Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Short Communication

Use of alternative care sites during the COVID-19 pandemic in the city of Buenos Aires, Argentina

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ABSTRACT

Objectives: In large cities, where a large proportion of the population live in poverty and overcrowding, orders to stay home to comply with isolation requirements are difficult to fulfil. In this article, the use of alternative care sites (ACSs) for the isolation of patients with confirmed COVID-19 or persons under investigation (PUI) in the City of Buenos Aires during the first wave of COVID-19 are described.
Study design: This is a cross-sectional study.
Methods: All patients with COVID-19 and PUI with insufficient housing resources who could not comply with orders to stay home and who were considered at low clinical risk in the initial triage were referred to refurbished hotels in the City of Buenos Aires (Ciudad Autónoma de Buenos Aires [CABA]). ACSs were divided into those for confirmed COVID-19 patients and those for PUI.
Results: From March to August 2020, there were 58,143 reported cases of COVID-19 (13,829 of whom lived in slums) in the CABA. For COVID-19 positive cases, 62.1% (n = 8587) of those living in slums and 21.4% (n = 9498) of those living outside the slums were housed in an ACS. In total, 31.1% (n = 18,085) of confirmed COVID-19 cases were housed in ACSs. In addition, 7728 PUI were housed (3178 from the slums) in an ACS. The average length of stay was 9.0 ± 2.5 days for patients with COVID-19 and 1.6 ± 0.7 days for PUI. For the individuals who were housed in an ACS, 1314 (5.1%) had to be hospitalised, 56 were in critical care units (0.22%) and there were 27 deaths (0.1%), none during their stay in an ACS.
Conclusions: Overall, about one-third of all people with COVID-19 were referred to an ACS in the CABA. For slum dwellers, the proportion was >60%. The need for hospitalisation was low and severe clinical events were rare. This strategy reduced the pressure on hospitals so their efforts could be directed to patients with moderate-to-severe disease.

Testing and rapid isolation of patients with COVID-19 is one of the undisputed cornerstones of the strategy to deal with the pandemic.[1] Effective isolation is, however, difficult to manage in practice.[2] In big cities, where poverty conglomerates in slums and collective housing is characterised by overcrowding, the real possibility of effective isolation is low.[2–4] Although the 'stay at home' orders are universal, its value as a message is shaped by the real feasibility of complying with these directives.

The City of Buenos Aires (Ciudad Autónoma de Buenos Aires [CABA]) is the capital city of Argentina, with a population of approximately 3.1 million. As in other Latin-American cities, there are conglomerates of urban poverty, characterised by a lack of basic services and overcrowding, in neighbourhoods called 'villas' (slums). There are also other forms of precarious housing, such as collective housing that share some of these challenges. In CABA, around 230,000 people live slums and another 100,000 live in collective housing. The slums are characterised by high population density, precarious basic services and overcrowding.

The availability of hospital beds is critical in an epidemic and these should be prioritised for moderate and severe cases. Most

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Table 1
Characteristics of the patients with COVID-19 and persons under investigation (PUI) housed in alternative care sites (ACSs)[a].

Characteristics	PUI			Patients with COVID-19		
	Out-of-slum (n = 4550)	Slum dwellers (n = 3178)	*P*-Value	Out-of-slum (n = 9498)	Slum dwellers (n = 8587)	*P*-Value
Age in years (mean ± SD)	29.2 ± 15.1	23.9 ± 15.4	<0.0001	31.6 ± 15.1	27.7 ± 15.1	<0.0001
Female	2382 (52.3)	1731 (54.4)	0.074	4485 (47.2)	4426 (51.4)	<0.0001
Pregnancy	17 (0.4)	14 (0.4)	0.716	43 (0.4)	59 (0.7)	0.037
Asthma	19 (0.4)	82 (2.6)	<0.0001	313 (3.3)	252 (2.9)	0.171
Diabetes mellitus	55 (1.2)	42 (1.3)	0.679	194 (2.0)	161 (1.9)	0.421
COPD	14 (0.3)	5 (0.1)	0.245	16 (0.2)	8 (0.1)	0.22
Hypertension	129 (2.8)	76 (2.4)	0.250	350 (3.7)	251 (2.9)	0.005
Obesity	72 (1.6)	46 (1.4)	0.706	265 (2.8)	196 (2.3)	0.034
Current smoker	427 (9.4)	176 (5.5)	<0.0001	617 (6.5)	389 (4.5)	<0.0001
Public health financing	4447 (97.7)	3153 (99.2)	<0.0001	9317 (98.1)	8552 (99.6)	<0.0001
Hospitalization	290 (6.4)	113 (3.6)	<0.0001	572 (6.0)	339 (3.9)	<0.0001
Critical care unit	1 (0.0)	1 (0.0)	1.000	31 (0.3)	23 (0.3)	0.497
Respiratory support	1 (0.0)	1 (0.0)	1.000	18 (0.2)	11 (0.1)	0.354
Death	1 (0.0)	1 (0.0)	1.000	16 (0.2)	9 (0.1)	0.317

COPD, chronic obstructive pulmonary disease.
[a] Data presented as n (%), unless stated otherwise.

patients with mild-to-moderate COVID-19 can spend the course of their illness at home.[5] However, when this is not possible, the use of alternative care sites (ACSs) is an option to reduce the spread of the disease in the community.[6]

Although there are guidelines that suggest the use of ACSs as a potential patient isolation facility,[7] there is, to the best of our knowledge, no documentation of a large-scale experience of the use of ACSs for isolation of people with COVID-19.

