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Special article

Management of the COVID-19 pandemic in Catalanian geriatric nursing homes

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Abstract

The covid-19 pandemic has exposed the deficiencies in the provision of social and health services, especially in nursing homes in Catalonia. This fact has triggered the debate on the residential model that Catalonia needs for the 21st century has begun. The objective of this article is to describe the management of the COVID-19 pandemic, during the 5 epidemic waves that affected the nursing homes of Catalonia, from an initial stage of absolute lack of control, to a final stage of pandemic control thanks to the rapid vaccination rate against COVID-19 in this área.

La gestión de la pandemia de COVID-19 en las residencias geriátricas de Cataluña

Resumen

La pandemia de COVID-19 ha puesto al descubierto las deficiencias en la prestación de los servicios sociosanitarios, en especial en las residencias geriátricas de Cataluña. Este hecho ha desencadenado el debate sobre el modelo residencial que Cataluña necesita para el siglo XXI.
El objetivo de este artículo es describir la gestión de la pandemia de COVID-19, durante las cinco olas epidémicas que afectaron a las residencias geriátricas de Cataluña, desde una etapa inicial de descontrol absoluto, hasta una etapa final de control de la pandemia gracias al rápido ritmo de vacunación contra la COVID-19 en dicho ámbito.

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Introduction

On 21 January 2020, the World Health Organisation (WHO) issued a first communique, reporting that on 31 December 2019, China had notified a series of cases of atypical pneumonia caused by a new coronavirus (2019-nCoV) of unknown origin in the city of Wuhan, in the province of Hubei.

The epidemiological warning network for the new virus 2019-nCoV (subsequently denominated SARS-CoV-2) remained active in Italy even though the WHO and the European Centre for Disease Prevention and Control (ECDC) considered that there was a moderate probability of the virus entering the European Union.

On 20 February 2020, the Italian Ministry of Health reported the first case of community transmission of COVID-19 in Europe, concretely in the region of Lombardy with 20 cases. In 1 week, the number of cases rose exponentially, reaching 528 cases with 14 deaths.2

In Spain, the health authorities said there was a low risk of COVID-19 arriving here, apart from a sporadic cases which may have originated in China or northern Italy (Lombardy, Véneto, Emilia-Romagna, and Piamonte) so that preventive measures were restricted to monitoring travellers from affected areas who showed some type of suspicious symptom. Air travel between Spain and Italy carried out normally, without any type of restriction or preventive measure, and direct flights between both countries were cancelled from 11 to 25 March 2020.3 Although no European government applied such a drastic measure at first, some of the main Airlines did, suspending all of their flights to and from Italy: Air France did so from 14 March to 3 April 2020, EasyJet from 10 March and 3 April 2020, and Ryanair from 13 March to 8 April.4

The SARS-CoV-2 viral epidemic continued its unstoppable expansion around the world, and on 11 March 2020, the WHO declared that it was a pandemic.5 In Europe, this expansion accelerated up to the point that on 13 March 2020, the WHO declared that Europe was the new epicentre of the COVID-19 pandemic, as it found that apart from China, where the incidence of the disease was starting to fall, more confirmed cases and death were being reported in Europe than anywhere else in the world.6

Due to the imminent arrival of the first wave of the pandemic in Spain, on 14 March 2020, the Government declared a state of alarm. This recentralised the control of health, defence, policing, transport, mobility, and town planning, establishing a single authority for decision-making. The state of alarm suspended classes at all levels of education, unessential retail commerce, shows and sports activities, hostelry, restaurants, and visits to museums and monuments.7 The lock-down of the population in their homes and the gradual cessation of economic activity in the country had definitively begun.

Nevertheless, no planning had taken place to protect one of the most vulnerable groups, the elderly living in nursing homes. The number of cases of COVID-19 and deaths it caused there rose quickly in the first months of the pandemic (March and April 2020) (Table 1). The pandemic exposed the deficiencies in the social–medical care model, since when there has been public and political debate about the need to reform the system of nursing homes to make them suitable for the needs of the 21st century.

