

Changing admission patterns in paediatric emergency departments during the COVID-19 pandemic

On 20 February 2020, so-called Italian Patient 1 was admitted to the intensive care unit of his local hospital due to a deteriorating clinical condition from SARS-CoV-2/COVID-19 infection.

In Italy, COVID-19 originated from a handful of small towns in northern Italy that were swiftly placed into lockdown. Lockdown of Milan, Venice, Rimini and their provinces and neighbouring towns and cities followed on 8 March

and the whole of Italy on 9 March, when the '#stayhome' (#iostoacasa) executive order was issued. This order remained in place until after Easter, with all public gatherings banned and travel only allowed for 'urgent, verifiable work situations and emergencies or health reasons'.

As of 30 March, 101 739 COVID-19 cases have been confirmed in Italy. This number includes the deceased (n=11 591) as well as those who have recovered (n=14 620). These cases have been identified through 477 359 tests on people experiencing suspicious symptoms, the most widespread testing in Europe.

We would like to present data from two towns in northern Italy, Cremona (72 680 inhabitants), in the real middle of the Italian COVID-19 epidemics, and Novara (104 268 inhabitants), close to Lombardy. In the pediatrics unit in Cremona, 8 out of 58 tests have been positive to date. Six of these cases have been admitted to hospital for mild or moderate symptoms, representing 13.8% of children tested versus 21.3% of patients in the general population. In Novara pediatrics department, only 4 out of 10 children were positive (40%)

for COVID-19, and only 1 was admitted to hospital.

During the current pandemic, we have witnessed a drastic decrease in admissions to our emergency departments (EDs) (table 1). In Cremona, there was a 76% decrease in the number of patients under 15 years admitted to the ED between the first day COVID-19 was recognised as a health problem in our region until 30 March (40 days of observation) compared with the same period in 2019. A similar trend has been observed in Novara (664 versus 1749 patients, a 64% decrease).

Why has this significant decrease in paediatric admissions occurred? While possible reasons include fear of COVID-19 or a reduction in other seasonal infections due to self-isolation, robustly answering this question is of paramount importance. Revealingly, the significant decrease in white codes at both EDs with a significant increase in green codes suggests that most of the non-relevant pathologies usually seen at our EDs have been avoided. ED overcrowding is a global problem that has a massive organisational and fiscal impact, hampering the ability to provide critical services to patients suffering from medical

emergencies in a timely manner in at-capacity or overcapacity departments. After the COVID-19 pandemic has resolved, the best way to disincentivise inappropriate use of the EDs will require serious consideration. Possible solutions might include education about medical necessity for inappropriate users, expansion of the prehospital role of primary care and inappropriate use prevention and improved access to alternative healthcare services.

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Contributors AS and IR were responsible for the study design. All authors were responsible to conduct the study and data collection. IR and AS ran the data analysis and interpreted data. IR and AS wrote the manuscript and all authors read the paper and contributed to discussion.

Table 1 Admissions data for children under 15 years of age attending the Cremona and Novara paediatric emergency departments during the COVID-19 pandemic between 20 February 2020 and 30 March 2020 compared with the same period in 2019

	Novara				Cremona			
	2019	2020	% change	P value	2019	2020	% change	P value
Admissions (n)	1749	664	-62.0		1209	290	-76.0	0.001
<i>Triage</i>								
White (n)	344	55	-84.0		622	51	-91.8	
White (%)	19.7	8.3	-57.9	<0.001	51.5	17.6	-65.8	<0.001
Green (n)	1381	576	-58.3		581	235	-59.6	
Green (%)	79.0	86.8	9.9	<0.001	48	81	59.2	<0.0001
Yellow (n)	24	32	33.3		6	4	-33.3	
Yellow (%)	1.2	1.6	33.3	<0.001	1.4	0.5	-64.3	<0.04
Red (n)	0	0	0		0	0	0	
Red (%)	0	0	0	1	0	0	0	NS
<i>Outcome</i>								
At home (n)	1660	596	-64.1		1066	243	-77.2	
At home (%)	94.9	89.7	-5.4	<0.001	83.8	88.2	5	NS
Hospital admission (n)	42	50	19.1		98	40	-59.9	
Hospital admission (%)	2.4	7.5	213.6	<0.001	8.1	13.8	58.7	<0.03
Other (n)	47	18	-61.7		45	7	-84.4	
Other (%)	2.7	2.7	0.88	NS	3.8	2.4	-36.8	NS

The colour code used at the triage is as follows: red tags—(emergency, intervention time 0 min) patients cannot survive without immediate treatment but have a chance of survival; yellow tags—(urgency, 15 min) patients have at least one vital function compromised, but their condition is stable for the moment and they are not in immediate danger of death; green tags—(wait, 60 min) patients will need medical care at some point, after more critical injuries have been treated; white tags—(dismiss, no time specified) patients with minor injuries for whom a doctor's care is not required, and have possibly gone to their family paediatrician.

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