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RESEARCH PAPER

Scope of treatment and clinical-decision making in the older patient with COVID-19 infection, a European perspective

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Key summary points

Aim To better characterize the management of older people presenting with COVID-19 in European hospitals during the first two waves.

Findings The majority of older patients admitted to the hospital were transferred to a specific geriatric COVID-19 unit. Respondents found it important to consult a palliative care specialist and spiritual counsellor. In some national guidelines in Europe, the clinical frailty scale was used in combination with other variables for decisions on treatment.

Message This pandemic has illustrated collaboration between geriatricians and palliative care specialists to improve the care for older patients with severe disease and an uncertain prognosis. Screening for frailty can prove to be useful in decision-making in this scenario.

Abstract

Purpose Older patients were particularly vulnerable to severe COVID-19 disease resulting in high in-hospital mortality rates during the two first waves. The aims of this study were to better characterize the management of older people presenting with COVID-19 in European hospitals and to identify national guidelines on hospital admission and ICU admission for this population.

Methods Online survey based on a vignette of a frail older patient with Covid-19 distributed by e-mail to all members of the European Geriatric Medicine Society. The survey contained questions regarding the treatment of the vignette patient as well as general questions regarding available services. Additionally, questions on national policies and differences between the first and second wave of the pandemic were asked.

Results Survey of 282 respondents from 28 different countries was analyzed. Responses on treatment of the patient in the vignette were similar from respondents across the 28 countries. 247 respondents (87%) would admit the patient to the

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hospital, in most cases to a geriatric COVID-19 ward (78%). Cardiopulmonary resuscitation was found medically inappropriate by 85% of respondents, intubation and mechanical ventilation by 91% of respondents, admission to the ICU by 82%, and ExtraCorpular Membrane Oxygenation (ECMO) by 93%. Sixty percent of respondents indicated they would consult with a palliative care specialist, 56% would seek the help of a spiritual counsellor. National guidelines on admission criteria of geriatric patients to the hospital existed in 22 different European countries.

Conclusion This pandemic has fostered the collaboration between geriatricians and palliative care specialists to improve the care for older patients with a severe disease and often an uncertain prognosis.

Keywords Covid-19 · Older patients · Collaboration · Palliative care · Advance care planning · Resuscitation order

Introduction

Older patients were particularly vulnerable to develop a severe COVID-19 disease resulting in an estimated 30% intra-hospital mortality [1, 2]. Due to extreme strain on the healthcare system, the question of how to provide the most optimal care with limited resources has been an issue in all European countries, in particular for these older frail patients. Decisions whether or not to admit them to intensive care units (ICU) have been discussed extensively, arguing that older frail patients have worse overall outcomes and high mortality rates [3, 4]. Therefore, a less interventionist approach led to an increasing demand for palliative care for a large group of frail old patients with respiratory failure [5]. New challenges were raised, for example, related to visiting policies for the relatives of these sick or dying patients. Even with a large part of this vulnerable older group of patients now vaccinated, the Special Interest Group on Palliative Care (SIG-PC) of the European Geriatric Medicine Society (EuGMS) decided to work on the lessons learned with this pandemic and on the next steps to improve the management of old frail patients with severe diseases. The aims of this online survey were to better characterize:

1) Management of older people presenting with COVID-19 in European hospitals (admission policy, visitation policy, resuscitation policy, advance care planning, use of services) and
2) National guidelines in European countries on hospital admission and ICU admission in older people with COVID-19.

Methods

Three members (RP; RvB; SP) of the SIG-PC wrote a vignette of a geriatric patient with a Clinical Frailty Score of 6, presenting with COVID-19. Questions regarding the treatment of the vignette patient as well as general questions regarding available services and national policies were drafted.

Three demographic questions were also added for the participants: country, age, number of years of working experience and the clinical setting (acute or long-term care).

Several other members of the SIG-PC commented on the text, until a consensus was formed.