In Catalonia on 21 May 2020 in plenary session, the Catalanian Parliament unanimously passed the decision to set up a Commission to investigate how the COVID-19 pandemic had been managed in nursing homes. This Investigative Commission was formed on 7 July 2020, when the Parliament held the corresponding monographic debate on

| Year | Month | Cases among residents | Cases in the general population | Deaths of residents | Deaths in the general population |
|------|-------|-----------------------|---------------------------------|--------------------|---------------------------------|
| 2020 | March | 2804                  | 23 556                          | 1108               | 2561                            |
| 2020 | April | 11 050                | 14 983                          | 4303               | 3053                            |
| 2020 | May   | 1376                  | 4143                            | 704                | 571                             |
| 2020 | June  | 251                   | 2630                            | 99                 | 96                              |
| 2020 | July  | 665                   | 20 915                          | 61                 | 117                             |
| 2020 | August| 705                   | 29 478                          | 123                | 172                             |
| 2020 | September | 880 | 30 773                         | 109                | 253                             |
| 2020 | October | 3274 | 97 401                         | 294                | 614                             |
| 2020 | November | 3424 | 60 941                         | 619                | 1199                            |
| 2020 | December | 2425   | 54 771                         | 455                | 802                             |
| 2021 | January | 3440 | 95 502                         | 633                | 1509                            |
| 2021 | February | 723  | 44 411                         | 204                | 1007                            |
| 2021 | March  | 228                   | 38 708                          | 45                 | 554                             |
| 2021 | April  | 216                   | 45 716                          | 37                 | 496                             |
| 2021 | May    | 66                    | 23 164                          | 15                 | 228                             |
| 2021 | June   | 39                    | 29 847                          | 5                  | 49                              |
| 2021 | July   | 1755                  | 181 239                         | 125                | 486                             |
| 2021 | August | 900                   | 47 883                          | 189                | 713                             |
| 2021 | September | 270 | 13 451                         | 45                 | 233                             |
| Total | 34 491 | 859 512               | 9173                            | 14 713             |

Source: Prepared by the author using data from the Agència de Qualitat i Avaluació Sanitàries de Catalunya (AQuAS).
the management of the pandemic in nursing homes, passing 58 proposed resolutions. The Investigative Commission is yet (in September 2021) to present its conclusions.

From the start of the pandemic until now, the health authorities have prepared and updated a series of documents on combating COVID-19 in nursing homes. These have been modified according to the evolution of epidemiological indicators, and of them the “Sector Plan” is the reference document. The said modifications are shown in Table 2.

In Catalonia, the COVID-19 pandemic has gone through 5 waves of epidemic, defined on the basis of the risk of a repeat outbreak, an epidemiological indicator that estimates the risk of transmission of an infectious disease in the general population for a specific place and time (Fig. 1).

The aim of this paper is to describe how the COVID-19 pandemic was managed during 5 epidemic waves in Catalan nursing homes, from a first stage of complete lack of control until a final stage in which transmission was controlled thanks to rapid vaccination against SARS-CoV-2 in the medical environment and nursing homes.

### Material and methods

A bibliographical review was carried out of documents and press releases associated with nursing homes. They had mainly been published in the Canal Salut web page of the Generalitat de Cataluña Health Department, as well as the web page of Barcelona Council and the Asociación Catalana de Recursos Asistenciales (ACRA) during the period from February 2020 to September 2021.

### Results

In Catalonia, the management of the COVID-19 pandemic in nursing homes to date may be divided into 11 phases (Table 2). These phases are described below:

**The phase of the first epidemic peak: March to April 2020**

The first peak of the epidemic occurred in this first phase (Fig. 1) and the State of Alarm was in force during the first 2 phases. The most important events are listed below:

On 11 March 2020, the first instructions for prevention and protection against infection by COVID-19 for nursing homes were published. They contained 3 lines of action: recommendations for access and visits to homes; organisational and working measures; and measures to increase prevention.

