

## Special article

# Coronavirus: the geriatric emergency of 2020. Joint document of the Section on Geriatric Cardiology of the Spanish Society of Cardiology and the Spanish Society of Geriatrics and Gerontology



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## Article history:

Available online 8 May 2020

## Keywords:

COVID-19

Geriatrics

Worldwide emergency

Pandemic

## ABSTRACT

SARS-CoV-2 infection, also known as COVID-19 (coronavirus infectious disease-19), was first identified in December 2019. In Spain, the first case of this infection was diagnosed on 31 January, 2020 and, by 15 April 2020, has caused 18 579 deaths, especially in the elderly. Due to the rapidly evolving situation regarding this disease, the data reported in this article may be subject to modifications. The older population are particularly susceptible to COVID-19 infection and to developing severe disease. The higher morbidity and mortality rates in older people have been associated with comorbidity, especially cardiovascular disease, and frailty, which weakens the immune response. Due to both the number of affected countries and the number of cases, the current situation constitutes an ongoing pandemic and a major health emergency. Because Spain has one of the largest older populations in the world, COVID-19 has emerged as a geriatric emergency. This document has been prepared jointly between the Section on Geriatric Cardiology of the Spanish Society of Cardiology and the Spanish Society of Geriatrics and Gerontology.

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## Coronavirus: la emergencia geriátrica de 2020. Documento conjunto de la Sección de Cardiología Geriátrica de la Sociedad Española de Cardiología y la Sociedad Española de Geriatría y Gerontología

## RESUMEN

La infección por SARS-CoV-2, denominada COVID-19 (*coronavirus infectious disease-19*), es una enfermedad desconocida hasta diciembre de 2019 a la que nos enfrentamos en España desde el 31 de enero de 2020 —fecha del primer caso diagnosticado en nuestro país— y que ya ha causado la muerte de 18.579 personas (a 15 de abril de 2020), sobre todo mayores. Es importante tener en cuenta que, dado que la información evoluciona con extremada rapidez en este campo, lo expuesto en el presente documento puede estar sujeto a modificaciones. La población de mayor edad es especialmente susceptible a la infección por COVID-19, así como a desarrollar criterios de gravedad. Este aumento de morbimortalidad en el paciente mayor se ha asociado tanto con las comorbilidades, especialmente la enfermedad cardiovascular, como con la situación de fragilidad, que conlleva una respuesta inmunológica más pobre. La situación actual, tanto por los países afectados como por el número de casos, constituye una pandemia y supone una emergencia sanitaria de primer nivel. Como España es uno

## Palabras clave:

COVID-19

Geriatría

Emergencia mundial

Pandemia

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de los países más envejecidos del mundo, la COVID-19 se ha convertido en una emergencia geriátrica. El presente documento se ha elaborado conjuntamente entre la Sección de Cardiología Geriátrica de la Sociedad Española de Cardiología y la Sociedad Española de Geriátrica y Gerontología.

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### Abbreviations

ARDS: acute respiratory distress syndrome  
CVD: cardiovascular disease  
ICU: intensive care unit

## INTRODUCTION: A PANDEMIC IN THE CONTEXT OF AN AGING SOCIETY

Since December 31, 2019, when the health authorities of the People's Republic of China informed the World Health Organization of several cases of pneumonia of unknown etiology in the city of Wuhan, the infection has spread across the globe and, at the time of article drafting, has been linked to 2 073 459 confirmed cases and 134 011 deaths (on April 15, 2020).<sup>1</sup> A week after this alert, the same Chinese authorities reported that the causative agent of the infection was a new coronavirus called SARS-CoV-2. Infection with this virus causes diverse clinical manifestations encapsulated in the term COVID-19. These manifestations include respiratory symptoms, from the common cold to severe pneumonia with an acute respiratory distress syndrome (ARDS), septic shock, and multiorgan failure. Nonetheless, most COVID-19 patients have thus far had milder symptoms.<sup>2</sup> The present document has been jointly drafted by the Geriatric Cardiology Section of the Spanish Society of Cardiology and the Spanish Society of Geriatrics and Gerontology to review the available evidence on this infection in elderly people, who constitute a population group that is particularly vulnerable to this disease and its severe manifestations.