Vignette

A 87 year old man is complaining of coughing, increasing shortness of breath and chest pain and had a positive COVID-19 PCR the day before presentation on the emergency department. He has been staying in a nursing home following a hip fracture 4 months ago. His medical history reveals a mild vascular dementia, multiple percutaneous coronary interventions in the previous years, chronic heart failure (treated with medication and currently stable) and cataract surgery on both eyes. The clinical frailty score is estimated at 6. He partly regained mobility since his hip fracture but he needs help for all activities outside and because of cognitive problems he also partly needs assistance for ADL activities inside.

The symptoms started 7 days ago, his temperature is 37.8°Celsius, heart rate 81/min, BP 152/77, respiratory rate 20/min and SpO2 91% without additional oxygen. The patient is conscious, but slightly incoherent in speech. He is able to answer with "yes" or "no" when asked straightforward questions. The referring letter from the nursing home reveals that the patient has three children. On physical examination, crackles and rhonchi are heard. The patient does not show signs of imminent respiratory distress. The urine in his urine catheter, inserted during his stay in the Emergency Room, is clear. The rest of the clinical examination is unremarkable. In his medical file, no advance care plans are described, the patient does not seem to comprehend questions regarding this topic. Chest X-ray shows bilateral infiltrates. CRP is 90 mg/L (normal value <9 mg/L), D-dimers 250 mg/L (normal value <0.5 mg/L).

The questionnaire was uploaded to Surveymonkey®, an online survey tool. The online link to the questionnaire was distributed by e-mail to all members of the EuGMS by the secretariat with a short accompanying note explaining the goal of the questionnaire and the request to answer the questions on February 15th 2021. The questionnaire was closed on March 30th 2021, placing it at the end of the second wave of COVID-19 in Europe, according to Eurostat. Answers were stored in a safe environment and analyzed using Microsoft Excel®. The study was approved by the scientific research committee SARS-CoV-2 and COVID19 of the Erasmus Medical Center as well as the medical ethics research committee of the Erasmus Medical Center, registration number MEC-2021-0085.

Results

Respondents

Six thousand six hundred and twenty members of the EuGMS received an email with a link to the questionnaire. The link was also posted on the social media accounts and website of the EuGMS. In total 296 answers from 38 different countries (10 non-European). With the exclusion of non-European respondents, 282 respondents from 28 different countries remained. The number of respondents differed between the countries, 1 to 35 answered questionnaires per country were received (see Fig. 1).

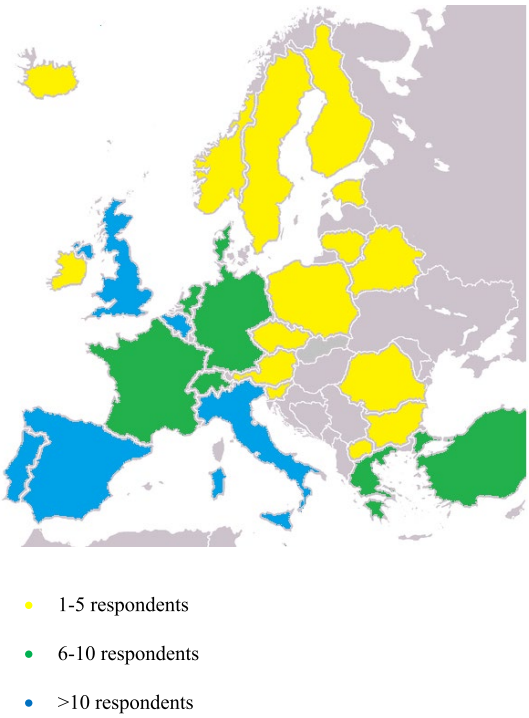

Fig. 1 Country of origin of respondents

Table 1 Demographics of the respondents

	No. (%)
Age ($n=218$)	
23–30	18 (8)
31–40	66 (30)
41–50	61 (28)
51–60	47 (22)
61–70	26 (12)
Gender ($n=218$)	
Female	147 (68)
Male	70 (32)
Other	1 (0)
Profession ($n=216$)	
Geriatrician	173 (80)
Internal medicine	16 (7)
Internist-geriatrician	5 (2)
General practitioner	5 (2)
Palliative care specialist	3 (1)
Other	14 (6)
Years of working experience ($n=219$)	
0–5 years	56 (26)
5–10 years	43 (20)
10–15 years	32 (15)
> 15 years	88 (40)
Location of work ($n=211$)	
Hospital	193 (92)
Nursing home	9 (4)
Other	9 (4)