The situation was critical at the end of March. On 27 March 2020, the mayor of Barcelona condemned the situation of abandonment caused by the Department of Work, Social Affairs and Families (DTASF), caused by the lack of protective equipment for workers, the lack of hospital care for residents, and the lack of information for their family members. The mayor asked the Generalitat Government for an action plan and political leadership, and she also supplied the first official data. From 15 March 2020, 54 deaths due to Coronavirus had

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**Table 2 – Phases in the management of the COVID-19 pandemic in Catalan nursing homes.**

| Epidemic wave | Phase | Documents on the management of COVID-19 in nursing homes |
|---------------|-------|--------------------------------------------------------|
| First wave    | First peak (March–April 2020) | • Action Guide⁷¹  
• Action Plan⁷³  
• Procedure for dividing homes into sectors⁷⁵  
• Guide for the preparation of contingency plans  
• De-escalation Plan⁷⁷  
• Sector Plan for Returning to Normality⁷⁸  
• Sector Plan for managing COVID-19⁷⁹  |
|               | First de-escalation (May–June 2020) | • Contingency Plan to protect nursing homes in autumn⁸⁰  
• Sector Plan for returning to normality⁸¹  |
|               | New outbreak (July–September 2020) | • Sector Plan for managing COVID-19⁸²  
• Sector Plan for returning to normality⁸³  |
| Second wave   | Second peak (October–November 2020) | • Intensification of the measures in the sector plan⁸⁴  
• Operational Protocol for the Christmas period⁸⁵  |
|               | Second de-escalation (November–December 2020) | • Recommendations for vaccination against COVID-19⁸⁶  |
| Third wave    | Third peak (December 2020–January 2021) | • Intensification of the measures in the sector plan⁸⁷  
• Sector Plan for managing COVID-19⁸⁸  
• Sector Plan for returning to normality⁸⁹  |
|               | Third de-escalation (February–March 2021) | • Vaccination Plan. New admissions and entries in nursing homes⁹⁰  |
| Fourth wave   | Fourth peak (April 2021) | • Sector Plan for managing COVID-19⁹¹  
• Adaptation of intensification measures in the sector plan⁹²  |
|               | Fourth de-escalation (May–June 2021) | • Measures to adapt the mitigation plan in nursing homes⁹³  
• Plan for intensification of control measures in nursing homes⁹⁴  (and 3 extensions)⁹⁵  |
| Fifth wave    | Fifth peak (July–August 2021) | • Sector Plan for managing COVID-19⁹⁶  
• Measures to adapt the mitigation plan in nursing homes⁹⁷  
• Plan for intensification of control measures in nursing homes⁹⁸  |
|               | Fifth de-escalation (September 2021) | • Sector Plan for managing COVID-19⁹⁹  
• Adaptation of intensification measures in the sector planⁱ⁰⁰  
• Plan for intensification of control measures in nursing homesⁱ⁰¹  |

Source: The Author.
occurred in Barcelona nursing homes, and 150 deaths had occurred in those in Catalonia. On 5 April 2020, the first step was taken to control COVID-19 cases in nursing homes. The Catalan Health Service (Cat-Salut) published the first intervention guide, implicitly admitting the deficiencies which then existed. Although it spoke of identifying cases, this had to be done without any diagnostic tests, and it mentioned masks and gloves as the only protective items. On 8 April 2020, the Government of the Generalitat announced that the DS would take control of nursing homes, which until then had been the responsibility of the DTASF.

On 10 April 2020, Cat-Salut started to apply the action plan for the management of nursing homes, to guarantee comprehensive healthcare throughout this area based on multidisciplinary management by Primary and Community Care teams (APIC), epidemiological monitoring of cases by the Territorial Epidemiological Monitoring Services (SVE), and control of hygienic and medical measures by territorial public health teams. The chief lines of action in this plan were as follows:

1. To classify nursing homes into 3 categories (A, B, or C) according to the degree to which they provide for needs for care and isolation of individuals with COVID-19 (Table 3).
2. To classify their residents ($\alpha$, $\beta$) according to their needs for help in performing everyday activities (Table 4).

