period (March 9-May 20). The change in activity was measured with the available data from the in-person visits, tele-visits, blood extractions and treatments performed by the HU healthcare providers. We then compared them with the activity of the same period during the year before. The analysis was performed weekly and over the entire study period mentioned above.

At the HU, we started to carry out preventive measures 6 days before the full lockdown. The in-person visits were restricted to emergencies related to bleeding disorders, encouraging telemedicine for the rest of the consults. The on-site staff was reduced to the minimum necessary, with only 1 haematologist on-site while the other was tele-working, and 1 nurse on 12 hours shifts. The 24/7 coverage was guaranteed with the original nursing team and the haematologist on-call.

The haematology team reviewed on a daily basis the scheduled face-to-face visits between March 10 and May 20, identifying the visits which could be carried out remotely. Most of the routine follow-up visits were carried out over the phone in March or, if possible, postponed until June and onwards. Urgent outpatient visits were carried out, usually related to recent bleeding events, as well as postoperative follow-ups in these patients.

Regarding clinical trials, screening and baseline visits were postponed until the end of the state of emergency. Follow-ups were done by phone if possible. In-person visits were performed only if the study protocol required it.

The nurse consult was done remotely reviewing the e-diary Haemoassist® and contacting patients over the phone in order to maintain follow-up on prophylactic treatment and adherence control. The hospital visits were restricted to patients who needed hospital administration of haemostatic treatments and urgent blood extractions.

Regarding the pharmacy department, during the first 2 weeks of March they confirmed stocks with all pharmaceutical companies who provide haemostatic medication to ensure the necessary supply for our patients, even if the borders closed. They also started the 'Home Delivery Programme' aiming to distribute the haemostatic medication to the patient's home, avoiding the monthly pickup trips to the hospital.

As a result of the new COVID-19 contingency plan at the HU, we observed a 38% increase in tele-visits performed by the haematology team in comparison with the previous year (371 vs 470). On the other hand, the analysis showed a 73% reduction in scheduled in-person visits (343 vs 92), concerning follow-up and first visits; and a 55% reduction in the number of emergencies attended at the HU (78 vs 35) in comparison with the previous year (Figure 1).

Regarding the nursing activity, a reduction in the work volume was observed, as blood extractions were 53% less than the previous year (395 vs 184) and administered treatments dropped 25% (605 vs 453) compared with the 2019 period (Figure 1).

The weekly analysis (Figure 2) showed that the highest volume of visits occurred during the first 2 weeks of the pandemic (31.2% of the entire medical activity of this 2020 period) because patients needed more information regarding the virus and the care required. After those first weeks, we observed a global reduction of activity (reduction of 81%-95%) that coincided with the Spanish home-confinement period, as well as the fact that our bleeding disorder population was already informed about the pandemic and the changes regarding the medical attention at the HU. The reduction in on-site visits was mainly due to the remote follow-up but it is also possible that the lockdown caused a reduction of physical activity and less bleeding events in our patients.

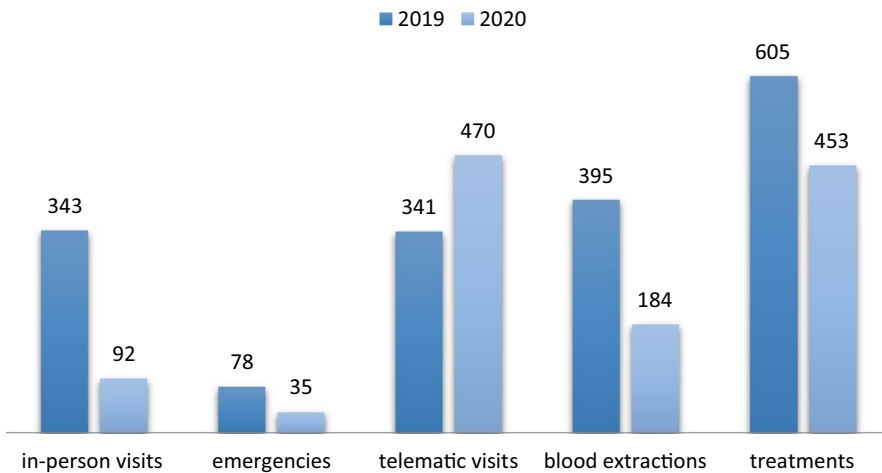
During the weeks of May 2020, healthcare providers' activity started to increase, coinciding with the end of the confinement period and the start of the de-escalation plan in Barcelona. This is possible due to subsequent restart of sports activities as well as the restart of some invasive procedures scheduled at our hospital.