218 respondents provided information on their age. Mean age was 45.3 years, ranging from 23 to 69. The majority of respondents were female ($n=147$, 68%) and worked as geriatricians ($n=173$, 80%). 55% of respondents had over 10 years of working experience and 92% of respondents worked in a hospital (see Table 1).

Treatment of COVID-19

The main results on management of the vignette patient (a COVID-19 positive geriatric patient with a Clinical Frailty Scale score of 6) are shown in Table 2. Responses regarding the treatment of the patient were fairly consistent. 97% of respondents would start one or more forms of treatment, with the majority starting oxygen (82%), corticosteroids (71%) and/or low molecular weight heparin (85%). A smaller portion of respondents would start antibiotics (39%) and/or antiviral drugs (20%). 247 respondents (87%) would admit the patient to the hospital, in most cases to a geriatric COVID-19 ward (78%). 18% would admit the patient to a

Table 2 Management of a COVID-19 positive geriatric patient with a CFS-score of 6

Questions (total of surveys = 282)	Yes (%)	No (%)
Start treatment	273 (96.8)	9 (3.2)
Start oxygen	232 (82.3)	50 (17.7)
Start antibiotics	113 (40.1)	169 (59.9)
Antiviral drug	55 (19.5)	227 (80.5)
Corticosteroid	200 (70.9)	82 (29.1)
Low molecular weight heparin	240 (85.1)	42 (14.9)
Admit patient to the hospital?	247 (87.6)	35 (12.4)
On geriatric covid ward	192 (68.1)	
On regular covid ward	44 (15.6)	
On ward for Optiflow or NIV	10 (3.6)	
On ICU	1 (0.4)	
Resuscitation policy added to medical file on ED?	201 (71.3)	81 (28.7)
No, this will be done on the ward		17 (6.0%)
No, not until the patient is able to speak on the matter		3 (1.0%)
No, not until the opinion of his children is known		12 (4.3%)
No, not until it is clear whether or not previous advance care planning was recorded		24 (8.5%)
Combination of 2 or more of the "no" answers		25 (8.9%)
Medically appropriate?		
Cardiopulmonary resuscitation	42 (14.9)	240 (85.1)
Intubation and mechanical ventilation	25 (8.9)	257 (91.1)
Admission to ICU	52 (18.4)	230 (81.6)
High flow oxygen	208 (73.8)	74 (26.2)
ECMO	19 (6.7)	263 (93.3)
Visitors allowed during non-palliative stage*	145 (51.6)	136 (48.4)
Visitors allowed during palliative stage	262 (92.9)	20 (7.1)
Additional services	232 (82.3)	50 (17.7)
Palliative care specialist	172 (60.9)	
Spiritual counseling	157 (55.7)	

NIV non-invasive ventilation, *ICU* intensive care unit, *ECMO* extracorpular membrane oxygenation

*This question was answered by 281 respondents

regular COVID-19 ward or a high oxygen ward (4%). One respondent answered they would admit the patient to the intensive care unit (ICU).

Advance care planning

71% of respondents would add a resuscitation policy to the patient file. The remaining 29% ($n = 81$) would not add a resuscitation policy while the patient was still at the ER. 24 respondents (30%) would wait until it was clear whether or not previous advance care planning (ACP) was registered, 17 (21%) would leave the decision to the physicians on the COVID-19 ward, 12 (15%) would first want to know what the opinion of the patient's children was on this matter, 3 (4%) would wait until the patient was able to speak on the matter and 25 respondents (31%) combined two or more of the before mentioned arguments.