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**Table 3 – Classification of nursing homes.**

| Characteristics | Type of home |
|-----------------|--------------|
| A               | B            | C            |
| With medical and non-medical care professionals | Yes | Yes | No |
| (for care and social care) | | | |
| Capable of offering an isolation zone with the minimum requisites for care for individuals with COVID-19 or with compatible symptoms | Yes | No | No |

Source: prepared by the author.

**Table 4 – Classification of residents.**

| Characteristics | Type of resident |
|-----------------|-----------------|
| A               | B               |
| Barthel test    | 50 (or higher)  | <50 |
| Pfeiffer test   | 0–2 errors      | 3–10 errors |
| Degree of dependency | 1 and II | III |

Source: Prepared by the author.
and it had to guarantee the following aspects:

1. The isolation of residents according to the sector which applied to them (red zone for confirmed COVID-19 cases; yellow zone for suspected COVID-19 cases or close contacts; and a green zone for healthy residents without close contacts).
2. Accepting new admissions (with a negative PCR 24 h. to 48 h. prior to admission and with a contingency plan).
3. Visits by family members (weekly and lasting for 30 min., with a previous appointment).
4. Return to normality in coexistence and home activities.17

At the end of June, the epidemiological situation of the COVID-19 pandemic was under control, so that the Spanish Government ended the State of Alarm. The de-escalation plan designed by the government of the Generalitat was in its final phase (of new normality), so that on 27 June 2020, the plan for the care sector to return to normality was passed, with the same objectives as the de-escalation plan.18

Renewed outbreak phase: From July to September 2020

A renewed outbreak occurred between the first and second peaks of the epidemic (Fig. 1).

On 7 July 2020, the DS published the contingency plan to protect nursing homes in the autumn of 2020, with the following lines of action:

- Prevention of the appearance and spread of the disease (using hygiene precautions, personal protective equipment, and staff training, together with dividing homes into sectors and creating circuits within them).
- Early detection of the infection (with diagnostic protocols and the isolation of cases).
- Public Health intervention (by the epidemiological monitoring department and public health departments).
- Health care within the territory (intervention by APIC teams, reinforcing intermediate care centres, and referral hospitals).
- Social care, organising, and reinforcing care (reserving places and relocating residents, increasing the number of staff, and their training).
- Information systems (giving professionals working in nursing homes access to the Clinical Primary Care Station or CPCS).19

The budgetary measures contained in the contingency plan to protect nursing homes in autumn 2020 were passed in Decree-law 29/2020, of 28 July.20

From the start of July, repeated outbreaks of COVID-19 gradually spread throughout Catalonia territory. With each outbreak regulations were published, setting out restrictive measures for the general population to combat the pandemic. Measures were also introduced in nursing homes, including the prohibition of visits by family members and resident lockdowns. Complementary to these measures, several instructions were published with additional measures to protect nursing homes and individuals with multiple disabilities and pathologies. These included restricting the admission of new residents, visits, and the movement of residents outside homes, and the suspension of activities in day centres.

At the beginning of August, the new strategy of detecting asymptomatic cases (virus carriers) in the population came into force in areas at high risk of an outbreak. This used PCR (polymerase chain reaction) tests for screening and to detect the virus in the population. This strategy aimed not only to break the chains of viral transmission within the population, but also to indirectly reduce the risk of transmission of the virus in nursing homes, therefore protecting those who lived in them. Nevertheless, half-way through August, the
were established for the medium term: serological tests to map immunity. The following measures were prepared for the sector of nursing homes and their management:

- The sectorial plan “Return to normality for the services which care for individuals with disabilities: homes, sheltered housing, and assisted apartments”, of 17 August 2020. This covers measures involving hygiene, cleaning, and disinfection, the use of personal protective equipment, recommendations for visits, and recommendations for trips outside the home by residents.
- The sectorial plan "Management of infection by SARS-CoV-2 coronavirus in nursing homes", of 18 August 2020. This refers to the classification of homes (as green, orange, or red) and dividing each home into sectors (green, yellow, and red zones) depending on whether cases of COVID-19 were present in them or not. It also sets out the key ideas and aims based on the following 4 elements:
  - Dividing nursing homes into sectors, with early detection and isolating individuals who are possibly infected.
  - Tools to ensure safe admissions.
  - Guidelines for visits.

a. Returning to normal coexistence and activities.

