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## The resurgence of acute bronchiolitis cases after the declaration of the end of state of emergency<sup>☆</sup>



### Resurgimiento de los casos de bronquiolitis aguda tras la declaración del final del estado de alarma

Dear Editor:

Acute bronchiolitis (AB) is a viral infection that causes annual outbreaks, in the case of Spain, with the epidemic season starting approximately in October of one year and ending in March or April the following year.<sup>1</sup> The non-pharmacological interventions implemented on the Spanish population as a result of the coronavirus 2019 (COVID-19) pandemic were responsible, at least in part, for a decrease in the incidence of childhood infectious diseases<sup>2</sup>, including AB.<sup>3,4</sup> In May 9, 2021, the government of Spain declared the end of the state of alarm, which was followed by a progressive de-escalation of the preventive measures implemented until that time. This could have led to the re-emergence of different viral agents involved in the pathogenesis of AB, as described in other geographical areas.<sup>5</sup>

In an extension of a previous study<sup>3</sup> and in the framework of the same research project, the Spanish Collaborative Study for the Care of Infants Hospitalised with Acute

Bronchiolitis (known by the acronym of its Spanish name, ECEALHBA), we conducted a substudy with the aim of determining whether there was a resurgence of AB cases in the form of an outbreak after the state of alarm was lifted, and to compare the outbreaks in different epidemic seasons, in addition to the frequency of hospitalization, grouped in different periods based on the pandemic.

We collected data on the cases of AB that required admission prospectively from April 16 to August 31, 2021 on the same study variables and applying the same inclusion criteria.<sup>3</sup> Thus, we analysed all cases of AB over 6 epidemic seasons, 2015–2016 to 2020–2021. We established 3 study periods based on 2 key dates: (1) Prepandemic period (P1), from September 1, 2015 to March 15, 2020 (declaration of state of alarm); (2) COVID-19 pandemic during state of alarm (P2), from March 15, 2020 to May 9, 2021 (end of state of alarm), and (3) COVID-19 pandemic after lifting of state of alarm (P3), from May 9, 2021 to the end of data collection.

A total of 4809 infants with a median age of 2.4 months (interquartile range, 1.4–4.5) and a median length of stay (LOS) of 4.4 days (standard deviation, 2.7), of who 384 (8.0%) required admission to the intensive care unit (ICU). The epidemic seasons before the pandemic took place in the typical time of year, the winter months, while in the 2020–2021 season, during the pandemic, it took place in the summer months and was shorter and less severe compared to preceding seasons (Table 1A and Fig. 1).

The most common profile of infants admitted to hospital during P2 compared to P1 and P3 was male sex, older age, negative for respiratory syncytial virus (RSV), with a shorter LOS and not requiring admission to the ICU. However, when we compared infants admitted during P3 (the period with the summer outbreak) with those admitted in P1 (period with typical winter outbreaks), these differences were not significant (Table 1B).

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**Table 1A** Weeks that the epidemic season started, ended and peaked, and its duration. Total admissions in the 6 epidemic seasons under study.

Season/characteristics	Start of season	End of season	Season peak	Duration of season	Admissions per season
2015–16	Week 47 (5)	Week 15 (4)	Week 1 (107)	21 weeks (793)	891
2016–17	Week 45 (10)	Week 13 (7)	Week 1 (112)	21 weeks (889)	1013
2017–18	Week 43 (5)	Week 18 (5)	Week 52 (82)	28 weeks (896)	928
2018–19	Week 44 (4)	Week 24 (3)	Week 1 (109)	33 weeks (960)	995
2019–20	Week 47 (10)	Week 12 (4)	Week 1 (105)	18 weeks (656)	767
2020–21	Week 22 (2)	Week 34 (0)	Weeks 28 and 29 (18)	13 weeks (153)	215
Average epidemic season profile <sup>a</sup>	Week 45 (6.8)	Week 16 (4.6)	Week 1 (103)	24 weeks (838.8)	961.8

The numbers in parentheses correspond to the cases requiring hospital admission in the corresponding week or weeks.

Start of season: week from which the increase in hospital admissions became noticeable and progressive until reaching the epidemic peak.

End of season: the week after the peak at which the number of admissions was the same or fewer than the number at the week identified as the start of the season.

<sup>a</sup> The values for the average epidemic season were calculated solely based on the first 5 seasons before the COVID-19 pandemic. Season weeks are presented as a whole number (rounded up to avoid decimal values).

**Table 1B** Comparison of clinical and demographic characteristics of infants admitted with a diagnosis of acute bronchiolitis in the 3 periods under study.