Cardiopulmonary resuscitation was felt to be medically inappropriate by 85% of respondents, intubation and mechanical ventilation by 91% of respondents, admission to the ICU by 82%, and ExtraCorpular Membrane Oxygenation (ECMO) by 93%.

Visiting policy and additional services

51% of the respondents said that visitors would be allowed during the non-palliative stage of the vignette patient, most respondents stating one or two visitors per day with duration of visiting hours in general maximized to one hour. During the palliative stage, visitors were allowed more often (93%), more visitors were allowed and duration of visit was generally more than one hour per day, often unlimited hours.

82% of respondents ($n = 232$) would call additional services: 172 respondents indicated they would consult with a

Table 3 Criteria mentioned in national guidelines

Country	No*	Criteria in national guidelines regarding hospital admission							Criteria in national guidelines regarding ICU admission						
		AG	LE	FU	CO	PO	CF	CFS	AG	LE	FU	CO	PO	CF	CFS
Austria	2	X	X	X	X			X	X	X	X	X			
Belgium	7	X	X	X	X	X	X	X	X	X	X	X		X	X
Czech Republic	1									X					X
Denmark	1	X	X	X	X		X	X	X	X	X	X		X	X
Finland	2		X	X	X	X	X	X		X	X	X	X	X	X
France	5	X	X	X	X		X	X	X	X	X	X		X	X
Germany	3	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Greece	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Iceland	2		X	X	X		X	X		X	X	X		X	X
Ireland	1	X	X	X	X			X	X	X	X	X			X
Italy	2	X	X	X	X	X	X		X	X	X	X	X	X	
Malta	2		X	X	X		X	X		X	X	X		X	X
Netherlands	6	X	X	X	X		X	X	X	X	X	X		X	X
North Macedonia	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Norway	3	X	X	X	X		X	X	X	X	X	X		X	X
Portugal	3	X	X	X	X		X	X	X	X	X	X		X	X
Romania	1	X		X	X		X	X	X		X	X	X		X
Slovenia	1		X	X	X					X	X	X			
Spain	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sweden	1		X	X	X			X		X	X	X			X
Switzerland	1	X		X		X	X	X	X		X		X	X	X
Turkey	4	X			X	X	X		X			X			
United Kingdom	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total		17/22	19/22	21/22	21/22	10/22	18/22	19/22	17/23	20/23	21/23	21/23	9/23	16/23	19/23

AG age, *LE* life expectancy, *FU* functionality, *CO* comorbidity, *PO* polypharmacy, *CF* cognitive function, *CFS* clinical frailty scale, *X* criterium present in guideline

*No refers to numbers of respondents from that country

palliative care specialist, 157 respondents would seek the help of a spiritual counsellor.

National guidelines

Table 3 illustrates that a combination of multiple criteria were used to decide on the ceiling of treatment in older COVID-19 patients.

National guidelines on admission criteria of geriatric patients to the hospital existed in 22 different European countries (see Table 3). Criteria that were most often present in the guidelines regarding admission to the hospital were functionality and comorbidity (19/22 guidelines), life expectancy and clinical frailty scale (19/22), cognitive function (18/22) and age (17/22). Polypharmacy was mentioned in 10 out of 22 national guidelines.

23 different European countries were reported to have national guidelines for admission of geriatric patients to the ICU (see Table 3). Criteria that were most often present in the guidelines were functionality and comorbidity (21/23 guidelines), life expectancy (20/23), clinical frailty scale (19/23), age (17/23) and cognitive function (16/23). Polypharmacy was mentioned in 9 out of 23 national guidelines.

Differences between first and second COVID-19 wave

Differences in management of older people with COVID-19 in European hospitals were reported between the first and second wave (see Fig. 2). Data were not collected per wave, separate questions were included regarding the first and second waves. It was left up to the discretion of the respondents to identify the first and second wave as this could vary between different countries. COVID-19 was more often present in the general geriatric population during the second wave, but less frequent in nursing homes. Older persons were more often admitted to the hospital in the second wave and there was a greater drop-out of personnel.

