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ARTICLE

Frailty as a Priority-Setting Criterion for Potentially Lifesaving Treatment—Self-Fulfilling Prophecy, Circularity, and Indirect Discrimination?

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Abstract

Frailty is a state of increased vulnerability to poor resolution of homeostasis after a stressor event. Frailty is most frequently assessed in the old using the Clinical Frailty Scale (CSF) which ranks frailty from 1 to 9. This assessment typically takes less than one minute and is not validated in patients with learning difficulties or those under 65 years old. The National Institute for Health and Care Excellence (NICE) developed guidelines that use "frailty" as one of the priority-setting criteria for how scarce, but potentially lifesaving, health care resources should be allocated during the COVID-19 pandemic. Similar guidelines have been developed elsewhere. This paper discusses the ethical implications of such rationing and argues that this is an unproven and ethically problematic form of health care rationing. It specifically discusses: (1) how the frailty ascription becomes a self-fulfilling prophecy, (2) the problematic use of "frailty" in COVID-19 "triage," (3) the circularity of the link between age and frailty, (4) indirect discrimination because of the use of a seemingly neutral criterion in health care rationing, and (5) the difficult link between comorbidities and frailty. It is found that there was no research into the use of global frailty scores as a criterion for access to acute treatment before January 2020 and so it is concerning how readily frailty scoring has been adopted to ration access to potentially lifesaving treatments. Existing gerontological frailty scoring systems have not been developed for this purpose, and repurposing them creates significant ethical issues.

Keywords: COVID-19; discrimination; frailty; priority setting; rationing

Introduction

During the COVID-19 pandemic, numerous guidelines have been developed for how access to scarce, but potentially lifesaving health care resources should be allocated. Some of these guidelines, including the guideline developed by the National Institute for Health and Care Excellence (NICE) use "frailty" as one of the main priority-setting criteria, so that patients who are more frail get lower priority and are therefore less likely to get access to the scarce resource, for example, hospital admission or intensive care treatment.[1] Some guidelines completely exclude patients with high levels of frailty from access to certain resources.[2] It is also likely that frailty is used more broadly in an informal sense without reference to specific guidelines as part of decisions whether to admit patients to a hospital in the first place.[3] The NICE guideline published in March 2020, for instance, has different pathways for those who are over 65 years of age depending on their frailty score. It advises using a frailty score of 5 on the Clinical Frailty Scale (CFS, see more below) as the criterion. On the CFS, a score of 5 is defined as someone who is

> *5 Mildly Frail*—These people often have *more evident slowing* and need help in *high order IADLs* (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, and housework.[4]

For patients under the age of 65 or those of any age with stable, long-term disabilities the guideline advises clinicians to perform "… an individual assessment of frailty," but provides no guidance on how to do so.

This paper first provides a description of the concept of frailty as it has been developed in the gerontological literature and describes how frailty is currently measured.

The second part of the paper outlines the reasons why frailty may be considered to be an attractive priority-setting criterion and provides an overview of the use of frailty in COVID-19 allocation guidelines based on a systematic literature review.

The third and major part of the paper explores three potential problems in the use of frailty as a priority-setting criterion for potentially lifesaving treatment: (1) the ascription of frailty may become a self-fulfilling prophecy, (2) the use of frailty instead of age may be circular, and (3) the use of frailty may lead to indirect discrimination of the old, people with disabilities, and those with chronic, stable comorbidities. On the basis of this analysis, a distinction is made between two types of situations depending on the basis for an increased risk of a negative treatment outcome linked to frailty. Is the basis for the link primarily the underlying disease process, or is the basis primarily the invasive or burdensome nature of the treatment?

What Is Frailty and How Is t Measured?

