Commentary

Integral management of COVID-19 in Madrid: Turning things around during the second wave—Authors’ reply

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We have carefully read the reply letters by López-Encuentra A [1], Lobo F [2], Zunzunegui MV [3], Díaz-Menéndez M [4], and Fontán-Vela M [5] as first signatories on our Comment on Integral management of COVID-19 in Madrid [6]. We will respond to the questions about the measures implemented in the specific period of the second wave and up to the date of writing the Commentary (December 16, 2020). The factors contributing to a third wave will have to be analyzed at a later stage, based on a sound and more objective assessment. In line with some comments, we must acknowledge some factors in the region that facilitate greater peaks of incidence in our region. Firstly, there is a high degree of social interaction, partly because the Community of Madrid (CM) has the highest population density in Spain (834 inhabitants/km² in 2019), which is 12% higher than the next province in terms of density, Barcelona [7]. In addition, the CM has the largest number of social-healthcare residences with more than 100 beds [8], a factor that increases the incidence and severity of COVID outbreaks, as has been demonstrated in other regions with similar characteristics, such as in the area surrounding the city of Milan [9]. Below we respond to four aspects that are also worth of reflection:

Diagnostic tests: Despite the shortage of equipment and consumables at the end of the first wave, an effort was made to increase the diagnostic capacity of the Microbiology Departments of all hospitals in the CM, and a commitment was made to particularly implement molecular diagnostic platforms. Overall, the diagnostic activity increased to 26,300 PCR tests per day in September, 27,400 at the end of October, and more than 28,000 in November 2020. This has resulted in more than 2 million PCR tests for SARS-CoV-2 done in the region from September to December 2020.

Point-of-care antigen tests (AT) are for the WHO [10] particularly useful in the diagnosis of infection if PCR results are not available at short notice, or in case of overwhelmed health-care system. They are also recommended in the study of contacts, especially in case of outbreaks or in areas with high community transmission, contexts in which the predictive values are sufficiently high to allow effective infection control, which is justified because even in the absence of symptoms the viral load levels are similar to that in symptomatic cases. All these circumstances occurred in the CM at the worst moments of the second pandemic wave.

According to data provided by the Spanish Ministry of Health to the ECDC [11], the diagnostic capacity of CM has reached 21 tests (PCR or AT) per case detected by the end of 2020, which has placed the region within WHO recommendations. From the beginning of October until the end of 2020, an average of 2341 diagnostic tests per 100,000 inhabitants were performed, figures that are above those of France (2084 tests/100,000), Italy (1906 tests/100,000) or the Spanish average number (2015 tests/100,000) in the same period [11].

Impact of perimeter restrictions: It is not correct to understand that perimeter containment only acts on mobility control, in fact, it includes many other associated measures such as limiting capacity and working hours for commercial activity, or diagnostic-tracking-screening campaigns as main interventions [12, 13]. Probably for this reason, the measures applied in the CM in confined areas caused a more pronounced decrease in the incidence of cases in...
perimetric areas than where these restrictions were not applied. In fact, according to the analysis proposed by Fontán-Vela, who raises this point with his reply, the weekly percentage change of incidence was of −22.08 versus −11.52 in areas with versus without lockdown.

**Resources allocated to pandemic control.** Up to December 2020 a total of 11,324 new posts were created in the CM to reinforce the fight against COVID (1067 medical personnel, 5063 nursing personnel, 3274 auxiliary personnel, and 1,247 non-health professionals) [14]. In addition, in September, screening activity was boosted with 456 new contact-tracers, so that by the end of the year the number of these posts, from primary care, Army and call-centers, rose to 1590 (approximately 1 per 4264 inhabitants).

**Economic impact:** COVID’s integrated management during the second wave also sought to cause the least economic impact. The quarter-on-quarter growth of GDP in the fourth quarter (+4.4%) confirms the economic reactivation in Madrid pursued by the measures adopted by the regional government, which seek economic activity without renouncing to the protection of health. The distribution accommodation and catering services sector grew by 11.2%, continuing the recovery started in the third quarter and its positive contribution to the CM accounts [15].

In conclusion, we would like to emphasize that i) it is necessary to contemplate a wide range of measures to limit the expansion of COVID cases, which should be grounded on the restriction of social interactions and on a simplified mass testing, ii) containment measures that have the least impact on the economy should be preferred, and iii) other measures that are already being implemented will have a positive impact, such as vaccination programs and epidemiological monitoring of mutational variants by sequencing. We are confident that, with the positive contribution of all citizens and professionals, we will see the end of this disrupting pandemic soon.

**Declaration of Interests**

FJC, JSR and PB work part-time as advisors to the Ministry of Public Health in the Community of Madrid. JC is assistant to the Vice-counselor of public health in the Community of Madrid. AZ is the Vice-counselor of Public Health in the Community of Madrid. FJMP is the Director of Social and Health Coordination in the Community of Madrid.

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