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Age factor and COVID-19: Are there limits to be admitted in the ICU? An ethical issue

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Abstract
***Objective*: The aim of this article is to clarify different aspects including ethics about the elderly patients during coronavirus disease 2019 (COVID-19) scenario in Spain.**
***Design*: Retrospective, observational.**
***Methods*: Description and comparison of all age groups by confirmed cases and hospitalizations, with special emphasis on those elderly admitted to the intensive care unit (ICU) and mortality. Study of the ethical recommendations of different Spanish scientific societies with treatment proposals for the elderly group. Patients were divided into 6 different age groups. Group I (0-14 years), Group 2 (15-29 years), Group 3 (30-49 years), Group 4 (50-69 years), Group 5 (70-79 years), and Group 6 (>80 years).**
***Results*: The number of confirmed cases during the study was 250,273 and 20,534 deaths. The global mortality was 8.2%. Number of hospitalized patients was 37.1% and 18.25% died. Three point one percent were admitted to the ICU with a mortality of 30.4%. ICU admission ratio: Group 4 51.7%, Group 5 28.4%, and Group 6 4.95%. Average age survivors were 58 (44-76 years), 83 (75-89 years) corresponding to Group 5-6. Non-ICU mortality increased to 14.6% in Group 5, while Group 6 achieved the highest mortality (21.7%).**
***Conclusion*: The number of elderly patients admitted to the ICU was exceptionally low.**

Key words: COVID-19, age factor, limitations, triage, allocation strategies.

Introduction about COVID-19
Since January 7, 2020, the Chinese authorities identified, as a causative agent of the outbreak, a new virus of the Coronaviridae family that has currently been named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). World Health Organization (WHO) names the disease as coronavirus disease 2019 (COVID-19). The Chinese-born epidemic spread across borders, practically impacting worldwide until the WHO finally decided to declare the pandemic state on March 11, 2020. Up to the moment this article has been written, around 6.7 million people have been infected worldwide with the SARS-CoV-2 and with an overall mortality of 355,755 cases. In Spain, the number of confirmed cases reached 248,068 and 20,515 deaths.

Hypothesis
In aging analysis, not only cost or burden must be brought to the fore, but aging as an asset, or the contributions of older people to society and the economic system. (1) "Active aging" according to the WHO adopted the following definition of "quality of life": as an individual's perception of his position in life in the context of the culture and value systems in which he lives and in relation to its objectives, expectations, norms and concerns. (2) Problems have been reported during the COVID-19 pandemic at the time of admission for elderly patients in the intensive care unit (ICU).

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We have two reports available (3,4) delivered during the COVID-19 pandemic in Spain, the last one with more than 250,000 cases (confirmed) and 20,534 deaths. The first estimations in Spain confirmed the prevalence of a higher mortality in groups of patients older than 70 years (globally), representing 86.3% of the deceased. Specifically, people between 80 and 89 years old represented 41.3% of deaths (7,117), above the groups between 70 and 79 years old (24.8%; n=4,273) and over 90 years old (20.3%; n=3,496). (3) The group of over 80 years old admitted to the ICU was the smallest with only 312 patients. (3) This percentage (group >80 years) was surprising, and indicated that most of them died, mostly without knowing where it occured, given the absence of detailed information.

We hypothesized that care provided to patients over 80 years of age has been nil, despite the potential benefit of receiving care and assistance at the critical care level. We have estimated that ICU admissions were exceptionally low in this range of age, so we emphasized knowing all the characteristics of this topic.

Methodology

Over the past 20 years, the life expectancy of the elderly has increased, and they should be considered as composed of several subpopulations with different therapeutic objectives.

There is a potential classification modified from patients described in 2007 enthroned age with activity-attitude (5) in elderly patients. This study typically identified 6 different groups with subpopulations due to age range according with the official data available (**Table 1**).

For the analysis, we studied all patients diagnosed with COVID-19 cases after being tested by any technique or by RT-PCR (reverse transcription polymerase chain reaction) test done in Spain during current pandemic. The official reports are available online from the Spanish Ministry of Health (5) by "COVID-19 team. RENAVE. CNE. ISCIII (National Epidemiology Center of the Carlos III Health Institute)." Since the start of the SARS-CoV-2 alert, and until 11:00 h on May 29, 2020, information has been received through SiViES (Surveillance System in Spain. National Epidemiology Center of the Carlos III Health Institute).