The concept of frailty was first operationalized in gerontology as a loss of reserves in a range of physiological and cognitive functions that creates a state of increased vulnerability when the person is challenged by disease or injury, a vulnerability to poor resolution of homeostasis after a stressor event.[5]

Many instruments have been developed for measuring frailty, some directly on the basis of the conceptualization of frailty as the result of an additive set of physiological deficits, some based on deficits in activities of daily living, and some on the basis of frailty as a more globally assessable state.[6] The deficit-model instruments are often complicated to use and have large information requirements, and the most commonly used instrument for measuring frailty is therefore based on the more global conceptualization. The CFS was developed and validated by Kenneth Rockwood and collaborators, and has since been endorsed by many professional organizations in gerontology and by the UK's NICE.[7] The CFS originally assigned a frailty score of 1–7, but the current version has two additional levels and assigns a frailty score between 1 and 9. It has been shown that higher frailty scores are an important predictor of death within 5 years in the older population (>65 years of age).[8] Frailty is therefore also, in the older population, a predictor of likely future increased care needs.

The CFS and most other frailty instruments are only validated in older populations, and their psychometric properties and relation to health care outcomes are therefore unknown or uncertain in younger general populations or groups of people with permanent physical or cognitive disabilities.

Frailty as a Priority-Setting Criterion

Frailty is a seemingly attractive priority-setting criterion for the allocation of lifesaving treatment for a number of reasons. In this section, we are stating these reasons without qualification, that is, as if they were uncontroversially true. The analysis and critique follow later.

First, frailty is strongly linked to the final outcome for many condition-treatment pairings, including in hospitalized patients with COVID-19. Patients who have higher frailty scores prior to treatment are more likely to die and more likely to be discharged with a substantial loss in prior functioning.[9,10,11] If the goal of treatment allocation is maximizing either lives saved, life-years saved, or some measure of welfare, then using frailty as an allocation criterion is justified.

Second, by using frailty we can dispense with using chronological age as a criterion and can thereby ensure that our guidelines do not engage in direct age discrimination, which is illegal in many jurisdictions. We can also dispense with the difficult task of estimating a patient's biological age, which we might otherwise have used to predict risk.

Third, because of the correlation between frailty and age, frailty also broadly tracks concepts such as "a fair innings" or a "complete life." Those who are very old and can solely on the basis of age be argued to have had a fair inning or who are more likely to have had a complete life are also more likely to be frail.[12,13]

Fourth, global frailty scoring is relatively easy, and the descriptors for the different levels are easy to understand by both health care professionals and patients. The concept of frailty and its link to the risk of a bad outcome is also easily explainable to patients and relatives.

Fifth, and perhaps more controversial, there is a potentially exploitable rhetorical link between frailty and protection. It sounds reasonable to say that we should protect "the frail" by not subjecting them to burdensome or invasive treatments. The phrase "the frail elderly" also seems to roll easier off the tongue than "the frail young."

Systematic Literature Review

Literature Search

Four electronic databases, CINAHL, Embase, MEDLINE, and The Philosopher's Index, were searched from their inceptions until December 2020. Two searches were conducted for each database to identify two different aspects of the use of frailty in priority setting and the ethical discourse about this use. In the first search which was non-coronavirus-specific, articles were searched using Boolean combinations of the following keywords: frailty AND priority-setting AND (discrimination OR prejudice OR bias OR inequality OR unfairness). The second database search was coronavirus specific and used Boolean combinations of the following keywords: ethics AND (intensive care OR critical care) AND (COVID-19 OR coronavirus OR Middle East Respiratory Syndrome OR Severe Acute Respiratory Syndrome). No language or other restrictions were applied to the initial search. The search strategy and reference lists of the included studies are available on request.

Inclusion Criteria

Papers were considered suitable for this review if they met all the following criteria. Articles must be relevant to the ethical or gerontological debate surrounding the use of frailty as a priority-setting criterion for potentially lifesaving treatment in an acute setting. Articles must be published in English with the full-text article available. Articles must concern the adult population (> = 18 years of age). Protocols and conference abstracts were excluded.

Paper Selection

Following the search strategy detailed above, titles and abstracts of the studies were screened by the first reviewer (DJW). The full texts of studies that were included based on titles and abstracts were retrieved and independently assessed for eligibility by the two reviewers (DJW and SH). Any discrepancies between the first and second reviewers were resolved by discussion.

