

# Presentations to the emergency department in Bologna, Italy, during COVID-19 outbreak

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## ABSTRACT

The Emilia Romagna (ER) region, Italy, in March 2020 has seen one of the largest and most serious clusters of COVID-19 in the world. In the period of 30 January to 31 May 2020, the number of paediatric emergency department presentations in Bologna, ER, decreased by 50% compared with the same period of 2019. Visits declined for every age group, with a decrease of 35%, 55% and 46% for the three age groups 0–2, 2–10 and 10–14 years, respectively. The admission rate increased from 5% to 13%. Fewer non-urgent attendances, alongside a decrease in seasonal infections due to the lockdown, appear to be the main reasons.

The Emilia Romagna (ER) region, in northern Italy, in March 2020 has seen one of the largest and most serious clusters of COVID-19 in the world. In Italy, despite aggressive containment efforts and strict social limitations ([figure 1](#)), the disease has continued to spread until the second week of April 2020 when the number of affected patients reached 108 257. As of 31 May, the numbers of confirmed cases and deaths related to COVID-19 are 233 019 and 33 415, respectively, in Italy, and 27 790 and 4114 in ER.<sup>1</sup>

Concomitantly with this exploding outbreak, hospital official statistics in the period of 30 January to 31 May 2020 showed a dramatic decrease in emergency department (ED) visits at the largest paediatric centre of ER, the Sant'Orsola University Hospital of Bologna, compared with the same period of 2019. The total number of attendances in this period in 2020 is 3901, compared with 7748 in the same period of 2019 (50% decrease) ([figure 1](#)). The lowest number of ED visits occurred during the period from 10 March to 15 April (512 and 2324 in 2020 and 2019, respectively, a decrease of 78%). Emergency visits declined for every age group, with a decrease of 35%, 55% and 46% for the three age groups 0–2, 2–10 and 10–14 years, respectively. We conversely observed an increase in the admission rate from 5% of 2019 to 13%

of 2020. The rate of medium (green and yellow) to highly urgent (red) colour-coded triage tags also increased from 58%, 11% and 0.01% of green, yellow and red codes, respectively, to 70%, 14% and 0.02%. The weekly rate of urgent colour coded on the total access in 2020 increased in the period from 28 February to 8 May, presenting a spike between 1 May and 8 May ([figure 2](#)). After the end of the 'lockdown' phase (10 March to 3 May) and the reopening of the commercial and social activities, attendances remain lower in 2020 than in 2019 ([figure 1](#)).

Some hypotheses possibly explaining the effects on utilisation of the paediatric ED are discussed. The first could be concerning the several social limitations imposed by Italian ministerial ordinances. During the 'lockdown', it was strictly recommended to the parents, in case of influenza symptoms or illness of the children, to call the regional information hotline and not to visit the ED. The health system in Italy provides for each resident child a family paediatrician until the age of 14. Patients can refer to their family paediatricians during the work hours of the weekday. In case of emergency, patients can refer to the ED autonomously, or after consulting with the family paediatrician, on any day or night of the week including the weekend. Access to the ED is always free of charge for children younger than 14 years.

We speculate that the pandemic reduced non-urgent attendances to the paediatric ED. It is well documented how the high level of utilisation of paediatric ED services is overwhelmed by inappropriate non-urgent conditions, with the percentage of non-urgent cases ranging from 24% to 40% of total attendances, with peaks up to 90%.<sup>2</sup>

The second point is the role that restricted environmental exposures may play in dampening epidemic 'waves' due to non-COVID-19 seasonal infections, namely upper respiratory tract infections, bronchiolitis and acute



