

VIEWPOINT

Repurposing the hostel El Burgo with biosafety measures for the medical care of COVID-19 patients

Medicalización del albergue “El Burgo” con medidas de bioseguridad frente al COVID-19

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On March 22 of 2020, the Emergency Medical Assistance Service (SAMU in Spanish), at the request of the Ministry of Health of the Andalusian Regional Government, deployed an Emergency Medical Team to La Línea de la Concepción, Cádiz (Spain), in order to medicalize a residential home. The necessary biosecurity measures were adopted to deal with the care of patients from a nursing home in the acute phase of SARS-CoV-2. The aim of this publication is to describe health care in the out-of-hospital setting and in biorisk conditions, taking as a reference the “triangle of care” designed by Dr. Carlos Álvarez Leiva for the operating procedures for multiple-victim incidents (MVI) and catastrophes¹. To this end, we designed the necessary structure for sectorization, biosecurity, medicalization and care processes for the population intervened from 22/03/2020 to 16/05/2020.

Sociodemographic and assistance data

Thirty-four patients were admitted, with a mean age of 83 years. Of the 28 patients admitted on the first day, 25 were classified as positive and 3 as suspects². The mean length of stay was 41 days, 82.8% returned to their destination residence and 11.8% died (Table 1).

Control management

There were 2 command structures that worked simultaneously and in coordination:

- Command Post Area: maximum responsible for the management and assistance process carried out in the shelter.
- Delayed element: support structure for the operation. It was constituted by members of the SAMU management team.

Space management

The property consists of 5 floors. The first, second and third floors are mainly composed of rooms. Access

to the floors is through the central part, leaving 2 symmetrical wings on each side. A sectorization by phases was carried out, identifying clean and dirty areas according to the level of contagion presented by the patients. Access to the “dirty” areas was delimited by physical barriers and biosafety signs.

For the working areas, with the exception of the positive and critical areas, the personnel wore surgical masks, gloves, waterproof gowns and surgical pajamas. For positive and critically ill patients, they wore full overalls, capelin, boot covers, double pair of gloves, mask and goggles or shield. In the basement was the laundry and the biological waste storage area in separate and marked rooms. The command post together with the material storage, linen, pharmacy, kitchen and staff canteen were located in the reception area in the clean zone. In the opposite wing the admission area was located, which was considered a dirty area. A common room was delimited for positive patients, with its own toilets, nursing control and dining room.

In a second phase of sectorization, the second floor was assigned to suspicious and very serious patients in single rooms. One of the rooms was the nursing control room and rooms were set aside for patients' leisure activities, with several rooms at the outer end of the wing being reserved as a morgue, following the protocols of the Ministry of Health for the handling of corpses³. The second floor was divided into two: one for staff rooms and the other for isolation of possible cases of staff infection. The third floor was reserved as a leisure area.

Management of human resources

There were a total of 46 professionals: 2 supervisors, 4 physicians, 8 nurses, 14 auxiliary nurses, 8 emergency health technicians, 5 cleaners, 3 cooks and 2 security guards. All were trained in a biosafety course given by SAMU.

Management: was in charge of the personnel payroll, reception of suppliers, sanitary and cleaning materials, oxygen and medicines. Provided a daily report on

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Table 1. Indicators and characteristics of patient care by sex

