

LETTER

# Transfusion medicine during COVID-19 outbreak in the hotspot of Spain

To the Editor

The coronavirus disease (COVID-19) pandemic was first confirmed in Spain on 31 January 2020.<sup>1</sup> Community transmission was confirmed in mid-February, and a national lockdown was imposed on 14 March. By 31 March, the cumulative cases in Spain were 97 724 with 8189 deaths, and most cases and deaths in the country were recorded in Madrid with 27 968 cases and 3392 deaths.<sup>2,3</sup> Managing patients with COVID-19 in Madrid, the epicenter of the pandemic in Spain with more than 25 000 deaths by 4 May,<sup>3</sup> has required

innovative solutions in all departments of hospitals. The Transfusion Medicine Service of La Paz University Hospital, a tertiary care institution in Madrid, provides a 24-hour service to 49 available specialties that provides an annual health care activity of 50 000 admissions to 1286 beds. Transfusion data from 2019 includes 19 710 red blood cell (RBC) units, 3983 platelet pools of four to six whole blood-derived platelet concentrates, and 3900 fresh frozen plasma (FFP) units for more than 5000 patients.<sup>4</sup> The immunohematology laboratory performs an average of 3500 studies per month. Pandemic

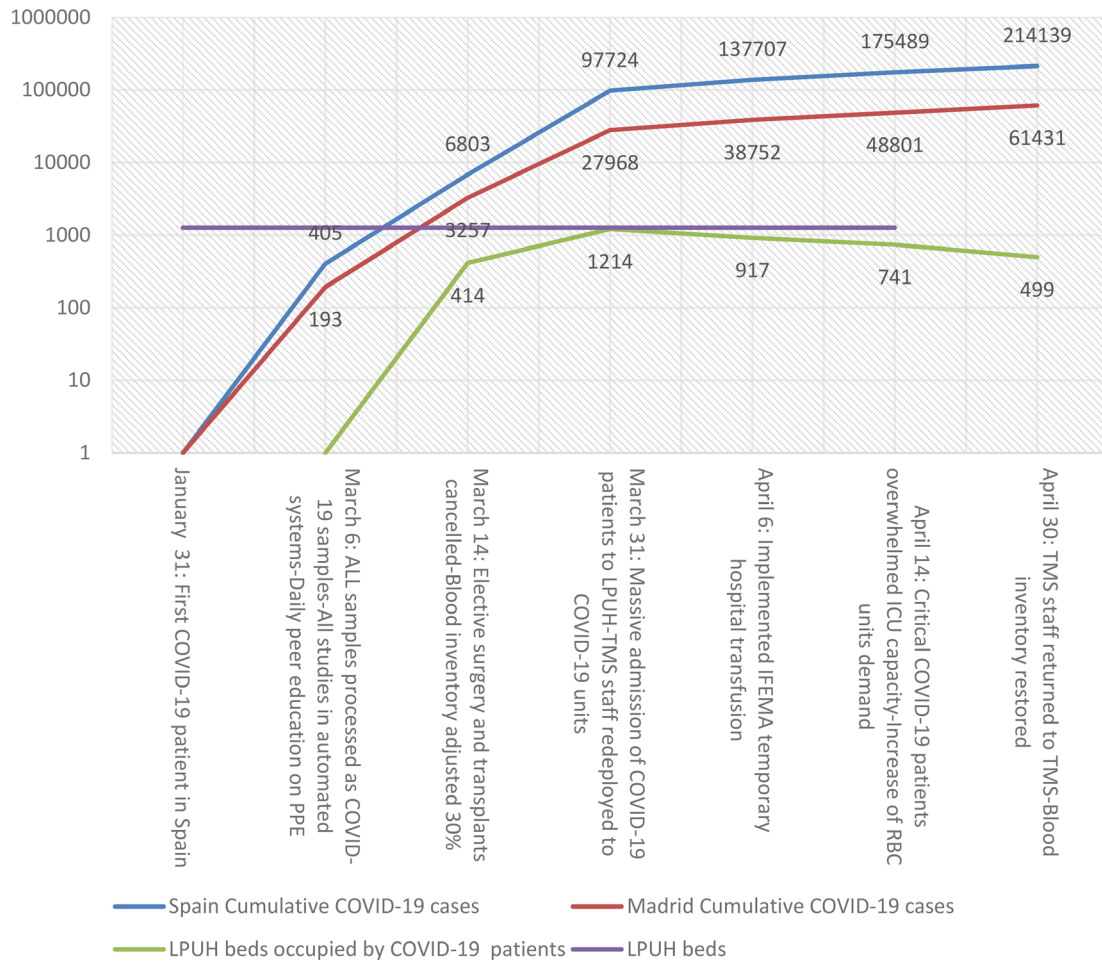


FIGURE 1 Transfusion Medicine pandemic scenario timeline [Color figure can be viewed at wileyonlinelibrary.com]

**TABLE 1** Demographic characteristics of patients with COVID-19 who received 823 RBC transfusions at La Paz University Hospital during the peak of the pandemic

Characteristic	
Total patients receiving RBC units	n = 203
Age, y	
Mean ± SD	67.6 ± 15.5
Range	24-96
Sex, n (%)	
Male	131 (65%)
Female	72 (35%)
Pretransfusion hemoglobin (g/dL)	
Mean ± SD	7.9 ± 1.23
ICU (114 patients)	8.0 ± 1.23
Range	
ICU	6.3-9.1
Restrictive transfusion threshold (7-8) <sup>a</sup>	
ICU	177 (87%)
	103 (90%)

Abbreviations: COVID-19, coronavirus disease 2019; ICU, intensive care unit; RBC, red blood cell.

<sup>a</sup>According to AABB practice guidelines.<sup>5</sup>

planning scenarios (Figure 1) have focused on minimizing the impact of blood shortages, encouraging the appropriate usage of blood products, and closely monitoring the blood demand. We processed all samples in the laboratory as “suspected” samples from 13 March to avoid the spread of the virus among laboratory personnel, resulting in no COVID-19 cases recorded in the department. From 6 April, we implemented blood