Results

It is clear from our systematic literature review that interest in the use of frailty as a priority-setting criterion has been inspired by the COVID-19 pandemic, which started at the end of 2019. Only one of our included papers was published before January 2020, with the remaining 26 included papers published after January 2020.

The most popular frailty screening system was the CFS which is discussed in 13 out of our 27 included papers. One paper used the "Hospital Frailty Risk Score" (HFRS), and the other 13 papers did not discuss a specific frailty scoring system.[14]

The existing literature on the use of the CFS for prioritizing patients for critical care seems to suggest that a CFS score of 5 or more should be considered, usually alongside other factors, for critical care prioritization.[15,16,17,18,19,20] One paper concluded that CSF 5 should not be used to limit access to critical care as they found the mortality rate in CSF 5 patients to be low and that the threshold should be set at CSF 6 or greater.[21] Another paper considered CFS 4 or greater to be clinically relevant for prioritizing patients for critical care; however, they warned against using the CFS for assessing patients with disabilities.[22] It has been argued that using frailty scoring (CFS) to determine whether to exclude patients from intensive care unit (ICU) care is difficult, even at the highest levels of the CFS, as studies have shown that survival after critical care is possible even at the highest levels of frailty.[23] Although the CSF dominates the literature surrounding frailty scoring, another interesting alternative is suggested in the literature. One paper used the "Hospital Frailty Risk Score" (HFRS), which is a different frailty scoring system based on ICD-10 codes, and concluded that the HFRS can be useful in risk stratification for patients with COVID-19.[24]

There is considerable disagreement in the literature about how to use frailty. Even among papers that agree that the CFS should be used, there is no agreement about a frailty cut-off score. The descriptors for the levels discussed in the literature, that is, CFS 4–6 are also very broad and pick out groups of patients with significant variability in frailty, despite being given the same score. Variability between frailty scales demonstrates the difficulty in using any one frailty scale to diagnose an individual as frail. The evidence for using a particular frailty score to determine the futility of access to critical care for COVID-19 is even more contentious as we will discuss below.

Self-Fulfilling Prophecies, Circularity, and Indirect Discrimination

When an ascription of a high level of frailty is used as a reason not to allocate a particular lifesaving treatment to a particular patient, the frailty ascription becomes a self-fulfilling prophecy unless the treatment is strictly futile for all patients at that level of frailty. That is, the ascription of frailty directly causes a negative health outcome in itself. Used in this way, frailty causes exclusion from the treatment, which increases the risk of death or a transition to a state of increased frailty. But, although there is a correlation between frailty and treatment outcome this does not indicate anything even close to futility in the COVID-19 context, except for those who have a CFS score of 9 and who are expected to die soon anyway. A study of in-patient mortality involving 5,711 patients found that age and frailty were independently correlated to mortality and that in a multi-variate Cox-hazard model a CFS of 7 almost doubled the risk of death to 1.90 over the reference group CFS 1–3, whereas being in the 50- to 64-year age group also almost doubled the risk to 1.96 over the 18- to 49-year-old reference group.[25] However, the mortality in the reference groups is below 15%, so even doubling the risk means that most patients with a CFS of 7 survive to discharge. Other studies of the link between frailty and mortality in patients with COVID-19 show similar results.[26,27] This means that most patients with a CFS score of 5 or 6 would benefit from treatments and that treatment is far from futile for these patients.

The fact that frailty scores are correlated with but not determinative of mortality also indicates why it is problematic to talk about their usage in COVID-19 triage, without clarifying what is meant by triage in this context. Classic battlefield triage divided casualties into three groups[28]:

1. Those who are likely to live, regardless of what care they receive.
2. Those who are unlikely to live, regardless of what care they receive.
3. Those for whom immediate care may make a positive difference in the outcome.