The world population has almost tripled from 1950 to 2020.<sup>3</sup> In this context, reduced fertility and increased life expectancy mean that older adults will outnumber young people in almost all countries in the next 40 to 60 years. The Population Division of the United Nations estimates that the population older than 60 years will increase from its current number of 800 million to 2000 million in 2050, at which time this population group will comprise 22% of the global population.<sup>4</sup> While only Italy had more people older than 65 years than younger than 15 years in 1995, 30 countries had this demographic profile in 2017 and 5 more will have this profile in 2020. Accordingly, population aging is creating major health care and social challenges related to the care of this ever-expanding age group.<sup>5</sup>

In the case of Spain, the population aging phenomenon is also well-advanced, with a doubling of the number of people older than 65 years in fewer than 30 years. According to the Spanish National Institute of Statistics, the current data from Spain show that the population older than 65 years represents about 17% of the total population, or more than 7 million people, about 25% of whom are octogenarians.<sup>6</sup> Projections made by the Spanish National Institute of Statistics suggest that people older than 65 years will comprise more than 30% of the population in 2050 (with almost 13 million) and that octogenarians will constitute more than 4 million or more than 30% of the total older population.<sup>7</sup> United Nation projections predict that Spain will

be the most aged country in the world in 2050, with 40% of the population older than 60 years.<sup>7</sup>

## EPIDEMIOLOGY OF COVID-19: IMPACT ON THE ELDERLY POPULATION

Few data are available in the literature on the epidemiology of COVID-19. In 2 series of 41 and 191 patients treated in hospitals in Wuhan that reported the profiles of hospitalized patients, the prevalence of the disease was higher in men (62%–73%) and the median ages were 49 [interquartile range, 41–58] and 56 [46–67] years, respectively.<sup>8,9</sup> According to data published by the Spanish Ministry of Health (table 1), 177 633 patients were diagnosed with COVID-19 in Spain by April 15, 2020; of the 57 106 hospitalized individuals, 24.1% were aged between 70 and 79 years, 19% were aged between 80 and 89 years, and 5.1% were older than 90 years.<sup>10</sup> These data are probably biased due to the underdiagnosis of mild or asymptomatic patients, as well as the existence of undocumented outbreaks in nursing homes. Accordingly, the actual age distribution is unknown. Nonetheless, these figures give us an idea of the gravity of the impact of this disease on the geriatric population, given that more than 30% of the patients admitted with confirmed infection are 70 years or older.

The mortality rate data also vary and are influenced by the various demographic, social, and epidemiological factors of each country, as well as possible differences in the diagnostic approach (more or less restrictive criteria at diagnostic testing). Accordingly, although the mortality rate varies between 2% and 5% in different documents, it is not currently possible to obtain an accurate rate.<sup>2,11</sup> Nonetheless, the available data clearly indicate that age is a major risk factor for mortality. One of the Chinese cohorts identified age as an independent predictor of mortality, with an odds ratio (OR) of 1.1 (95% confidence interval [95%CI], 1.03–1.17) per year.<sup>8</sup> An Italian study that examined the first cases identified in the country found that mortality was substantially increased in septuagenarians and almost tripled in octogenarians.<sup>12</sup> The World Health Organization report of February, 28, 2020, based on 55 924 confirmed cases in China, showed mortality rates of 14.8% in patients older than 80 years and of 8% in those aged between 70 and 79 years vs less than 0.5% in those younger than 50 years.<sup>11</sup> Similarly, in Update No. 76 on the situation in Spain from the Spanish Ministry of Health of April 15, 2020 (table 1), the mortality rate increased from 1.2% in patients aged 50 to 59 years to 13.8% in those 70 to 79 years and 23.7% in those from 80 to 89 years, reaching 25.6% in patients  $\geq$  90 years.<sup>10</sup>