Both sectorial plans were updated with minor changes on 14 September 2020.

Second epidemic peak phase: From October to November 2020

After the start of the second wave of the epidemic (Fig. 1), the Spanish government declared a second state of alarm, which commenced on 25 October 2020 and finished on 9 May 2021. The state of alarm did not on this occasion lead to the recentralisation of autonomous community powers or the application of conditions as restrictive as those of the first wave. It solely established the general regulation of a curfew (nocturnal lock-down) for the whole population, independently of any other measures which may have been applied by the autonomous communities. With the imminent start of the second epidemic wave, the following measures were applied to the population of Catalonia:

1. New measures for bars and restaurants (as only take-away food was permitted) and for shops and cultural and sports activities, on 16 October 2020.
2. Restrictions on night-time mobility, on 25 October 2020.
3. Closure of the border and lock-down in towns at weekends, on 30 October 2020.

In the context of nursing homes, on 16 October 2020, the document “Intensification of the measures in the sectorial plan for nursing homes due to the current rise in cases” was published. This proposed 2 types of measures (over the short- and medium terms) to prevent the SARS-CoV-2 virus from entering homes, or to detect it as soon as possible. In the short term, a selection of residents was established by introducing serological tests to map immunity. The following measures were established for the medium term:

1. Reinforcement of the screening of workers in nursing homes (by self-nasal swabs).
2. Intensification by the home of preventive and protective measures.
3. Activation of the territorial rapid intervention team.
4. Reinforcement of communications with families.
5. Calling workers (in the job vacancies section of the Servicio de Ocupación de Cataluña or SOC, to cover job vacancies).

Furthermore, with the “Public health programme to control the infection and supervise preventive measures in certain hospitals due to the medical emergency caused by COVID-19”, created on 6 October 2020, the Government of the Generalitat set checking compliance with contingency plans in the 1647 care homes in Catalonia as one of its objectives. It took on a total of 95 workers (including technical and administrative personnel) to perform the said checks.

The second de-escalation phase: From November to December 2020

Once the second peak of the COVID-19 epidemic has passed, on 19 November 2020, the Government of the Generalitat published the “Plan for the gradual opening of activities”. This had the aim of reactivating the economy in the affected sectors, as the Christmas holidays were approaching. This de-escalation plan comprised 4 phases, and each phase was planned to last for 15 days if the epidemiological indicators allowed this.

Respecting nursing homes, a new update of the sectorial plan was published in December 2020, and the “Operational protocol for interaction between residents, family members and workers in the Christmas period” was published for the Christmas holidays. Preventive measures against COVID-19 were relaxed in geriatric nursing homes for the Christmas holidays, and visits by family members were permitted, as were therapeutic walks around the homes and periods away from the home lasting 3 or more days.

The third epidemic peak phase: From December to January 2021

When the third epidemic peak started (Fig. 1), preventive measures were intensified and made more restrictive in nursing homes. These measures were published on 14 January 2021, and they were as follows:

1. Reinforcement of worker screening.
2. Reinforcement of resident screening.
3. Intensification of preventive and protective measures (reinforcing division into sectors, coexistence units, training, circuits, and hygienic measures, as well as ventilation).
4. Activation of the territorial rapid intervention teams.
5. Suspension of therapeutic walks and trips outside nursing homes.