Availability of ICU beds in Spain

The Spanish National Health System (SNS) has 454 hospitals with a total of 122,047 beds. (6) The private centers 310 hospitals, with 31,333 beds. In a crisis situation, that would mean a total of 764 hospitals with 153,380 beds, 326 beds/100,000 (100K) inhabitants. Compared to the rest of Europe (27 countries, from 2020), Spain has 215 fewer beds than the 541,43 beds/100K registered by the European average. (7)

The total number of critical care beds in Spain identified in a registry between 2010-2011 was 5,596 in which, excluding the beds for neonates, pediatrics and stroke, they were 4,738, which for a population census (April 1, 2011) of 46,148,605 inhabitants, generated a resource of 10.3 ICU beds per 100K inhabitants. (8) However, the number of ICU beds in Spain reported by The Spanish Society of Intensive, Critical Medicine and Coronary Units (SEMICYUC) (9) up to date is 3,598 (2019) compared to 3814 beds by the registry of the Ministry of Health of Spain in 2017, which means ratio of 7.8-8.2 beds/100K inhabitants. Once the beds of private centers have been recovered by the Ministry (plus 730 beds), this level rises to 9.3 beds/100K. (6)

Impact tools from COVID-19

In Madrid, on March 9, 2020, the heads of the ICU services in Spain began to coordinate a joint Contingency Plan (9) that allowed effective and controlled treatment of these patients.

This Contingency Plan used the tool resource "FluSurge 2.0", (10) that provides hospital administrators and public health officer an estimation of demand for hospital resources during the "next flu pandemic", assessing the number of hospitalizations and deaths.

The introduction of data related to age, was according to the current data of the active population. The number of ventilators available is covered by the 92% of all ICU beds. After including the data and with an impact of 25%, as well as a duration of 12 weeks globally in Spain, the most likely scenario is 198,882 admissions and a mortality ratio of up to 39,990 with the minimum scenario being 26,286 and the worst of up to 62,182 deaths (**Figure 1**).

Assessing in two potential scenarios: A (25% attack rate) and B (35% attack rate), the outbreak peak would occur during week 7, representing for A the 51% of total capacity hospital needed and the increase in need ventilators of 118%. Scenario B, during the same outbreak peak, will be representing 71% of total hospital capacity, an increase of 257% in the capacity demands of the ICU, increasing also 180% ventilators needed.

The analysis data included all patients diagnosed

of COVID-19, categorized in different groups of age, sex, hospitalized and non-hospitalized, admitted in ICU and fatality. Also, it includes the patients with risk factors (at least one or more underlying disease) cardiovascular, respiratory, diabetes, Xray con infiltration compatible with pneumonia, acute respiratory distress syndrome (ARDS), and needs of mechanical ventilation.

The age variable was expressed as median of interquartile range (IQR) for identify the age more unfavorable. P values comparing ICU and non-ICU patients and global between survivors and deaths, were from χ^2, Fisher's exact test, or ANOVA, Kruskal-Wallis, and/or Mann-Whitney U test. A two-sided α of less than 0.05 was considered statistically significant.

Results

As of May 29, 2020, (13th week) the number of confirmed cases was 250,273 and 20,534 deceased. During the attack period, the pandemic peak came the last March 26, 2020 (between 5th-6th week after outbreak). In Spain, the number of daily cases reach 9,444 (29.1% worst than in scenario B) with 56,188 cases confirmed, 9,759 hospitalized (ICU 737 admissions with COVID-19) and 4,089 deaths. On April 1 there were 1,528 people in the ICUs in Madrid, according to the Ministry of Health. Up to May 10, 2020, the total number of patients hospitalized were 74,008 and admitted in the ICU 7,695 (10.3%) corresponding with the 13th week of the outbreak.

The data offered (**Table 2**) on May 10, 2020 by Spanish Ministry of Health (4) suggested various interpretations remarkably similar given during the hypothesis.

The distribution by sex and age group indicates that COVID-19 cases were overrepresented among those over 50 years, both in men and women. In women it drew attention more sharply between 45 and 65 years, and in men from 60 years.

Global mortality shown was 8.2%. Fifty-eight point three percent of all survivors of COVID-19 were women (41.7% men). The survivors average age was 58 (44-76 years), being 83 (75-89 years) in the deceased group (corresponding to Group 5-6).