## CLINICAL MANIFESTATIONS OF COVID-19 AND THE PARTICULAR CHARACTERISTICS OF ELDERLY PATIENTS

The clinical presentation of COVID-19 is quite variable. In a Chinese study comprising 72 314 patients (44 672 laboratory-confirmed cases, 16 186 suspected, 10 567 clinically diagnosed, and 889 asymptomatic), the clinical severity was reported to be mild in 81.4% of patients, severe in 13.9%, and critical in 4.7%.<sup>2</sup> In the more severe cases, COVID-19 can cause pneumonia, which is sometimes complicated in the most severely ill patients by an

**Table 1**Distribution by age of confirmed cases of COVID-19, patients who required hospitalization or intensive care unit admission, and mortality<sup>10</sup>

Age group, y	Total							
	Confirmed n	Total hospitalized		ICU		Died		Death rate, %
		n	%	n	%	n	%	
0-9	382	137	0.2	20	0.4	1	0	0.3
10-19	682	132	0.2	6	0.1	1	0	0.1
20-29	6294	917	1.6	53	1.1	17	0.2	0.3
30-39	11 752	2416	4.2	169	3.5	35	0.4	0.3
40-49	18 388	5514	9.7	431	8.9	109	1.1	0.6
50-59	22 844	8965	15.7	940	19.3	284	3.0	1.2
60-69	20 137	11 508	20.2	1561	32.1	887	9.2	4.4
70-79	19 042	13 765	24.1	1500	30.9	2633	27.4	13.8
80-89	16 962	10 824	19	162	3.3	4016	41.8	23.7
≥ 90	6335	2928	5.1	16	0.3	1622	16.9	25.6
Total	122 818	57 106	100	4858	100	9605	100	

ICU, intensive care unit.

ARDS with distributive, cardiogenic, or mixed shock. Elderly people and/or those with pre-existing medical comorbidities are the most vulnerable and more frequently develop more severe forms of the disease.<sup>8,9,13–16</sup> This aspect may be influenced by aging-related physiological processes, such as, in particular, elderly patients' higher prevalence of frailty and comorbidities that reduce functional reserve, which in turn decreases intrinsic capacity and resilience and undermines patients' resistance to disease and infection.<sup>16</sup>

The most frequent symptom is fever. In a series of Chinese patients, 83% of those hospitalized had fever, a proportion that reaches 98% in other published series.<sup>13,17</sup> There are no conclusive data on the clinical profile by age, but elderly patients frequently do not have fever (or it is of lower intensity), even in the presence of severe infections.<sup>18</sup> For example, a study of patients attending the emergency department who were confirmed to have influenza infection found that only 32% had triage temperatures exceeding 37.8 °C.<sup>19</sup> In a series of 56 patients with COVID-19, the proportion of patients with fever was smaller for those older than 60 years, although the percentage difference was small.<sup>20</sup> Accordingly, the threshold of suspicion should be lower in elderly patients and COVID-19 should never be ruled out in such patients due to an absence of fever.<sup>21</sup>

The next most common clinical manifestation is cough, seen in 60% to 80% of patients; it is typically a dry cough.<sup>13,17,22</sup> Other respiratory symptoms may develop, such as dyspnea (affecting about 30%) and, less frequently, sore throat and rhinorrhea. According to the initial series,<sup>17</sup> the most severe respiratory condition involves a pneumonia that is bilateral in 75% of patients; the pneumonia is complicated by ADRS in 17% of patients.