The Home Delivery Programme was able to deliver clotting factors all over Catalonia. At first, home supply to patients who lived

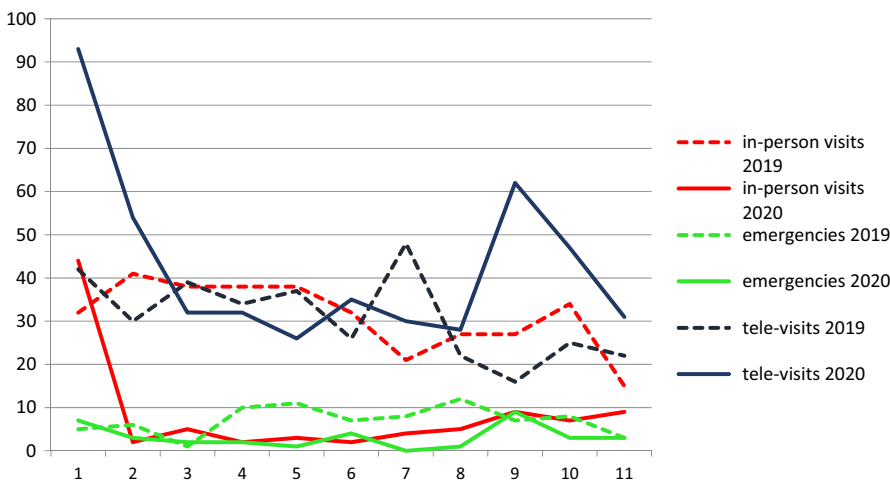
**Essentials**

- The SARS-CoV-2 pandemic has forced hospitals to adapt their work to optimize the diagnosis and treatment of patients with COVID-19 and to avoid new infections.
- Haemophilia Unit at Vall d'Hebron University Hospital in Barcelona, Spain.
- We observed a 73% reduction of in-person visits and an increase of 38% of virtual ones. The Home Delivery programme was able to deliver 95% of all haemostatic treatment supplied to patients.
- COVID-19 has permanently changed the way hospitals work, making it more necessary to implement new telemedicine tools besides phone calls and e-diaries. Our experience with this new system was satisfactory so we think it could be of great interest for those in a similar situation.

**Activity Comparison**



**FIGURE 1** HU activity comparison between March 9 and May 20 from 2019 and 2020



**FIGURE 2** Haematology weekly activity in 2020 in comparison with 2019

outside the city of Barcelona or had special needs was prioritized but it was quickly extended to all patients. Two-hundred and thirty refrigerated shipments were delivered for monthly consumption to a total of 124 patients during the period of 9 March and 20 May 2020. Those shipments represented 95% of all haemostatic treatment supplied to patients. The other 5% was supplied at the HU to patients who came for on-site visits. The shipments involved a total of 460 phone calls (Over 400% more than the period before) between the hospital pharmacy team and nurse team with the patients, to ensure package delivery as well as for the treatment adherence recall. The clinical follow-up continued to be done with the Haemoassist® App in 80% of the patients.

The pandemic has changed the management of patients with chronic diseases such as bleeding disorders, increasing the use of telemedicine tools to ease the healthcare system.<sup>7,8</sup> This includes a variety of technologies to ensure remote medical attention such as live audio and video calls, e-portals or other type of messaging technologies, remote patient-monitoring tools (For example the Haemoassist® App which we have been using in our unit for many years now) and store-and-forward technologies that collect images and data to be transmitted at a later time.<sup>8,9</sup>

In our centre, before and during the pandemic, the telemedicine tools available were only phone calls and e-diaries. Now, video consultations are available and face-to-face visits are still restricted to patients who need a physical examination or additional tests.

The Home Delivery Programme has been especially important to distribute haemostatic treatment to patients all over Catalonia, avoiding hospital visits during the confinement period and the SARS-CoV-2 infection. This programme will continue, prioritizing patients who live outside the city of Barcelona.

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Martínez García, MF and Benitez Hidalgo, O designed the study, collected data and analysed results. Martínez García, MF wrote and edited the manuscript too. Alvarez Martinez, E; Juarez Gimenez, JC; Fernandez Sarmiento, C; Suito Alcantara, M; Soto Bonet, N and Cardona Lopez, R collected data. Iacoboni Garcia-Calvo, G helped editing the manuscript. Gironella Mesa, M supervised the study.

#### DISCLOSURES

The authors have no competing interests.

Maria Fernanda Martínez García<sup>1</sup> 

Olga Benitez Hidalgo<sup>1</sup>

Eva Alvarez Martinez<sup>2</sup>

Juan-Carlos Juarez Gimenez<sup>3</sup>

Carmen Fernandez Sarmiento<sup>2</sup>

Milagros Suito Alcantara<sup>4</sup>

Nuria Soto Bonet<sup>2</sup>

Raquel Cardona Lopez<sup>2</sup>

Gloria Iacoboni Garcia-Calvo<sup>5</sup>

Mercedes Gironella Mesa<sup>5</sup>

<sup>1</sup>Hemophilia Unit, Hematology Department, Vall d'Hebron Hospital, Barcelona, Spain

<sup>2</sup>Hemophilia Unit, Vall d'Hebron Hospital, Barcelona, Spain

<sup>3</sup>Hospital Pharmacy Department, Vall d'Hebron Hospital, Barcelona, Spain

<sup>4</sup>Hemostasis Unit, Hematology Department, Vall d'Hebron Hospital, Barcelona, Spain


<sup>5</sup>Hematology Department, Vall d'Hebron Hospital, Barcelona, Spain

#### Correspondence

Maria Fernanda Martínez García, Hemophilia Unit, Hematology Department, Vall d'Hebron Hospital, Barcelona, Spain.

Email: m.martinez.13@vhebron.net

#### ORCID

Maria Fernanda Martínez García  <https://orcid.org/0000-0003-0171-3849>

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