The mortality raised to 14.6% in the Group 5 (70-79) and Group 6 (>80), such that they reach the top deaths (21.7%) and a fatality 5.12%. Twenty-four point one percent of the cases reported were health caregivers. This percentage being significantly higher among women (76%) than men. Health personnel who died from COVID-19 was 0.12% of the total. (52)

Of the total number of patients diagnosed with COVID-19, 37.1% were hospitalized and 18.25% died. Three point one percent were admitted to the ICU, with 30.4% mortality. Forty-one point seven precent of the patients had one or more diseases, of which 16.3% died, which meant a fatality of 6.75%. Patients with cardiovascular disease died 23.4%, followed by diabetes (22.8%) and pneumonia (19.72%). Pneumonia patients develop 9.4% of them, but their mortality rate reaches 40.1%. Seventy-five point five percent of ICU patients needed ventilatory support with mechanical ventilation, of whom 33.4% died.

In a specific analysis on death, it was observed that deceased patients, compared to the non-deceased, were significantly older (median age 83 vs 58 years), men were more represented, and frequently have underlying diseases, pneumonia and other respiratory complications, and they have been hospitalized and admitted to the ICU more frequently. Eighty-seven percent of the patients who died were over 70 years, 95% of them had some types of previous underlying disease and 60% had cardiovascular disease.

According to the admission in the ICU data, 70% of patients were men (women 30%). The age range of the patients admitted in the ICU was 65 (56-72) versus 70 (56-81) admitted in the hospitals. Group 4 had 52.2% of the total ICU admissions. Both Groups 5 and 6 corresponded to the other 33.6% ICU admissions, but Group 6 was only 5%. Seventy percent of the ICU patients had one or more chronic diseases. Cardiovascular disease was present in 34.3%, diabetes 22%, and 12% respiratory disease. The diagnoses of pneumonia were made by radiological or clinically in 77% of the patients admitted in the ICU (65.9% non-ICU) with a diagnose of ARDS in 28%.

In a specific analysis of death in the ICU, it was observed that Group 6 was practically a testimony to the number of admissions comparatively, with admission only occurred in 4.95% with respect to all groups.

Discussion

The world's elderly population is projected to exceed the billion mark by 2020. At that time, more than 700 million older people will live in developing countries.

Any pathology in the elderly could be attended by the Intensive Medicine teams and their admission to the ICU, after identifying optimal mental capacity (ruling out senility or severe psychological deterioration), lack of immunocompromise with immunosuppressive

therapies and not malignancy with a life expectancy of less than 2 years.
There is an evident difference in the number of ICU admissions by age, Group 4 with 51.7% admissions, Group 5 with 28.4% compared with 4.95% of those over 80 years (**Table 3**). We may ask ourselves exactly what was happening with the Group 6, why such differences, but we still had no answers based in a scientific evidence, so this situation left doubt whether the octogenarians had been treated under the same conditions as the lower group (70-79 years), given that the case fatality rate represents a difference of 7%, understanding that the real mortality of patients in ICUs with severity complex and multiorgan failure, it is common to find it around 17.3%, rising after discharge in the general wards 22.3%, (11) while in COVID-19 it is 20.9% of deaths and a fatality rate of 21.9% in the group of nonagenarians, although in this group the number of hospitalizations was significantly lower and almost circumstantial in the ICU (46 patients), representing 0.6% of the total.

Comorbidities
The WHO defines comorbidity as the occurrence of more than one pathology in the same person. This is similar to that offered by Alvan R. Fenstein (1970) in a publication of the Journal of Chronic Diseases. (12) Its formal definition is the concurrent presence of two or more medically diagnosed diseases in the same individual, and the diagnosis of each contributing disease is based on established and widely recognized criteria. (13)
With aging, the presence of comorbidity increases markedly. After age 65 48% of people living in the United States report arthritis, 36% hypertension, 27% heart disease, 10% diabetes, and 6% a history of stroke. (14,15) As a result, these 35.3% of the population in the United States aged 65-79 report two or more diseases, and this reaches 70.2% at the age of 80 years or more. (16) During 2018 the number of deaths in Spain (16) was 427,721 (1,172 deaths x month) due firstly to cardiovascular diseases (28.3%), followed by tumor diseases (26.4%), and then respiratory disease (12.6%). Fifty percent of people over 75 years have osteoarthritis (but the cause of mortality was only 1.2%), followed by hypertension (HT) with 44%, poor circulation (34.5%), heart (25.77%), etc (**Figure 2**).
Fifty percent of those over 75 years have rheumatic disease and/or osteoarthritis, as this is a common condition present in 30% of those 55 years older, and more than 14% of those with 45 or more years. "Osteoarthritis" is a serious pathology if there is a serious condition of reduced mobility and dependency.