Other clinical manifestations include general symptoms such as asthenia, anorexia, myalgia, headache, anosmia, digestive manifestations such as diarrhea, and even cardiovascular complications (which are addressed in the next section). Because these symptoms are fairly nonspecific, the infection may be underdiagnosed at early stages or in patients with mild disease. No detailed analysis has been performed of symptoms according to age, but it is expected that, as occurs for other diseases, elderly patients will frequently show atypical or more nonspecific clinical symptoms. What does seem clear is the higher frequency of severe manifestations, need for intensive care unit (ICU) admission, and mortality in elderly patients.<sup>10</sup> Accordingly, given the epidemic, a low threshold of suspicion is recommended for this infection in older patients (table 2).

The most notable laboratory test data include severe lymphocytopenia (< 800 cells/ $\mu$ L) as the most frequent hematological finding in critically ill patients, which additionally seems to be more pronounced in elderly patients.<sup>20</sup> Other frequent findings, which have been linked to poor prognosis, are elevated levels of D-dimer, interleukin 6, lactate dehydrogenase, and ferritin. Also reported have been elevations in C-reactive protein, transaminases, and bilirubin. In contrast, procalcitonin increases are infrequent.<sup>9</sup> From the radiological point of view, patients not admitted to the ICU typically show bilateral involvement comprising ground-glass opacities with subsegmental areas of consolidation, whereas standard computed tomography images of ICU patients show bilateral multiple lobar and subsegmental areas of consolidation<sup>9</sup> (table 2).

### IMPACT OF COVID-19 ON OLDER PATIENTS WITH HEART DISEASE

COVID-19 can cause a severe infection with serious effects in patients with heart disease. Importantly, patients with cardiovascular disease (CVD) have a higher risk of severe symptoms and death.<sup>8,23</sup> In addition, COVID-19 infection has been associated with multiple direct and indirect complications in the cardiovascular system, such as acute myocardial damage, myocarditis, arrhythmias, and thromboembolic disease.<sup>8,23</sup> Moreover, the treatments under investigation for COVID-19 can have secondary cardiovascular effects (table 3)<sup>24</sup>; these interactions mean that patients' standard drug therapies are frequently discontinued during their admission, which can lead to decompensation of the underlying heart condition. Furthermore, polypharmacy involving antipsychotic drugs and other antibiotics that prolong the QT interval can contribute to cardiotoxicities related to these drug combinations in older patients.

The above-mentioned limitations once again complicate the elucidation of the true prevalence of comorbidities such as CVD in people infected with SARS-CoV-2. Nonetheless, the available studies indicate an association between pre-existing CVD and severe cases of COVID-19 infection. Between 32% and 48% of patients in the published cohorts had some type of comorbidity, particularly hypertension (15%–30%), diabetes (19%–20%), and CVD (8%–15%).<sup>8,9</sup> Specifically, a meta-analysis of 6 studies with a total of 1527 patients determined prevalences of hypertension, CVD and cerebrovascular disease, and diabetes of 17.1%, 16.4%, and 9.7%,

**Table 2**  
Summary of the typical clinical manifestations and laboratory test and radiological findings in patients with COVID-19

Clinical manifestations		
Very frequent (> 60%)	Frequent (20%-50%)	Infrequent (< 10%)
Fever	Anorexia	Headache
Cough	Myalgia	Diarrhea
Dyspnea	Sputum production	Vomiting
Exhaustion	Pharyngalgia	Anosmia and ageusia
		Rhinorrhea
Laboratory test abnormalities		
Severe lymphocytopenia*	↑ Ferritin*	↑ Transaminases (ALT, AST)
↑ D-dimer*	↑ IL-6*	↑ C-reactive protein
↑ LDH*	↑ Troponin*	↑ Bilirubin
Radiological findings		
Bilateral involvement		
Ground-glass opacities		
Lobar and subsegmental consolidations		

ALT, alanine aminotransferase; AST, aspartate aminotransferase; IL-6, interleukin 6; LDH, lactate dehydrogenase.

\* Laboratory test results associated with worse prognosis.

