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BRIEF REPORT

Ethical implications of population ageing in the intensive care unit

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Abstract
Population ageing has significant ethical implications in the management of elderly patients in the intensive care unit (ICU). In the aspects of beneficence and non-maleficence, conflicting evidence has long existed regarding an association of older age with poorer prognosis, but elderly patients who have poor prognosis in the ICU may have a worse outcome if not admitted. More randomised controlled studies are needed to study the benefits of ICU admission to different subgroups of critically ill elderly patients. The acute care for the elderly unit could be developed to provide more comprehensive care to the elderly. ICU resource rationing should follow clear guidelines with a pluralistic strategy of distributive justice, which incorporates the core proposition of "veil of ignorance" with the anti-ageist and equalist view so that age itself should not be a criterion but any associated risks with age confirmed by studies should be taken into account of assessing prognosis and outcome. There may be a need for improvement in protection for patients' right to autonomy in the ICU.

Keywords Critical care · Ethics · Intensive care · Population ageing

Background

Population ageing is a common problem in developed countries. In the intensive care unit (ICU) in developed countries, the proportion of older patients has always been high and is growing [1]. Every clinical action of medical practitioners should be compliant with moral standards. Generally, beneficence (acting in the best interest of patients), non-maleficence (not doing harm), autonomy (empowering reasoned informed decisions made by patients), and justice (equitable distribution of resources) are known as the four pillars of medical ethics [2]. Intensive care involves aggressive treatment against severe conditions with immense utilisation of healthcare resources, so the decision of ICU admission is inevitably complicated with tension between ethical principles, involving deliberate weighing among factors including the severity of illness, the presence of comorbidities, the levels of frailty and disability, the expected impact of treatment on the outcome, the expression of do-not-resuscitate (DNR) orders, and the availability of treatment modalities, and benefits and burdens of ICU management for the patient, family, and society [3]. In this essay, I will discuss the ethical implications of population ageing in the management of elderly patients in the ICU.

Beneficence and non-maleficence

Beneficence and non-maleficence are essentially on the same dimension, where the former is a positive requirement and the latter is a negative prohibition [2]. When tension exists between them, the doctrine of double effect is employed to resolve such situation, which states the criteria for an action with foreseen good and bad consequences to be permissible [4]:

(1) the action in itself from its very object be good or at least indifferent;
(2) the good effect and not the evil effect be intended;
(3) the good effect be not produced by means of the evil effect;
(4) there be a proportionately grave reason for permitting the evil effect.

Clinical outcome is one of the parameters for measurement within the consequentialist beneficence/maleficence dimension. However, insufficient knowledge is available to determine if intensive care is bringing more benefits than harm.

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Observational studies have shown conflicting results of presence [5] or absence of benefits [6] in critically ill elderly patients admitted into the ICU compared with those not admitted. Only one randomised controlled trial is found, which has reflected no reduction in 6-month mortality with a higher ICU admission rate of critically ill elderly patients [7].

For clarification, there have long been conflicting results between studies showing an association of older age with poorer prognosis or greater mortality in the ICU [1, 8] and those rejecting such association [3]; and a review attempted to resolve the conflict by arguing that elective surgical patients and certain medical or acute surgical patients have better prognosis in the ICU than other critically ill elderly patients [9]. However, "poor prognosis" is not exactly relevant to the measurement of net benefits because those elderly patients who have poor prognosis in the ICU may have a worse outcome if not admitted. Age is reasonably expected to be a risk factor for ICU mortality because age is obviously associated with diminution of physiological reserve, a prevalence of chronic diseases and frailty [8].