Prioritize or distribute justice without paternalistic interference.
A consensus group of experts, (17) the majority belongs to the Intensive Medicine Services in Spain and other 21 institutions, have introduced the criteria of "aging" in an ethical guide (**Table 4**). The recommendations introduce a proposal of support with mechanical ventilation and non-invasive ventilation, according to the characteristics of the patient with respiratory failure due to COVID-19, (17) selecting those older (>80 years) with/without comorbidities, and different methods of oxygenation and ventilation. Proposals are also introduced to the patients between 70-80 years of age with clear differences with respect to the previous one. This proposal in an ethical document seems highly questionable even in a pandemic situation. Finding a fragility scale or having a consultation with a "health ethics committee" during an emergency triage is very unusual and not available in most ICUs across the country. The lack of resources in a pandemic, should not allow a selection on who lives or not, but a selection of foundations in favor of life. The fact of introducing any strategy that maximizes survival at hospital discharge and the number of years of life saved, (17) even considering that chronological age (in years) should not be the only element to consider in allocation strategies. A proposition based on chronological age is a contradiction to the right of distributive justice and does not make a more ethical any document.
The European Society of Intensive Care Medicine (ESICM) and the Society of Critical Care Medicine (SCCM) have launched a guideline (18) on the management of critically ill adults with COVID-19 in which 38 affiliations between hospital centers, institutions, departments, universities, and medical schools, did not include any age criteria as recommendations what to do or does not.
Risk factors associated with respiratory failure requiring mechanical ventilation are not clearly described in published reports, although from the limited available data, risk factors are associated with a critical illness/ICU admission, included older age (>60 years), male gender, and the presence of underlying comorbidities such as diabetes, malignancy, and immunocompromised state. (19-22)
In current practice, chronological age has not been an impediment to treat, until now. Outcome in eld-

erly patients undergoing primary coronary intervention for acute myocardial infarction is positive. (23) Age by itself should not be an absolute contraindication against renal transplantation in the elderly. An estimated 5-year survival rate of 55% post-engraftment for an 80-year-old patient can be acceptable, (24) due to the improvement in their quality of life, avoiding chronic hemodialysis. Age criteria per se should never be used as a means for a categorical exclusion from therapeutic interventions that represent the standard of care. Likewise, without falling into the temptation of paternalistic interference, age-based cutoffs should not be used in resource allocation strategies. (25)

Only 4.95% of patients over the age of 80 in Spain have been admitted to the ICU. It is a serious difference and raises questions about whether there has been "unfair patient selection" at admission and specifically in the ICU.

Each patient has the right to be treated individually, based on the standard of care in medicine. (26)

During the data collection, differences were found in the number of cases and patients due to accumulated cases or changes in criteria, which was a bias in the information provided.

One of the main limitations of this study is the wide heterogeneity in the definitions used by the different registries when defining comorbidities, as well as the existence of null data provided on the care of critically ill patients, which makes even more difficult the availability of verified information. Therefore, one of the objectives of this study (causes and number of deaths of the different “age groups” in the ICU) could not be achieved due to the lack of information about it, not officially disclosed.

Conclusions

Without a clear explanation, the admissions of patients older than 80 years in the Spanish ICU has been in an extremely low proportion, compared to other age groups treated. During COVID-19, exquisite performance is required for medical care and evaluation. The concept of “old” or “elderly” is underrated. Patients are equally susceptible to treatment and life support, provided there is no diagnosis of "senility", severe disability, and/or the presence of two or more underlying chronic nonterminal diseases.

The lack or deficit of resources, even in the midst of an epidemic crisis, does not justify potential discriminatory interventions based on age or disability, except when advance directives are available or in patients with clearly defined comorbidities or chronic terminal illnesses. Denial of admission to a patient solely by age is not justified an ethically objectionable.