Data from laboratory-confirmed COVID-19 cases and persons under investigation (PUI) reported to SISA (Sistema Integrado de Información Sanitaria Argentino) from all health centres in the CABA between 22 March and 1 August 2020 were analysed. All health centres report COVID-19 cases and PUI using a standardised case report form that collects demographic and clinical data, as well as patient outcomes including hospitalisations, intensive care unit (ICU) admissions and deaths.

All patients who consulted the public health system were scored in an initial triage. In this assessment, clinical risk was determined based on demographic data, pre-existing conditions, oxygen saturation and vital signs. In addition, all individuals were socially stratified according to their living conditions and their actual ability to remain isolated at home. All patients and PUI considered to be at low clinical risk and with insufficient housing conditions to perform an isolation were housed in an ACS.

ACSs are defined in accordance with established definitions as "structures of opportunity to provide a safe and comfortable setting where patients can be isolated and monitored during the COVID-19 pandemic".[8] All the ACSs in the CABA were intended to be non-acute care centres. ACSs were intended to provide assistance to patients with COVID-19 who were asymptomatic and/or mildly symptomatic and who did not require oxygen, nursing or assistance with daily activities.

Given the potential for patient health to rapidly deteriorate, even at the non-acute care level and with low-risk patients, all ACSs were provided with an assisting team that included nurses, physicians and technical staff.

Between 22 March and 1 August 2020, a total of 58,143 people were diagnosed with COVID-19 in the CABA, which represents a cumulative incidence rate (95% confidence interval [CI]) of 1890 (95% CI 1832–1948) per 100,000 population. The cumulative incidence rate in the slums was 5916 (95% CI 5542–6289), corresponding to 13,829 people; while, in the non-slum dwellers it was 1559 (95% CI 1505–1612), corresponding to 44,314 people (incidence rate ratio [IRR] 3.79 [95% CI 3.65–3.94], $P < 0.00001$).

A total of 25,813 people were housed in an ACS, of which 11,765 lived in a slum (5033 [95% CI 4693–5372] per 100,000 population) and 14,048 lived outside the slums (494 [95% CI 464–523] per 100,000 population). The rate of ACS use was significantly higher among the slum population (IRR 10.18 [95% CI 9.54–10.88], $P < 0.00001$).

For individuals who were housed in an ACS, 18,085 (8587 slum dwellers) had COVID-19 and 7728 (3178 slum dwellers) were PUI. For COVID-19 positive cases, 62.1% (n = 8587) of those living in slums and 21.4% (n = 9498) of those living outside the slums were housed in an ACS. In total, 31.1% (n = 18,085) of confirmed COVID-19 cases were housed in ACSs. The characteristics of patients with COVID-19 and PUI are described in Table 1. Slum residents were significantly younger and had a higher proportion of women. Comorbidities were of low prevalence in both groups. In total, 5.1% of the individuals housed in ACSs required hospitalisation, 0.22% in critical units and 0.12% required mechanical ventilation. A total of 27 people died (0.1%), none in ACSs but during subsequent hospitalisation.

The experience of the city of Buenos Aires has proved to be feasible with a pragmatic approach. During the initial stages of the

pandemic, slum residents had a significantly higher COVID-19 incidence rate than the rest of the city.[8] However, owing to their demographic composition, most of the sick were considered to be at low clinical risk. In this population, the conditions of overcrowding made effective isolation unlikely. These two situations constituted ideal conditions for the implementation of low-complexity ACSs. To this end, the Ministry of Health of the City of Buenos Aires refurbished a total of 46 hotels that were closed during the pandemic, and equipped them with medical staff, non-medical assistants, nurses and administrative personnel.

Nearly one-third of patients with COVID-19 in the CABA were housed in an ACS, which rose to two-thirds for individuals with COVID-19 residing in the slums. The ACS system reduced the number of patients with COVID-19 attending hospital; thus, hospital bed occupancy rate remained in a non-critical situation during the period studied.

Only 5% of those housed in the ACS had to be hospitalised and the percentage of people requiring mechanical ventilation was very low. No patient had serious events during their stay in the ACS.

While the ACS experience described here may be considered a management success, it also reveals a failure that goes beyond the control of infections. It is well known that a large number of people live in poverty in the CABA; however, the COVID-19 pandemic has highlighted enormous social collectives that rarely participate in the numerator of classical epidemiology. On this occasion, their visibility and vulnerability, rightly, mobilised resources and actions that were not present in other dramatic but socially less dangerous situations, such as tuberculosis[9] and non-communicable diseases.[10] Among the many challenges brought about by the COVID-19 pandemic, one of the most important is to find the mechanisms so that what constituted a contingency plan can become a permanent presence that guarantees responses and rights to vulnerable populations.

Author statements

Ethical approval

This survey falls outside of the national requirement for ethical review. The current legal norm (resolution1480e11) in Argentina in relation to the obligations regarding clinical research allows exceptions to the registration of informed consent.

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Competing interests

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Authors' contributions

All authors participated equally in the study. D.F and A.M. wrote the first draft of the report and analysed the data. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

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