transfusion in Madrid Fair Institution (IFEMA), a temporary support hospital created in an exhibition center on 23 March, which admitted more than 3000 patients with a mild form of COVID-19 during the pandemic. We reviewed the Transfusion Medicine Service activity from 1 March 2020, to 30 April 2020, which was the peak of the pandemic when 2604 patients with COVID-19 (positive polymerase chain reaction results) were admitted, overwhelming the hospital’s capacity. Compared with the same period in 2019, the number of platelet pools transfusions performed declined by 40%. Similarly, the number of RBC transfusions performed decreased by 26% in March 2020 after elective surgery, and transplants were suspended. However, the decline in April 2020 was only 5%, a result of the increasing demand for RBCs among patients with COVID-19. A total of 823 RBC units (median, 3; range, 1-26) were transfused in 203 recipients with COVID-19 from March to April 2020. Neither platelet pools nor FFP transfusion was significant among the COVID-19–

affected population. The major causes of transfusion were anemia of inflammation (69%) and bleeding (7%). The mean pretransfusion hemoglobin concentrations, as shown in Table 1, was 7.9 g/dL for the overall group, and the mean pretransfusion hemoglobin for 114 patients transfused at the intensive care unit was 8.0 g/dL. One hundred eight (95%) patients with COVID-19 transfused in the intensive care unit (ICU) were on mechanical ventilation, and 10 (9%) were on extracorporeal membrane oxygenation, while five patients (4%) were transfused due to bleeding complications. The overall need for RBC transfusion among patients with COVID-19 was 7.78% (203/2604) and increased to 48% in the group admitted to the ICU (114/237). This is in contrast with the need for RBC transfusion at IFEMA, which was significantly lower (<1%) probably due to the less severe clinical profile of patients with COVID-19 admitted to the temporary hospital. In summary, COVID-19 imposes a significant increase in the number of RBC transfusions performed among patients with severe disease. A restrictive RBC transfusion threshold for nonbleeding, hospitalized, and most critically ill adult patients with COVID-19 and a strict adherence application of evidence-based guidelines would be advisable to attenuate transfusion-related complications and simultaneously avoid blood product supply exhaustion.

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