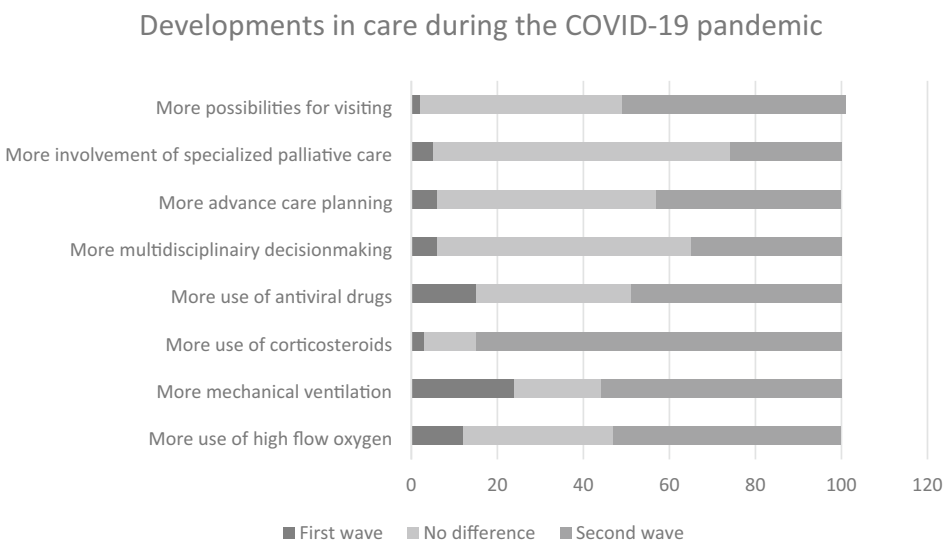

Fig. 2 Developments in care during the COVID-19 pandemic

All proposed treatments (high flow oxygen, mechanical ventilation, corticosteroids and antiviral drugs) were reported to be used more often in the second wave. However, there was less difference in decision-making regarding palliative care, with almost half of the respondents reporting no difference between first and second wave.

Discussion

The majority of older patients admitted to the hospital were transferred to a specific geriatric COVID-19 unit. This reflects the important role geriatricians play in in-hospital care of older frail people with COVID-19 throughout Europe. With the use of the comprehensive geriatric assessment, geriatricians can provide a broad range of care to older people, from full therapy to comfort care [5]. As the majority of patients suffering from a severe form of COVID-19 were of older age [6], it was especially important for geriatricians to take a leading role.

Assessment of frailty

In many hospitals, the clinical frailty scale (CFS) was used to assess the level of frailty in older persons. The CFS proved to be an important predictor of worse outcome in COVID-19 [5–8]. Importantly, CFS was always used in combination with other variables for decisions on ceiling of treatment. Many European guidelines included comorbidities, life expectancy and cognitive function. Age is not suitable to be used as a rigid criteria but could be used as a predictor for worse outcomes.

Treatment options and limitations

Treatment options for our vignette patient were in almost all cases limited to therapy that could be provided on the clinical ward, such as administration of oxygen, corticosteroids and low molecular weight heparin. Antiviral drugs and/or antibiotics were started by a minority of respondents. This course of treatments is in line with scientific research and protocols available at the time the questionnaire [9]. Respondents indicated that more treatment options were available during the second wave, as was to be expected.