Most patients with COVID-19 who are admitted to the hospital fall into the third group, irrespective of their frailty score in that hospitalization itself and treatment escalation is likely to make a positive

difference to their outcome. So, treatment allocation involving frailty scores is not triaged in this classical sense. It is not triaged in the meaning of allocation due to urgency either, since all patients with COVID-19 who have a clinical need for, for instance ICU, treatment have an urgent clinical need. The need of the frail is as urgent as the need of the robust when both have passed the clinical threshold for needing a particular treatment. So, the use of the term *triage* for COVID-19 allocation to lifesaving treatment probably does little more than import the sense that we are in a crisis situation where normal principles for resource allocation are suspended, and where it is acceptable to deny some patients treatments with real lifesaving potential. In a situation where it is literally true that we only have one spare ventilator (or other lifesaving resource or intervention) and two or more patients who are similar in all relevant respects except for different levels of frailty competing for that resource at this very moment, we might talk about triage by frailty. But, this is not how frailty scores are used in the guidelines. Patients are scored and decisions are made individually and not comparatively, and, in many cases, they are made without knowing whether the resource is currently available and whether there are currently any competing claimants for that resource.

As already noted above, frailty scores may be used in allocation guidelines because the use of chronological age is perceived as ethically and/or legally problematic. There is, however, a certain circularity involved here because of the correlation between frailty and age. This becomes perhaps even more obvious in those cases where guidance documents warn against the use of the otherwise recommended frailty scoring system in younger people. There are good methodological reasons for such a warning, since most scoring systems have not been validated for use outside older age groups. But, using frailty scores only in decisions about the old substantiates the perception that their primary purpose is to function as a proxy for age. It also introduces a problematic discontinuity in the decision-making criteria. Why make a decision on the basis of CFS scoring in a patient who is 65 years old, but rely on "an individualized assessment of frailty" in someone who is 64 as NICE advises the doctor to do? And, what does it mean to make "an individualized assessment of frailty"? Although *frailty* is a term in ordinary language it has been transformed into a technical term in the development of frailty scoring systems, and that technical term no longer has the same meaning as the ordinary language term. It is strictly speaking a term that is defined for those over age 65, but not for those who are younger. This means that it is, in a certain sense, not possible to make an individualized assessment of frailty, as defined in the gerontological frailty literature, in relation to someone who is much younger than 65. We can determine whether someone in their 30s is frail (ordinary language) but not whether that person is frail (as technically defined).

Indirect discrimination occurs when the application of a seemingly neutral criterion nevertheless leads to discrimination against a particular person or group. The use of frailty as a priority-setting criterion potentially leads to indirect discrimination against the old, people with disabilities and patients with chronic, stable comorbidities. We have already discussed the problems in relation to the old, so here we will focus on people with disabilities and patients with chronic, stable comorbidities. NICE and others now recognize the problems in using frailty scoring in relation to patients with disabilities, but it is worth outlining them anyway. Having a disability will often involve some deficit in one or more physiological functions and in one or more activities of daily living (ADLs). If applied directly to people with a disability, frailty scoring systems will therefore in many cases indicate that the persons have a high level of frailty, for example, because they need help with ADLs. This raises two issues. The first is that the ascription of frailty may be false since the person with the disability is actually fit and not particularly vulnerable to disease or injury. A patient with mild cerebral palsy will have a normal life expectancy and even patients with moderate cerebral palsy have life expectancies of 50–60 years or more.[29] These patients may need help with many ADLs and may have significant motor problems and will therefore have high frailty scores, but they are not frail. The second is that it may be true that the person has a high level of frailty, but that making decisions to refuse them access to interventions on that basis is discriminatory in those cases where the interventions are likely to benefit them. The frailty of the person with a disability is often a stable part of their health state and not likely to progress or progress at the same rate as frailty in the elderly. This problem is not necessarily overcome by moving from the use of frailty scores to an individualized assessment of frailty. Unless the individualized assessment is made by a health

care professional with a good understanding of the particular disability, it is still quite likely to be erroneous and overestimate the frailty of the person. Normally, we would take the disability and frailty to generate a particular **claim** on services, that is, those services the person need to alleviate the disability or prevent progression of an underlying condition, not to negate that claim or make it weaker. So, for instance, in relation to COVID-19 or flu vaccinations, having a disability that creates a particular vulnerability/frailty moves a person into a higher priority group not a lower priority group. We normally also do not take it as a good reason to deny a needed service to someone with a disability, that some other non-disabled person is able to be benefited more by having the service. Using frailty as an allocation criterion for lifesaving treatment in relation to persons with disability thus does entail a kind of indirect disability discrimination that is usually taken to be ethically problematic and which is illegal in many countries.