The start of the third epidemic peak coincided with the start of the COVID-19 vaccination programme in Europe. On 23 December 2020, the European Medicine Agency (EMA) authorised use of the first vaccine, denominated Pfizer/
BioNTech, and the first dose was administered on 27 December 2020. In Catalonia, the COVID-19 vaccination campaign was based on the document “Recommendations for vaccination against COVID-19”, which had been published by the DS on 21 December 2020. The first stage of the first phase of the vaccination campaign had the aim of vaccinating the most vulnerable and priority groups, taking the decision to start the vaccination campaign with the residents and workers in geriatric nursing homes.

The third de-escalation phase: From February to March 2021

The Generalitat Government was completely determined to bring the pandemic under control in the nursing homes of Catalonia. On 2 February 2021 it therefore created a temporary programme (to last for 2 years) to reinforce the staff in these homes and care homes for people with disability. These homes were managed by the Dirección General de la Autonomía Personal y la Discapacidad under the DTASF (17 public care homes in all). This plan included 192 professionals: 108 assistant geriatric nurses, 5 technicians who specialised in caring for individuals with disability, 38 qualified nurses, 8 physiotherapists, 16 administrative technicians, and 17 doctors or qualified nurses.

The swift implementation of the vaccination campaign made it possible to control the pandemic in nursing homes (Table 5). Thus at the start of February 2021, they were considered to be safe places respecting COVID-19, so that on 10 February 2020 new medical measures were announced for nursing homes. Therapeutic walks and visits outside geriatric nursing homes were once again permitted. To continue guaranteeing high rates of vaccination coverage, on 25 February 2021, the document “Vaccination plan: new admissions and the entry of new workers” was published, to include all new residents and medical workers in the vaccination campaign. At the beginnings of March, vaccination coverage in nursing homes amounted to 90% of their residents and 70% of their personnel.

For the first time in many months, Catalan nursing homes ceased to be a source of negative news and started to generate positive news about the high level of vaccination coverage and control of the pandemic. Thus in a paper published in the pre-print space of the Lancet, 116 783 individuals were analysed, including residents, nursing home staff, and medical personnel in Catalonia. This covered the period from 27 December 2020 to 5 March 2021, and it concluded that the first dose of the Pfizer/BioNTech vaccine reduced the risk of infection by from 32% to 42%, and that the second dose of this vaccine reduced it by from 88% to 95. After the administration of both doses of the Pfizer/BioNTech vaccine, the risk of hospitalisation fell by 97% and the risk of dying in a nursing home fell by up to 98%.

The fourth de-escalation phase: April 2021

No new measures against COVID-19 were implemented in nursing homes during April 2021. Nevertheless, measures were put into place to favour citizen mobility during the Easter Week holiday, and this led to the fourth wave. Luckily, the impact of this fourth wave was insignificant for the general population, and it went completely unnoticed in nursing homes (Fig. 1). This was very probably the result of the start of the vaccination programme in the general population, which was able to contain the growth of the said wave.

The fourth epidemic peak phase: April 2021

In May 2021, the epidemiological indicators for COVID-19 had fallen significantly in the general population in Spain and Catalonia, leading to the end of the state of alarm. The anti-COVID-19 measures were relaxed in the belief that the pandemic would remit significantly. In Catalonia, the sectorial plan for nursing homes was modified once again, as it kept the most restrictive measures (the use of a mask and the division of nursing homes into sectors according to floor), although activities in shared and well-ventilated areas were now permitted.

In June 2021, given the improved COVID-19 indicators, the Spanish Government established 2 major measures of increased flexibility: masks no longer had to be worn in public places after 26 June 2021, and the digital COVID certificate was no longer needed to travel in the European Union after 1 July 2021. In Catalonia, the DS returned the management of the geriatric nursing homes it had been managing since 8 March 2020 to the Department of Social Rights (the old DTASF) on 25 June 2021. On 22 June 2021, the nursing homes decided to implement measures to increase flexibility, such as making it unnecessary to wear a mask outdoors, to permit visits by family members to a resident’s room or to permit activities with fully vaccinated volunteers.