**Table 3**  
Adverse cardiovascular effects of drugs investigated for COVID-19 treatment

Chloroquine/hydroxychloroquine	Use carefully in patients with previous heart disease, with QT at the upper limit of normal or under treatment with QT interval-prolonging agents*, electrolyte abnormalities (particularly, hypokalemia or hypomagnesemia), clinically relevant bradycardia, arrhythmia, or severe heart failure.
Lopinavir/ritonavir	The dosage must be adjusted in chronic kidney disease (glomerular filtration rate < 50 mL/min) Use carefully in patients with previous heart disease, with QT already at the upper limit of normal or under treatment with QT interval-prolonging agents*, electrolyte abnormalities (particularly, hypokalemia or hypomagnesemia), clinically relevant bradycardia, arrhythmia, or severe heart failure.
Azithromycin	Chronic kidney disease, fulminant hepatitis; carefully in patients with arrhythmogenic diseases (particularly, female and elderly patients): congenital or confirmed QT interval prolongation*, electrolyte abnormalities (particularly, hypokalemia or hypomagnesemia), clinically relevant bradycardia, arrhythmia, or severe heart failure
Remdesivir	Hypotension during infusion. Unknown CV interactions
Tocilizumab	Hypertriglyceridemia, elevated transaminases. Unknown CV interactions
Interferon β-1b	Flu-like illness. Liver failure. No CV interactions reported
Cyclosporin	Hypertension, hyperlipidemia, hyperuricemia, hyperkalemia, hypomagnesemia

CV, cardiovascular.

\* QT interval-prolonging agents: class IA (quinidine and procainamide) and III (dofetilide, amiodarone, and sotalol) antiarrhythmics, cisapride, terfenadine, antipsychotics such as pimozide, antidepressants such as citalopram, and fluoroquinolones such as moxifloxacin and levofloxacin.

respectively.<sup>25</sup> These comorbidities were more common in patients who required ICU admission than in those who did not. In the Chinese study that included 44 672 confirmed cases from Wuhan, the mortality rate was higher in patients with CVD (10.5%), diabetes (7.3%), and hypertension (6%).<sup>2</sup> Although the overwhelming majority of data are thus far derived from Chinese cohorts, the initial Italian data indicate similar results.<sup>12</sup> In the report on the COVID-19 situation in Spain of April 13, 2020, by the Spanish National Network of Epidemiological Surveillance (COVID-19 report No. 22), 33.1% of those affected had a history of CVD, easily the most frequent comorbidity in these patients, followed by diabetes mellitus (16.5%), high blood pressure (14.1%) and respiratory disease (10%).<sup>26</sup> In this report, patients with a history of CVD more frequently had pneumonia, hospitalization, need for ICU admission, and mortality.

The specific pathophysiological mechanisms explaining this association between CVD and the frequency and severity of COVID-19 infection are unknown but age may be one of the factors involved, beyond the simple epidemiological association. First, age

is both a risk factor for cardiovascular conditions and progressive deterioration of the immune system; indeed, changes in the immune response have been associated with a higher prevalence of CVD.<sup>27,28</sup> Specifically, in COVID-19 infection, angiotensin-converting enzyme 2 (an integral membrane protein with multiple physiological functions) has been identified as the cellular entry point for the virus. Additionally, binding of the virus to this receptor alters a lung-protective mechanism, which may contribute to its pathogenicity.<sup>29,30</sup> Patients with hypertension and CVD have been theorized to be more susceptible to the infection due to an elevated concentration of angiotensin-converting enzyme 2 secondary to treatment with angiotensin-converting enzyme inhibitors.<sup>23,31</sup> Nonetheless, this relationship remains to be fully elucidated and there are no clear evidence related to the possible influence of angiotensin-converting enzyme inhibitor therapy on the clinical course of the disease; both the European Society of Cardiology and the Spanish Society of Cardiology do not recommend angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers discontinuation.<sup>32</sup>