Due to the increasing life expectancy, an adequate classification of older patients in subpopulations as previously proposed, including not only octogenarians but also nonagenarians, could help to make decisions or at least work in that direction in the future.

Conflict of interest

The author declares no conflict of interest.

Table 1. Proposal of classification by age range according data of this study

Group (years)	Defined as	Capabilities	Medical assistance
1 (0-14)	Younger	From newborns to 14 years	Pediatrician
2 (15-29)	Teens and adult younger	From teenagers to adult younger patients	Family practitioners
3 (30-49)	Active adult	Active for working life	Family practitioners
4 (50-69)	Active young old	Active and retired or not retired from working life	Family practitioners
5 (70-79)	Retired young old	Active, some of them even work (included intellectual work)	Family practitioners
6 (>80 +)	Retired elderly	Still active (physically and mentally) and also independent	Family practitioners Geriatricians
7 (>90 +)*	Old older patients or nonagenarians	Some active, but usually need help	Family practitioners Geriatricians

Legend: *This Group 7 was included reports in the beginning of pandemic, but no available data was updated. Modified from (5). Significance of the groups by capabilities and medical assistance.

Table 2. Age group. Mortality, update to May 10th, 2020. (4) Official report.

	Deaths	Survival	Total confirmed	%*	%**
Sex - Women - Men***	 8913 11622	 132658 97081	 141570 108703	 6.29 10.8	 3.56 4.63
Age (IQR)*** - <2 to 14 yo (Group 1) - 15 to 29 yo (Group 2) - 30 to 49 yo (Group 3) - 50 to 69 yo (Group 4) - 70 to 79 yo (Group 5) - >80 yo (Group 6)***	83 (75-89) 3 28 280 2480 4890 12834	58 (44-76) 1406 15453 59465 76586 28521 46122	 1409 15481 59745 79066 33411 58956	 0.21 0.18 0.41 3.13 14.6 21.7	 0.001 0.011 0.12 0.99 1.95 5.12
Health caregivers***	52	40909	40961	0.12	0.02
Hospitalization***	16812	75301	92113	18.25	6.71
Admission ICU***	2342	5353	7695	30.4	0.94
Risk factor 1+***	16897	86676	103573	16.31	6.75
Cardiovascular***	10133	33287	43420	23.34	4.04
Pneumonia[2]***	12288	55005	62293	19.72	4.9
ARDS***	2345	3501	5846	40.11	0.93
MV***	1943	3866	5809	33.24	0.77
Diabetes***	5532	18690	24222	22.8	2.21
Other diseases***	11727	57252	68979	17	4.68
Total	20534	229739	250273	8.2	
Amendment[1]	20515	227553	248068	8.2	

Legend: IQR=interquartile range; ICU=intensive care unit; ARDS=acute respiratory distress syndrome; MV=mechanical ventilation; *=percentage of mortality from every group; **=fatality percentage about total confirmed patients; ***=a significative difference p>0.001, p values between survivors and deaths, from χ^2, Fisher's exact test, or ANOVA, Kruskal-Wallis, and/or Mann-Whitney U test; Risk factor 1+=one or more comorbidity factors; [1]=differences founded from ages group but did not change the results; [2]=patients diagnosed by radiology or clinical symptoms.

Table 3. Characteristics according to hospitalization in the Intensive Care Unit (ICU). COVID-19 cases notified to RENAVE. All patients updated, May 10th, 2020 [4]. Official report

	ICU admitted n (%)	Non-ICU n (%)	p value
Sex			<0.001
- Women	2300 (30)	33446 (45)	
- Men	5316 (70)	40409 (55)	
Age, median (IQR)	65 (56-72)	70 (56-81)	
Age group (years)			
- <2 to 14 yo (Group 1)	51 (0.6)	280 (0.37)	
- 15 to 29 yo (Group 2)	87 (1.1)	1391 (1.9)	
- 30 to 49 yo (Group 3)	932 (12)	10323 (14)	
- 50 to 69 yo (Group 4)	3978 (52)	24230 (33)	
- 70 to 79 yo (Group 5)	2191 (29)	16469 (22)	
- >80 yo (Group 6)	374 (5)	21152 (29)	
Risk factor 1+	5308 (70)	48534 (79)	<0.001
Cardiovascular	2616 (34)	24446 (41)	0.004
Respiratory	934 (12)	8857 (15)	0.336
Diabetes	1538 (22)	13460 (23)	<0.001
Other	3070 (40)	34089 (46)	<0.001
Pneumonia*	5837 (77)	48712 (66)	<0.001
ARDS	2125 (28)	2974 (8)	<0.001
Deaths	2342 (30)	12713 (17)	<0.001
Total	7616 (9)	73885 (91)	
Amendment[1] total	7695 (9)	74008(91)	