The vast majority of respondents deemed more invasive treatment options such as transfer to the ICU and mechanical ventilation to be medically inappropriate. 74% of respondents found high-flow nasal canula (HFNC) oxygen treatment medically appropriate. It is unknown whether the respondents found this option medically appropriate because they felt HFNC would be a less invasive alternative for mechanical ventilation or because they believed HFNC would be a way to keep the patient as comfortable as possible. Research showed that HFNC does reduce numbers of intubation and ventilation, but does not affect case fatality [10]. Effects on comfort for the patients are not clear. A Cochrane review stated it was uncertain whether HFNC made any difference on both short-term as well as long-term comfort [11]. It could be argued that HFNC can be of value for both patients, family and physicians in the sense that all options were explored to give the patient the best chance of survival. On the other hand, not all patients are comfortable undergoing HFNC treatment. Thus, more research is needed to understand what HFNC means to all parties involved and if and when it should be started or discontinued.

Patients with a CFS of 5 or more have been reported to have a higher mortality rate both during an ICU admission as well as within 30 days (OR 1.22 and 1.50, respectively)

in one study [12]. Consequently, some countries used a CFS score of 6 or higher as a contra-indication for ICU referral during the COVID-19 pandemic, as this was considered disproportional care, especially in the context of an (impending) shortness on ICU beds [13]. This is reflected in the answers from our respondents. Frailty is considered an important predictor on mortality. On the other hand, frailty is a syndrome, which is potentially reversible; in an individual patient all frailty components may be reversible after intervention [14]. Furthermore, the CFS scale is a screening tool, not appropriate to be used in isolation for clinical decision-making. According to the published National Institute for Health and Care Excellence COVID-19 rapid guideline critical care in adults, higher CFS score should be a trigger of individualized evaluation of appropriateness of therapeutic modalities/critical care for the patient [15]. Individual evaluation is expected to be based on premorbid functional status, life-expectancy and the shared decision-making principle, including comprehensive geriatric assessment in geriatric patients. It has been stated that the CFS scale should not be used in isolation to dictate access to healthcare resources, but should be used as one part of an assessment process to help ensure that decisions about healthcare interventions are appropriate in the context of an individual's healthcare needs [16]. It has been suggested that geriatric input early in the hospital admission of older people with COVID-19 could ensure better holistic assessments [16].

71% of respondents would add a resuscitation policy to the file, indicating that they found the described interventions (such as resuscitation, transfer to the ICU) medically inappropriate. This is in line with previously found results [5].

Visitation policy

Relatives were not always allowed during a COVID-related admission while the patient was in a non-life-threatening situation. However, from the moment the situation became critical, relatives were allowed to stay with the patient in most cases. Even with the ethical questions surrounding visiting policies in times of a pandemic, it was often felt that the presence of family members in the last hours of life outweighed the risks of being exposed to the virus [17].

Collaboration with palliative care specialists

Respondents found it important to provide the patient with a good death and consulted a palliative care specialist in 61% and spiritual counseling in 56%. This is in line with guidelines and we were glad to see that even amidst the chaos of the pandemic, geriatricians strived to alleviate the dying process as much as possible.

Strengths and limitations

A major strength of the study is that physicians from 28 different countries responded to this online survey, giving insight into many different national policies and standards. A main limitation to this study is the low response rate, this is most likely due to the usage of an online survey, combined with the workload of the respondents.

Conclusion

The majority of older patients admitted to the hospital were transferred to a specific geriatric COVID-19 unit. Respondents found it important to consult a palliative care specialist and spiritual counseling. In national guidelines in Europe, the clinical frailty scale was used in combination with other variables for decisions on treatment. This pandemic has also illustrated collaboration between geriatricians and palliative care specialists to improve care for older patients with severe disease and often an uncertain prognosis. The experiences of the pandemic provide strong arguments for geriatric and palliative care specialists working together on guidelines and establishing multidisciplinary teams to provide optimal and holistic care for severely ill patients [18, 19].

This pandemic has illustrated the importance of collaboration between geriatricians and palliative care specialists to improve the care for older patients with severe disease and often an uncertain prognosis. Working together on guidelines development and in multidisciplinary teams may provide the optimal care for severely ill patients [18, 19].

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Data availability Data are available.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

Ethical approval Ethical approval was granted by the ethical committee of the Erasmus MC (MEC-2021-0085).

Informed consent There was no research involving human participants and/or animals.

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