Moreover, in addition to an association between a history of CVD and the presence and severity of COVID-19, the infection is itself associated with cardiovascular manifestations. Troponin elevation is frequent, and in a higher proportion and to a greater extent in patients with severe infections.<sup>33–35</sup> As in other coronaviruses, myocarditis development has been described in patients with COVID-19, although its prevalence is unknown. In a series of 150 patients, 7% of deaths were attributed to myocarditis, and mononuclear infiltration has been found in myocardial tissue in autopsy studies.<sup>33,36,37</sup> Clinical signs of heart failure are frequent in patients hospitalized for COVID-19 (up to 29% in some of the published series), which could be due both to decompensation of a pre-existing disease and to the development of myocarditis or stress cardiomyopathy.<sup>8,38</sup> Heart failure increases mortality and can also confound suspicion of COVID-19 infection in patients who attend emergency departments with dyspnea. It is unknown if the infection is associated with coronary heart disease, but there is evidence that patients with respiratory infections have an elevated risk of acute myocardial infarction, probably due to atherosclerotic plaque destabilization. Indeed, Kwong et al.<sup>39</sup> found that, in the first 7 days after a confirmed respiratory viral infection, there is a significant increase in acute myocardial infarction vs the onset of this event 1 year before or after this risk period. Curiously, in the subgroup analysis, this higher incidence of acute myocardial infarction was only confirmed in patients older than 65 years.<sup>39</sup> To conclude, patients with COVID-19 exhibit changes in coagulation parameters and, in particular, an elevated concentration of D-dimer, which may increase thrombotic risk and is associated with higher mortality. However, the clinical impact of these phenomena is unknown, as well as the optimal treatment.<sup>8,40</sup>

There are thus far no data on the differential cardiac involvement in elderly patients. Nonetheless, a higher percentage of these types of complications is likely due to the association with more severe clinical symptoms and the higher prevalence of previous CVD in this population group. Future data will provide more evidence on the risk stratification, particularly in patients with previous CVD, as well as on the impact of the viral infection on the cardiovascular system.

## NURSING HOMES AND SOCIAL HEALTH CENTERS

Among elderly patients, those who are institutionalized comprise a group that is extremely vulnerable for various reasons (table 4), especially when nursing homes are frequently being isolated due to COVID-19 outbreaks and experience a large number of deaths due to the infection.

Given the current situation of the COVID-19 pandemic in Spain, the Spanish Ministry of Health and the Spanish Society of Geriatrics and Gerontology have each drafted documents containing recommendations on the identification and urgent reporting of cases and on the care and isolation of patients in this situation (table 5).<sup>41–43</sup> In social health centers experiencing an outbreak, the management of the center must designate a person responsible for recording the cases and immediately reporting the details to Public Health.

## HOW TO CONTINUE TO PROVIDE HEALTH CARE TO OUR OLDER PATIENTS WITH HEART DISEASE?

The current situation of the pandemic, overload of the health care system, and confinement measures to reduce the spread of the virus make it difficult to maintain non-COVID-19-related health care. In this regard, elderly patients with heart disease are

**Table 4**

Reasons for the special vulnerability of nursing home residents to COVID-19 infection

They generally have an underlying disease or comorbidities
They are usually elderly
They usually have geriatric syndromes (eg, frailty, cognitive decline, dependency)
They have close contact with other people (their carers) and other residents
They usually spend considerable amounts of time in enclosed spaces and with an equally vulnerable population
They usually have atypical symptoms, sometimes ones that complicate clinical suspicion and diagnosis

**Table 5**

Classification of cases in nursing homes and social health centers according to Order SND/265/2020 of March, 19, 2020<sup>43</sup>