Legend: COVID-19=coronavirus disease 2019; IQR=interquartile range; ARDS=acute respiratory distress syndrome; Risk factor 1+=one or more comorbidity factors; *=patients diagnosed by radiology or clinical; [1]=means differences founded from ages group but did not change the results. p values comparing ICU and non-ICU patients and global between survivors and deaths, from χ^2, Fisher's exact test, or ANOVA, Kruskal-Wallis, and/or Mann-Whitney U test.

Table 4. Indicaciones de VMI y VMNI según las características de la persona

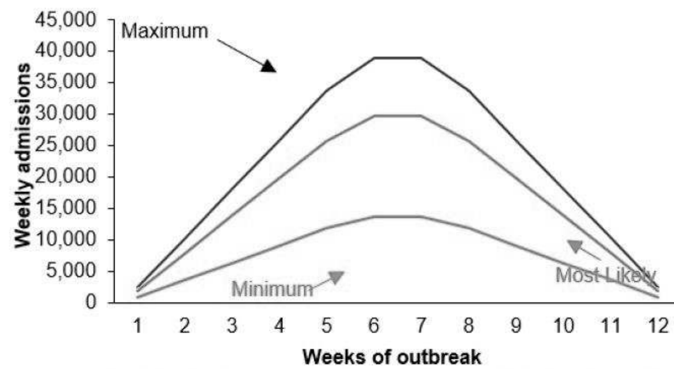
Características de la persona	Propuesta de ventilación en insuficiencia respiratoria por COVID-19
>80 años con comorbilidades	Recibirá mascarilla de oxígeno de alta concentración, oxigenoterapia de alto flujo o VMNI (estos dos últimos procedimientos se considerarán la relación riesgo/beneficio por la producción de aerosoles en habitaciones compartidas y la disponibilidad de vigilancia en planta de hospitalización convencional)
>80 años sin comorbilidades	Recibirá preferentemente mascarilla de oxígeno de alta concentración, oxigenoterapia de alto flujo o VMNI (estos dos últimos procedimientos se considerará la relación riesgo/beneficio por la producción de aerosoles en habitaciones compartidas y la disponibilidad de vigilancia en planta de hospitalización convencional) Se seleccionará, cuidadosa e individualmente, la indicación VMI según indicación y evaluando riesgo/beneficios
Entre 70-80 años - Sin patología previa importante - Con comorbilidad moderada-grave*	Subsidiario de tratamiento con VMI Se valorará cuidadosamente la indicación de VMI y se le tratará preferentemente con VMNI o similar, según disponibilidad
Demencia y/o enfermedad neurodegenerativa	No subsidiarios de VMI
En todos los casos anteriores	Se retirará la VMI según la evolución en la puntuación de la escala SOFA diaria, las complicaciones acontecidas y estableciendo un juicio de futilidad

Legend: VMI=ventilación mecánica invasiva; VMNI=ventilación mecánica no invasiva; COVID-19=coronavirus disease 2019; SOFA=Sequential Organ Failure Assessment; *=ICC, miocardiopatía dilatada, EPOC, cirrosis, insuficiencia renal crónica, etc.
Escala de Charlson >3 puntos.

"Published with permission of the publisher. Original. Indications of VMI and VMNI according to the characteristics of the person. Original source: Rubio O, Estella A, Cabre L, et al. Recomendaciones éticas para la toma de decisiones difíciles en las Unidades de cuidados intensivos ante la situación excepcional de crisis por la pandemia por COVID-19: revisión rápida y consenso de expertos. Med Intensiva. 2020. DOI: 10.1016/j.medin.2020.04.006 [17] Copyright© 2020, Publicado por Elsevier España, S.L.U. Todos los derechos reservados."