Characteristics	Total N = 34 n (%)	Men N = 14 n (%)	Women N = 20 n (%)
Stay			
Mean (95% CI) (days)	41 (36-46)	40 (32-48)	41 (35-48)
CV (%)	33.9	33.2	35.1
Stay for COVID-19			
Mean (95% CI) (days)	21 (19-24)	22 (17-27)	21 (17-25)
CV (%)	37.1	38.8	36.8
Kind of discharge			
Transfer to the socio-health center of origin	28 (82.3)	11 (78.6)	17 (85)
Transfer to hospital	2 (5.9)	2 (14.3)	0 (0)
Deaths	4 (11.8)	1 (7.1)	3 (15)
No. of diseases and risk factors			
Median (IQR)	1 (1.2)	1 (1.2)	1 (0.75-2)
No. of symptoms compatible with COVID-19			
Median (IQR)	0 (0. 2)	1 (0. 2.75)	0 (0-1.25)
Fever	10 (29.4)	5 (35.7)	5 (25)
Cough	13 (38.2)	7 (50)	6 (30)
Dyspnea	10 (29.4)	7 (14)	3 (15)
No. of ICD-10 medical procedures per day			
Mean (95% CI)	13.2 (13.0-13.4)	13.7 (13.3-14.1)	12.9 (12.7-13.1)
CV (%)	5.4	5.2	6.0
Type of procedure			
Introduction			
Mean (95% CI)	5.1 (5.1-5.2)	5.5 (5.3-5.6)	5.5 (5.2-5.7)
CV (%)	5.1	7.3	7.3
Measurement			
Mean (95% CI)	8.1 (7.9-8.2)	8.2 (8.1-8.4)	8.0 (7.8-8.1)
CV (%)	6.1	6.2	7.4
Monitoring			
Mean (95% CI)	0.04 (0.03-0.04)	0.09 (0.08-0.09)	0.07 (0.02-0.12)
CV (%)	28.7	7.4	42.5
Oxygen therapy treatment			
Low concentration	10 (29.4)	6 (42.9)	4 (20)
High concentration	3 (8.8)	1 (7.1)	2 (10)
Oxygen treatment basic therapy	4 (11.8)	4 (28.6)	0 (0)
Duration of treatment oxygen therapy (days)			
Median (IQR)		30 (15-5-48)	4 (3-12.5)

%, Relative frequency in percent; CV%: Covariance in percent; IQR: interquartile range.

According to ICD-10 coding.

the situation of the center and the status of the patients. Liaison with local authorities for information and updating of resident data. Issued daily orders for logistics, kitchen, cleaning and facility maintenance.

The physicians performed the assessment of new admissions, control and evolution of the residents, communicated the current condition of each resident's family members on a daily basis, made referrals to hospitals and certified deaths.

The nursing staff performed tasks such as administering medication to the residents, performing procedures, etc.

The nursing assistants performed their own tasks such as assisting with cleaning, feeding, care, etc.

The emergency health technicians were responsible for the logistical activities of the center, such as maintenance

of the decontamination line and assistance during the process, control of water quality, control and distribution of oxygen cylinders, control of warehouses and vehicle checks. In addition, they participated in assistance tasks as assistants to the nursing staff.

Finally, the general services were made up of local personnel who performed cooking, cleaning and security tasks.

The intervention

The first team went to the residence to assess the condition of the residents. After 36 hours, the residents were transferred to the facilities that had been prepared for their reception.

During the team's stay at the residence, another team concomitantly adapted the facility to health care conditions. This included setting up the patient units and equipment with sanitary supplies, organizing the staff quarters, establishing the command post and identifying power, water and waste points.

To transport residents, 17 vehicles were available (advanced life support ambulances –ALS–, basic life support –BLS–, collective, bus and light vehicles).

Walkie-talkies were used for communications between health personnel. Liaison with the delayed element was by means of a telematic system with daily meetings at 08:00 and 20:00 hours, with 24-hour availability and incident reporting. In the following days, patients were transferred to other areas according to their condition, being "Positive", "Suspected" or "Discarded".

Biosafety

A safety and self-protection protocol was adapted for SARS-CoV-2 biohazard areas.

The decontamination line was a pneumatic tent with 3 airlocks. In the first, washing and spraying with a 1/10 of the outside of the personal protective equipment (PPE) with a solution of water and bleach for disinfection. In the second, the overalls and the pair of outer gloves were removed with the help of the life-guard, and in the third, the capelin, goggles, tights and finally the mask were removed⁴. Solid urban waste was deposited in a container outside the building for daily collection. Biohazardous waste was collected every 24 hours, deposited in red biohazard bags and respecting the clean/dirty circuit.

Reactivation

Closing of the contract and management with the liaison nurse of the Andalusian Health Service (SAS) for the deactivation of the resource. Performance of PCR (polymerase chain reaction) tests for professionals. Adequacy of the center, with disinfection of facilities and

exteriors. Relocation of personnel from other SAMU areas and subsequent evaluation and lessons learned meeting.

Final considerations

The response reported by the team of professionals shows a zero contagion rate, which differs greatly from the data reported for the region⁵ and national and international⁶. On the other hand, even with the development of contingency health care and despite the health status of the patients and the complications present in their care, the case-fatality rate was also below those published by national and international authorities. We believe that COVID-19 has shown that even the most advanced countries can be overtaken.

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