Asymptomatic residents and without close contact with a possible or confirmed case of COVID-19
Asymptomatic residents in preventive isolation due to close contact with a possible or confirmed case of COVID-19
Residents with symptoms compatible with COVID-19 or confirmed cases of COVID-19
Confirmed cases of COVID-19

particularly vulnerable for 3 reasons: they are patients at risk of decompensation (to a greater or lesser extent, depending on their CVD situation), they represent a group at high risk from COVID-19 infection, which is why their isolation strategies must be particularly strict, and they have poor access to telemedicine options (eg, due to difficulties with telephone communication and with no access or poor understanding of new technologies). Accordingly, considering their heightened vulnerability, we must make special effort to care for this population group in the current situation, although with the above-mentioned limitations (table 6 and table 7).

Finally, given the rapid daily increases in the number of cases and the overload (in many cases, collapse) of the health care system, the care is being affected of patients who might be hospitalized due to other diseases. The limited resources necessitate decision-making that prioritizes patients who are more likely to benefit. This concerns the care of patients infected with COVID-19, as described above, but also affects patients with all types of conditions. In this regard, frailty and other geriatric syndromes must be evaluated when hospitalization and invasive techniques are being considered, now more than ever.<sup>44</sup> It must be remembered that little evidence is available on several cardiac treatments in elderly patients with frailty (eg, invasive management of non-ST-segment acute coronary syndrome) and the risk-benefit balance for decision-making must include the risk related to admission in the current situation and the resource limitations.

## ETHICAL QUESTIONS

The previous sections clearly show that the risk posed by COVID-19 infection is higher in elderly people than in younger individuals. For this reason, the medical and political authorities should offer older people, especially those who are particularly frail, strict preventive measures to minimize the risk of infection. In addition, if an effective vaccine is obtained for the disease, vaccination of elderly people and patients with chronic diseases

**Table 6**

Recommendations on the management of older patients with heart disease

<b>Replace in-person visits with teleconsultations<sup>21</sup></b>
<i>No follow-up visits for stable patients but make contact with them (or identify the most vulnerable) to ensure that:</i>
They are aware of the current situation and of the need for confinement and to avoid health care centers
They know the recommended measures to avoid infection with COVID-19 (table 7)
They are in a stable situation regarding their conditions
They know the warning symptoms for decompensation that require evaluation
They have a telephone number that can be consulted if needed to avoid in-person visits as much as possible
They have sufficient medication and prescriptions
<i>It is important to locally organize the telephone follow-up of these patients</i>
<i>Measures must be implemented to permit bidirectional communication (telephone and e-mail)</i>

**Table 7**

General recommendations to prevent infection in older people

<b>General recommendations</b>
1. Wash hands frequently
2. Avoid close contact (at least a 1-m interpersonal distance)
3. Clean and disinfect surfaces that have come into contact with several people
4. Avoid all travel that is not strictly necessary
5. Stay at home
6. If warning signs/symptoms develop, contact your primary care physician
<b>For which symptoms should I seek medical help?</b>
<i>Fever, cough, and fatigue. If you feel that you are developing symptoms, call your physician</i>
<i>The warning signs suggesting COVID-19 and the need for immediate consultation are:</i>
1. Difficulty breathing or fatigue
2. Persistent pain or pressure in the chest
3. Confusion or inability to wake up
4. Bluish lips or face
5. Gastrointestinal symptoms: nausea, vomiting, diarrhea, loss of appetite
6. General malaise, overall muscle pain

should be a priority—after health care workers and other highly exposed professionals—to maximize the number of lives saved, and this also applies to other preventive measures such as possible prophylaxes before or after exposure.<sup>45</sup> In contrast, the situation is different in the case of people that have already been infected with COVID-19. However, chronological age should again not be the main consideration in decision-making. Besides age, attention must be paid to other aspects determining theoretical life expectancy. The recent statement of the Executive Board of the European Geriatric Medicine Society stressed that advanced age cannot by itself be a reason for excluding patients from specialized hospital units.<sup>46</sup> Regardless, any patients rejected from specialized hospital units must be ensured access to medical care, symptomatic management, and palliative treatment if required.