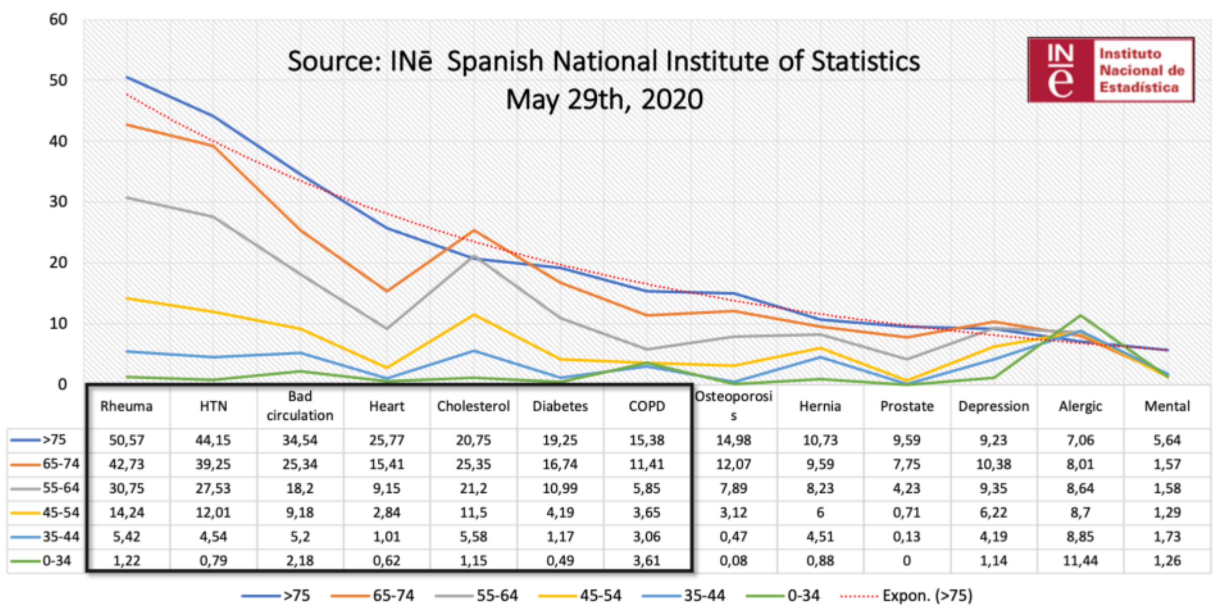
Figure 1. Distribution of admissions by week, 12 week outbreak, 25% attack rate

Pandemic Influenza Impact / Attack Rate	25%
Total Hospital Admissions	
Most Likely Scenario	*198,882*
Minimum Scenario	91,968
Maximum Scenario	260,368
Total Deaths	
Most Likely Scenario	*39,990*
Minimum Scenario	26,286
Maximum Scenario	62,182



Hosp Adm. / Week	1	2	3	4	5	6	7	8	9	10	11	12
Most Likely Scenario	1,989	7,955	13,922	19,888	25,855	*29,832*	*29,832*	25,855	19,888	13,922	7,955	1,989
Minimum Scenario	920	3,679	6,438	9,197	11,956	13,795	13,795	11,956	9,197	6,438	3,679	920
Maximum Scenario	2,604	10,415	18,226	26,037	33,848	39,055	39,055	33,848	26,037	18,226	10,415	2,604

Figure 2. Comorbidities by age range. Population by age, chronic disease and diagnosis of the disease



	Rheuma	HTN	Bad circulation	Heart	Cholesterol	Diabetes	COPD	Osteoporosis	Hernia	Prostate	Depression	Alergic	Mental
>75	50,57	44,15	34,54	25,77	20,75	19,25	15,38	14,98	10,73	9,59	9,23	7,06	5,64
65-74	42,73	39,25	25,34	15,41	25,35	16,74	11,41	12,07	9,59	7,75	10,38	8,01	1,57
55-64	30,75	27,53	18,2	9,15	21,2	10,99	5,85	7,89	8,23	4,23	9,35	8,64	1,58
45-54	14,24	12,01	9,18	2,84	11,5	4,19	3,65	3,12	6	0,71	6,22	8,7	1,29
35-44	5,42	4,54	5,2	1,01	5,58	1,17	3,06	0,47	4,51	0,13	4,19	8,85	1,73
0-34	1,22	0,79	2,18	0,62	1,15	0,49	3,61	0,08	0,88	0	1,14	11,44	1,26

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