Variable	Prepandemic (P1) (n = 4580)	Pandemic (P2) (n = 70)	Pandemic (P3) (n = 159)	P
Sex, male (n = 2790)	2664 (58.2%)	50 (71.4%)	76 (47.8%)	.002
Nationality, Spanish (n = 4047)	3850 (84.7%)	58 (82.9%)	139 (87.4%)	.565
Age group				
Newborn (n = 562)	535 (11.7%)	7 (10.0%)	20 (12.6%)	
Infant ≤ 3 months (n = 2283)	2194 (47.9%)	20 (28.6%)	69 (43.4%)	.007
Infant > 3 month (n = 1964)	1851 (40.4%)	43 (61.4%)	77 (44.0%)	
LOS group				
≤3 days (n = 2122)	2008 (43.8%)	43 (61.4%)	71 (44.7%)	.014
>4 days (n = 2687)	2572 (56.2%)	27 (38.6%)	88 (55.3%)	
Aetiological investigation, yes (n = 4609)	4382 (95.7%)	68 (97.1%)	159 (100%)	.001
RSV				
Not tested (n = 202)	198 (4.3%)	3 (4.3%)	1 (0.60%)	
Positive (n = 2977)	2841 (62%)	9 (12.9%)	127 (79.9%)	<.001
Negative (n = 1630)	1541 (33.6%)	58 (82.8%)	31 (19.5%)	
Admission to ICU, admitted (n = 384)	366 (8.0%)	0 (0%)	18 (11.3%)	.001

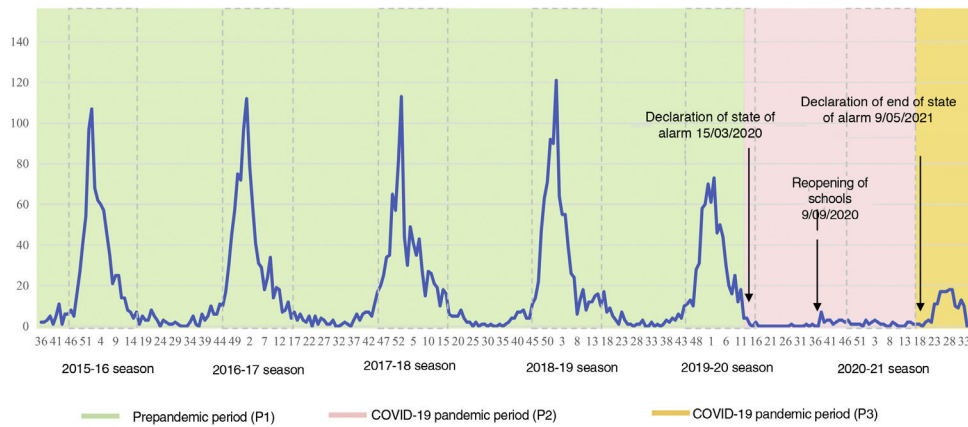
ICU, intensive care unit; LOS, length of stay; RSV, respiratory syncytial virus.

The numbers in parentheses correspond to the percentage of the category over the total in each group or period into which the admissions due to bronchiolitis were classified.

Our data evince a resurgence of AB cases in the population of central and eastern Spain, unexpectedly, in the summer months, in the 2020-2021 epidemic season, 3 weeks after the lifting of the state of alarm. A similar phenomenon had also been described in geographical areas in the southern hemisphere, with a resurgence of respiratory infections by RSV in November and December 2020, which correspond to the summer in these areas, after the de-escalation of measures implemented to contain the pandemic.<sup>5</sup> This

resurgence has also been described in other regions of the northern hemisphere.<sup>6</sup>

In this study, the LOS and the proportion of cases with detection of RSV that required admission to the ICU were greater during the pandemic compared to previous seasons. In our study, we only found a slight increase in the proportion of admission to the ICU in P3 (11.3%) compared to P1 (8%), with no overall differences in LOS (Table 1B).



**Figure 1** Graphic representation of the total admissions due to bronchiolitis in the 16 participating hospitals during the 6 epidemic seasons under study.

The rectangles with a dashed border indicate the bounds of the epidemic seasons, from week 45 (first of November) to week 16 (third of April). These are average bounds obtained from our data. For further information, see [Table 1A](#).

These findings evince the importance of social distancing, hand hygiene and mask use, among other measures, for effective prevention of the spread of the viruses involved in the annual outbreaks of AB.

At the time of this writing, in November 2021, the members of the ECEALHBA research project have already been noticing, in their recent daily clinical practice, what appears to be an earlier start of the 2021–2022 epidemic season in addition to an increase in severity, virulence and younger age of affected patients. Confirming these perceived trends and attempting to identify the underlying causes of these particularities are among the future research objectives of the ECEALHBA project.

## Appendix A. Members of the ECEALHBA project research group

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<sup>1</sup> Appendix 1 details the members of the ECEALHBA project research group.

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