0.06pt?>New general recommendations published due to the COVID-19 pandemic<sup>47</sup> consider 3 areas of activity related to difficult ethical decisions in exceptional crisis situations and the

adequacy of care and ICU admission. The first refers to resource organization and availability and, besides aspects related to material resource optimization, to the promotion of procedures that facilitate the withdrawal of mechanical ventilation and streamline patient transfer to a general ward. The second point refers to the global situation and patient characteristics. The most relevant aspect in terms of older people is their biological age and the use of clinical frailty scales, frailty indices, and comprehensive geriatric assessment, with age not *per se* a reason to block ICU admission. In this population, a therapeutic adequacy plan must be established at admission and recorded in the clinical history; it must be made clear whether the patient is a candidate for mechanical ventilation or not and a treatment deintensification plan should be specified to avoid futility if the patient deteriorates. The third point concerns the ethics of decision-making. Priority must be given to decisions that maximize survival to discharge and the number of life-years saved and give patients a chance to live each stage of their lives. Reference is once again made to chronological age as a factor that should never be the only consideration. Decisions must be based on the opportunity cost principle and the need to maximize the common good, that is, admit those patients who will benefit the most, independent of age or chronic diseases. Patients with a minimum expected benefit should not be admitted to the ICU and careful evaluation is required of the benefit derived from the admission of patients with a life expectancy less than 1 to 2 years. Therefore, elderly patients should not be refused admission to the ICU due to their chronological age and it is necessary to assess their general situation, as well as the benefit of admission. Regardless, the aim is to allow patients to live their current stage of life to the fullest.<sup>47</sup>

In this regard, the Spanish Bioethics Committee has released a report warning that a utilitarian mentality and prejudices against the elderly or persons with disabilities should be avoided when ICU admittance is being considered. This report also stresses the social utility of every person simply for being human. Decisions must be based on the principles of utility and equity, and it may sometimes be fairer to give preference to the most vulnerable groups.<sup>47</sup> Age should never be considered a reason to deny or limit health care.

## CONCLUSIONS

The situation of the COVID-19 pandemic that we now face represents one of the most important geriatric emergencies of 2020. According to the available data, it will probably cause the death or disability of a considerable percentage of older adults in Spain, particularly those with previous CVD. Furthermore, the management of these patients is further complicated by the adverse cardiovascular effects of the drugs used to combat the infection, in addition to the scarcity of resources, especially in critical care units. The current pandemic is therefore a demanding situation and a health care, epidemiological, social, and political challenge that is further complicated by complex ethical questions that make it even more difficult, if possible, to manage older patients infected with COVID-19.

## EDITOR'S NOTE

This document is subject to modifications as knowledge on the COVID-19 infection evolves. The present manuscript has undergone an especially rapid internal review by the editorial team due to the strong interest in disseminating the information among the scientific community. The Spanish Society of Cardiology has published an early version of these recommendations on its website.

## ACKNOWLEDGMENTS

The authors would like to thank Ángel Cequier, current president of the Spanish Society of Cardiology, for suggesting this much-needed and highly pertinent document.

## CONFLICTS OF INTEREST

The authors report no conflicts of interest related to this manuscript.

## APPENDIX 1. SCIENTIFIC SOCIETIES OF THE AUTHORS

The contributing authors are members of the following scientific bodies: Section on Geriatric Cardiology of the Spanish Society of Cardiology: C. Bonanad (president), S. García-Blas (chairperson), P. Díez-Villanueva, A. Ayesta (chairperson), J. Sanchis Forés, A. Ariza-Solé, and M. Martínez-Sellés; Spanish Society of Geriatrics and Gerontology: F.J. Tarazona-Santabalbina (chairperson of the clinical section), M.T. Vidán-Austiz (vice-secretary), and F. Formiga.

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