Chronic, stable comorbidities (or underlying health conditions) entailing frailty raise a variation of the discrimination issues raised by disability. The first question is how to distinguish between a chronic comorbidity and a disability. It is possible to have a chronic comorbidity without being disabled if that comorbidity does not lead to long-term impairment in function. So, someone with birch pollen allergy would have a chronic comorbidity but not a disability (at least not outside of the birch pollen season). But, although such a comorbidity could be relevant for the prognosis if the patient were infected with COVID-19, this would not be through frailty as conceptualized in global frailty scoring systems like the CFS. A comorbidity that led to an increased frailty score in the CFS would by definition do so as a consequence of long-term impairment of function and would therefore be a disability. A person with chronic obstructive pulmonary disease (COPD) has a relevant comorbidity. Another person may have the same decrease in lung function due to a disability, and it is not obvious why we should label COPD as a comorbidity and not a disability if both persons have the same functional impairment and both have the same ADL restrictions.

The second question is that even if we can make a distinction between some chronic comorbidities and disabilities, that distinction does not seem to be of a kind that can carry any moral weight in the current context. The fact that disability discrimination is a legal category in many countries is at least partly because of the long and ignominious history of disability discrimination. But, although "comorbidity discrimination" does not have such an identified history, it seems to share all or most of the features that make disability discrimination problematic.

So far, we have discussed the relationship between frailty and outcome in a fairly undifferentiated way. But pre-existing frailty can affect the likelihood of a positive treatment outcome in at least two ways. It can affect the response/vulnerability to the disease, and it can affect the response/vulnerability to the treatment. These are often but not always interrelated. Perhaps we could argue that the reason for using frailty as a priority criterion for high-impact treatments like admission to ICU is not primarily seeking a particular aggregate outcome in terms of lives or life-years saved, but instead protecting those who are so frail that the treatment is likely to cause more harm than benefit. The reason not to offer ICU admission is that it is likely to be harmful to the patient. As we have discussed above, this is not true in general for patients with CFS scores of 5, 6, or even 7, since as a group they are statistically likely to benefit from treatment.[30] But, it might be true in certain cases where a patient has what we can perhaps call a "specific frailty." As described above, the initial approach to frailty in gerontology was to see it as a consequence of a loss of reserves in a range of physiological and cognitive functions creating the global state defined as frailty. So, there are many distinct pathways to a global CFS score of 5, and two persons with the same CFS score may have very different specific losses of reserves. Some of these specific losses could create a specific frailty in relation to, for instance, ventilator treatment. But that cannot be read off the global frailty score.

Conclusion

Our systematic literature search found no research into the use of global frailty scores as a criterion for access to acute treatment before January 2020—coinciding with the start of the COVID-19 pandemic.

Thus, it appears that the global medical community was ill-prepared to ration acute treatment in a pandemic setting and that global frailty scoring rose to the top as the most palatable and seemingly most legally acceptable rationing tool.

However, as we have shown using global frailty scores as a criterion for access to acute treatment is methodologically and ethically problematic. Existing gerontological frailty scoring systems have not been developed for this purpose, and repurposing them creates significant ethical issues. We found that most patients infected with COVID-19 who were deemed frail (up to and including a CSF score of 7) would survive COVID-19 hospitalization. The term *triage* has been used to defend the use of frailty as a criterion to deny the frail treatment; however, we conclude that using frailty as a criterion to deny them treatment is denying them something valuable on a potentially discriminatory basis.

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