The fifth epidemic peak phase: From July to August 2021

The explosion of COVID-19 cases in the general population was so sudden and intense (Fig. 1) that it overwhelmed the operational capacity of the COVID-19 epidemiological system, losing the ability to follow-up contacts (following

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**Table 5 - Vaccination coverage from the start of the campaign in Catalan nursing homes until 9 March 2021.**

| Vaccination coverage | First dose | Second dose |
|----------------------|------------|-------------|
|                      | Residents % | Personnel % | Residents % | Personnel % |
| Old people’s homes   | 94.5       | 76.8        | 90          | 71.3        |
| Homes for people with disability | 95.2 | 74          | 92.5        | 66.3        |
| Mental health centres | 92.6 | 73.7        | 85          | 64.7        |
| % Care homes (total) | 91.4       | 75          | 86.8        | 68.9        |
| No. of residents (total) | 56,990 | 33,315      | 51,980      | 30,547      |
epidemiological chains) and to perform screening tests among contacts.\textsuperscript{39}

Case numbers also increased greatly in nursing homes (Table \ref{table:6}), so that not only were the above-mentioned measures to increase flexibility suspended, but also on 5 July 2021, the “Measures to adapt the mitigation plan in nursing homes” were published.\textsuperscript{40} This was followed on 19 July 2021 by the “Plan to intensify control measures in nursing homes” and the 3 extensions of the “Plan to intensify control measures in nursing homes”, published on the 2, 17 and 31 August 2021.\textsuperscript{42–44} All of the measures that were approved had the aim of preventing a situation similar to the one that occurred in the first wave.

The following are the most significant COVID-19 control measures approved in the Plan for intensification:

1. The regular screening of all workers (3 tests a week on alternate days for personnel who are not fully vaccinated and one PCR every 15 days for vaccinated staff).
2. A study of close contacts, who should do a PCR test on days 0, 4, 10, and 15.
3. For residents, confirmed cases and any contacts who were not fully vaccinated are isolated (for at least 10 days on condition that they are free of symptoms in the previous 72 h.). Although fully vaccinated contacts do not have to go into quarantine, they do have to take a PCR tests on days 0, 4, 10, and 15.
4. All family members who visit residents must take a rapid antigen test.
5. Rapid antigen tests are applied to all family members who come to collect residents for visits outside the home.
6. Newly admitted residents go directly into the green zone if they are fully vaccinated. No admissions are permitted in red zones.
7. The division into sectors is strengthened, as are the stable coexistence units. Workers receive additional training and supervision in the use of PPE, the kitchen, and waste circuits are supervised, as are hygienic measures, security, and ventilation.\textsuperscript{41}

\textit{The fifth de-escalation phase: September 2021 (currently)}

The health authorities established 2 important measures to prevent any repetition of the sudden appearance of a peak in the epidemic:

1. The first measure was a new modification of the sectorial plan to update it according to the new epidemiological situation.\textsuperscript{45} The following changes stand out in comparison with the previous sectorial plan of May 2021:
   a. Residents are classified in 1 of 4 different groups:
      - Residents who have not been exposed to the virus and have no infection (group A).
      - Residents at risk of having been infected with COVID-9 (group B-1).
      - Fully vaccinated residents or ones who had the disease 6 months prior to close contact (group B-2).
      - Confirmed cases of COVID-19 (group C).
   b. Residents were placed in different sectors according to the group they belonged to:
      - Group A (green zone).
      - Groups B-1 and B-2 (yellow zone).
      - Group C (red zone).
   c. New residents:
      - They are admitted to the yellow zone if they are unvaccinated.
      - They are admitted to the green zone if they are vaccinated.
      - The individual in charge of hygiene and health sets the standards for personnel and has to guarantee the correct application of preventive and control measures against COVID-19.
      - Residents and staff who have been in close contact or are partially vaccinated and have not had the disease in the 6 months prior to a close contact will be quarantined during 14 days, in a single room or in their home, respectively.
      - Residents who are close contacts and are fully vaccinated will not undergo quarantine in their rooms and will be able to perform activities (always in the group they coexist with) and receive visits (always by the same family bubble).
      - Personnel will be screened using a fortnightly PCR test for those who are fully vaccinated, with 3 screenings per week on alternate days for those who are not vaccinated or are not fully vaccinated, with a PCR test prior to their return to work after more than 3 week absence from their job.\textsuperscript{45}