Quality of life could also be a parameter of beneficence/maleficence, which comprises of external environmental, health-related and patients' subjective perceptions [10]. Elderly ICU survivors have a larger risk of declination in physical and cognitive functions than their healthy counterparts [11]. A systematic review has revealed that the perceived quality of life in older ICU survivors is not different from that in younger groups and increases over time despite a decline in activities of daily living [3]. Another study showed that the perceived quality of life of survivors aged 80 or above was similar to that of an age-matched general population [12]. However, no studies compare the quality of life between elderly survivors from critical illness admitted to the ICU with those admitted to the general ward. Therefore, ICU treatment arguably brings better quality of life to elderly survivors.

More randomised controlled trials are needed to compare the prognosis and outcome between critically ill elderly patients admitted and not admitted to the ICU, preferably with further classification of these patients into subgroups, so that better guidelines for ICU admission could be formulated in an evidence-based manner. Studies could prevent the unethical nature of placebo in the context of the ICU by adopting a similar design as Guidet et al. (2017) which randomised the use of an ICU promotion programme between hospitals to avoid the ethical difficulties on the individual patient level.

Another recommendation is to develop a new model of critical care—the acute care for the elderly (ACE) unit. It is proposed to provide comprehensive critical inpatient geriatric care with four key elements: a specially designed environment, patient-centred care, planning for discharge, and review of medical care [13]. It is found to reduce functional and cognitive decline, cost, length of stay, and readmission rates to acute hospitals compared with conventional care. [14]

Justice

The principle of distributive justice arises from the scarcity of resources. On the level of individuals, poor prognosis does not necessarily suffice a failure to attain net beneficence. However, in the level of population, should scarce resources be allocated according to those with better prognosis or those with greater needs?

In the ICU, bias against the elderly in resource allocation has been reported. Elderly critically ill patients are less frequently admitted to the ICU [5], may receive less intensive treatment [15], and experience having their treatments withheld more frequently [16] than younger patients. Notably, the increase in ICU mortality with age may not be related to the severity or ICU treatment intensity, but undertreatment and lower efficiency of organ support treatment could be possible reasons [17].

There are various theories about if age should be a criterion for healthcare resource rationing: "fair innings" argument proposes that everyone is entitled to a similarly long "normal" span of health [18]; Norman Daniels' prudential lifespan account argues for fairness between birth cohorts instead of age groups [19]; and John Harris' "anti-ageist" argument rejects the relevance of age as a criterion for allocation of life-prolonging [20].

It is hereby suggested that a pluralistic strategy which could incorporate the advantages of different arguments would be plausible. The core of Daniel's prudential lifespan approach is the adoption of Rawls' ideology of "veil of ignorance" [21]—to imagine how we would distribute resources if we have no knowledge of our own status. To incorporate this core proposition of "veil of ignorance" with the anti-ageist and equalist view which affirms that a person's moral claims derive from his or her being as a human regardless of any arbitrary features, it is argued that age itself should not be a criterion but any associated risks with age confirmed by studies should be taken into account of assessing prognosis and outcome [22]. Then, resources should be allocated according to a careful balance of clinical need and outcome.

Autonomy

The right of patients to make an informed decision about treatment is essential for upholding the autonomy of patients. In European ICUs, 95% of critically ill patients in the ICU were incapable to make a decision at the time of end-of-life decision [23]. According to a study in France, even if the elderly patients were capable of expressing opinion, they were rarely asked for opinion on ICU admission [24]. In a study set in a surgical ICU in Taiwan, although DNR was common, such discussion was usually prompted late only after the

exhaustion of therapeutic options which may include futile treatments [25].

Conclusion

The ageing population is imposing great ethical challenges on the ICU. More randomised controlled studies are needed to study the benefits of ICU admission to different subgroups of critically ill elderly patients. The acute care for the elderly unit could be developed to provide more comprehensive care to the elderly. ICU resource rationing should follow clear guidelines with a pluralistic strategy of distributive justice. There may be a need for improvement in protection for patients' right to autonomy in the ICU.

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Compliance with ethical standards

Conflict of interest The author declares that there is no conflict of interest.

Research involving human participants and/or animals No human participants and/or animals were involved.

Informed consent No patients were involved.

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