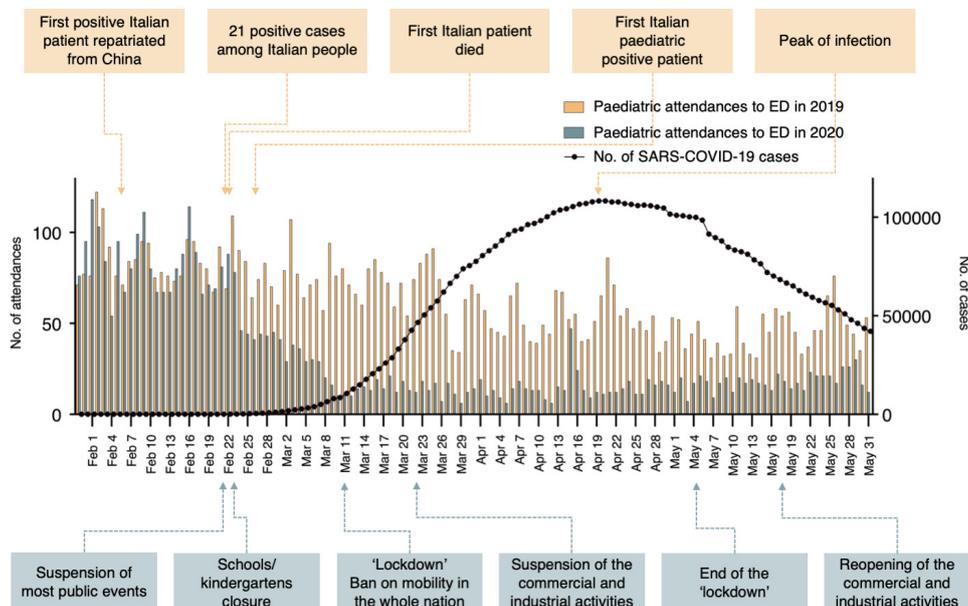
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**Figure 1** Visits to the paediatric emergency department of Bologna, northern Italy, from 30 January to 31 May 2020, compared with the same period in 2019 and chronicle of events in Italy during the COVID-19 pandemic. ER, emergency room.

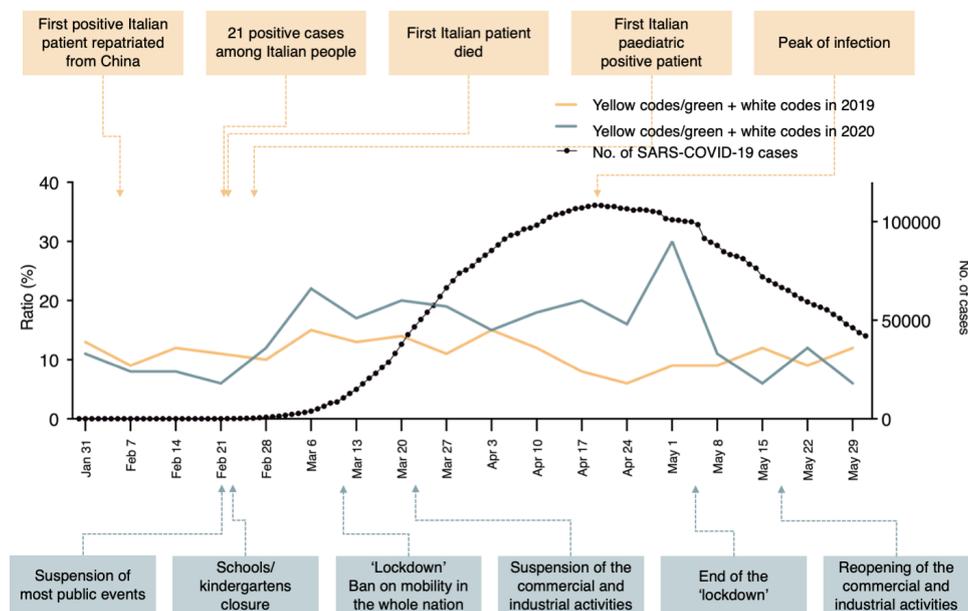
gastroenteritis. As of 23 February, schools remain closed. The effects of closing schools during COVID-19 pandemic on the transmission of viral infections were recently reported.<sup>3</sup> We hypothesise that an immediate drop in attendances from 24 February is likely to be related to the ministerial ordinances while the subsequent decrease is attributed to a lower incidence of seasonal infections.

Third, it seems that children are less likely to become severely ill than older adults to COVID-19 infection. Among symptomatic children, 5% had dyspnoea or hypoxaemia and 0.6% only progressed to acute

respiratory distress syndrome and/or multiorgan system dysfunction.<sup>4</sup>

It is also conceivable that a psychological attitude of reticence and fear towards hospital environments has become widespread, leading to neglecting clinical conditions that deserve an urgent medical evaluation.<sup>5</sup> A possible risk is delayed access to hospital care for children with special needs and for those with exacerbations of chronic conditions.

The striking decline in paediatric ED visits during COVID-19 outbreak is an evolving scenario. The



**Figure 2** Trend of colour-coded triage tags by week in paediatric emergency department of Bologna, northern Italy, from 30 January to 31 May 2020. Green and yellow lines represent the ratio: yellow codes/green+white codes in 2020 and 2019, respectively. Yellow, green and white codes represent moderately urgent, deferrable and non-urgent attendances, respectively.

COVID-19 ‘lesson’ could give us the opportunity for rethinking our paediatric ED organisation.

**Collaborators** Alessandra Cavallo.

**Contributors** RM collected the data and drafted the initial manuscript. IC and DL collected the data. ML and AP conceptualised the study and critically reviewed the manuscript for important intellectual content. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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