2. The second measure consisted of the administration to residents of a third dose of vaccine against COVID-19 (Table \ref{table:6}), to thereby increase their antibody levels and ensure a correct immune response.\textsuperscript{46}

It is too soon to determine the impact of these measures on control of the epidemic. The current situation in Catalan nursing homes is as follows:

\begin{table}[h]
\centering
\caption{Development of the vaccination campaign against COVID-19 in Catalan nursing homes.}
\begin{tabular}{lccc}
\hline
Year & Month & 1st dose & 2nd dose & 3rd dose \\
\hline
2020 & December (after 27 December 2020) & 4,270 & 0 & 0 \\
2021 & January & 47,627 & 27,513 & 0 \\
2021 & February & 5778 & 24,001 & 0 \\
2021 & March & 4092 & 6179 & 0 \\
2021 & April & 2581 & 3526 & 0 \\
2021 & May & 1755 & 2473 & 0 \\
2021 & June & 1030 & 1226 & 0 \\
2021 & July & 987 & 869 & 0 \\
2021 & August & 567 & 624 & 0 \\
2021 & September & 326 & 519 & 26,790 \\
\hline
Total & Total & 69,013 & 66,930 & 26,790 \\
\hline
\end{tabular}
\footnotesize{Source: Prepared by the author using Agència de Qualitat i Avaluació Sanitàries de Catalunya (AQuAS) data.}
\end{table}
1. On 24 September 2021, of the 1021 geriatric nursing homes in Catalonia, 11 (1.07%) are red homes, 29 (2.84%) are orange, and 981 (96.08%) are green homes.47
2. On 29 September 2021, the vaccination coverage against COVID-19 among residents was 97% for the first dose, 96.4% for the second dose, and 57.5% for the third dose. COVID-19 vaccination coverage among the personnel was 91.8% for the first dose and 91.1% for the second dose.47

**Conclusion**

The COVID-19 pandemic has been the greatest challenge faced by the Catalan health authorities in the past 100 years. Its impact on the general population and those in geriatric nursing homes has been enormous (Table 1) and the development of the vaccination campaign against COVID-19 was a major challenge.

In Catalonia, the situation in geriatric nursing homes during the different waves of the pandemic varied widely:

1. In the first wave, they were very vulnerable due to the structural deficits of the care model itself, the deficits in the system as a whole due to the lack of personal protective equipment and contingency plans. The situation was completely unstable and in some cases, this led to possible failures to take proper care, as is shown by the reports presented by the Sindic de Greuges48 (the Catalanian Ombudsman) and the Consell Assessor de Salut.49
2. The preventive measures to control the pandemic were insufficient in the second wave (the contingency plan, the sectorial plan and its intensification measures, and mass screenings using PCR or rapid tests).
3. Thanks to the start of the vaccination campaign against COVID-19, the pandemic had less incidence in geriatric nursing homes that it did in the general population during its third and fourth waves (Table 1).
4. The number of cases increased greatly in the fifth wave. This may have been due to the delta variant of the SARS-CoV-2 virus (which is more transmissible and virulent than the other variants). It is now the majority variant, nevertheless, the fall in immunological efficacy of the vaccines 6 months after they have been administered, has made it advisable to commence the second phase of the vaccination campaign, with the administration of a third dose.51

We are now at a moment of grave uncertainty. Until the COVID-19 pandemic is brought under control, it will not be possible to start the debate about the new social and healthcare model which the country needs. As a society, we have to protect our senior citizens and ensure their health and well-being. When the pandemic has ended, it will be the time to consider all of the reforms which are necessary to prevent the repetition of a situation such as the one experienced during this pandemic.

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**Conflict of Interests**

The author has no conflict of interests to declare.

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