

WHAT'S NEW IN INTENSIVE CARE



Equity in patient care in the intensive care unit

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Intensive care physicians use key interventions like mechanical ventilation or vasopressor support in response to physiological deterioration, aiming to give each patient their best chance to not only survive critical illness, but to return back to their pre-admission lives. However, it is recognised that the provision of intensive care interventions cannot be explained entirely by physiological or other clinical factors like patient comorbidities [1, 2]. Instead, many large-scale retrospective studies found that the treatment provided to critically ill patients is independently associated with sociodemographic factors including patient race, gender and socioeconomic status [2–6]. This suggests possible inequity in intensive care unit (ICU) interventions across sociodemographic groups. Understanding these sociodemographic differences in critical illness and intensive care interventions could better ensure we provide equitable care to our patients.

Pursuing equity, attending to sociodemographic differences

Health equity “...implies that everyone should have a fair opportunity to attain their full health potential and that no one should be disadvantaged from achieving this potential” [7]. Health potential varies between individuals, and therefore, equity in healthcare does not necessarily mean providing the same treatment to all, or even achieving the same or ‘equal’ outcomes for all. On the one hand, providing different treatment to patients based on their sociodemographic characteristics rather than

physiological features, in the absence of evidence that this improves outcomes for each group, is an inequitable approach to treatment. On the other hand, providing tailored or personalised interventions, based on demonstrated heterogeneity of treatment effect across groups, is an equitable approach to treatment.

Therefore, to provide equitable care in the ICU we need to carefully study sociodemographic factors in critical illness and intensive care interventions. Understanding differences in risk profile and treatment response between sociodemographic groups allows for more targeted treatments. Where research reveals disparities that are not explained by biological factors, we should explore the structural factors, unconscious biases, and other underlying drivers of these disparities. The first step to address any disparity is to be aware that it exists.

Disparities in intervention between races and ethnicities

Yarnell and colleagues demonstrated that Black and Asian patients were less likely than White patients to be intubated after reaching defined clinical thresholds for mechanical ventilation [2]. Similarly, a recent systematic review and meta-analysis found that Black patients were less likely to receive timely antibiotic therapy and early tracheostomy than White patients in the ICU [3]. It is not possible to define underlying mechanism for these associations from this retrospective research, yet these striking findings warrant further examination.

Recent work has highlighted systematic differences in the reliability of pulse oximetry according to race, with Black patients more likely than White patients to have occult arterial hypoxaemia when paired pulse oximetry demonstrated saturations of 92% or more [8, 9]. This highlights the importance of studying monitoring devices and interventions within different racial and ethnic

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groups, to ensure they provide benefit across diverse critically ill populations.

These findings arose from healthcare systems that routinely collect data on race and/or ethnicity. Unfortunately, similar research has not occurred in many countries in Europe because ethnicity or race is not routinely recorded in the health record [10]. The current evidence from United States of America (USA) and United Kingdom (UK) suggests we cannot assume intensive care interventions are applied in a 'colour blind' fashion. It will be important to confirm or refute these findings in different healthcare systems.

Sex and gender equity

More men than women are admitted to ICUs around the world; it remains unclear if this represents equitable access to critical care. Todorov and colleagues examined 450,948 adult patients with cardiovascular and neurovascular-related critical illness in Switzerland, finding that women were less likely to be admitted to ICU despite being more unwell [6]. In contrast, a recent study of over 1.4 million ICU patients in Australia and New Zealand found that women were admitted at lower illness severity than men. [11]

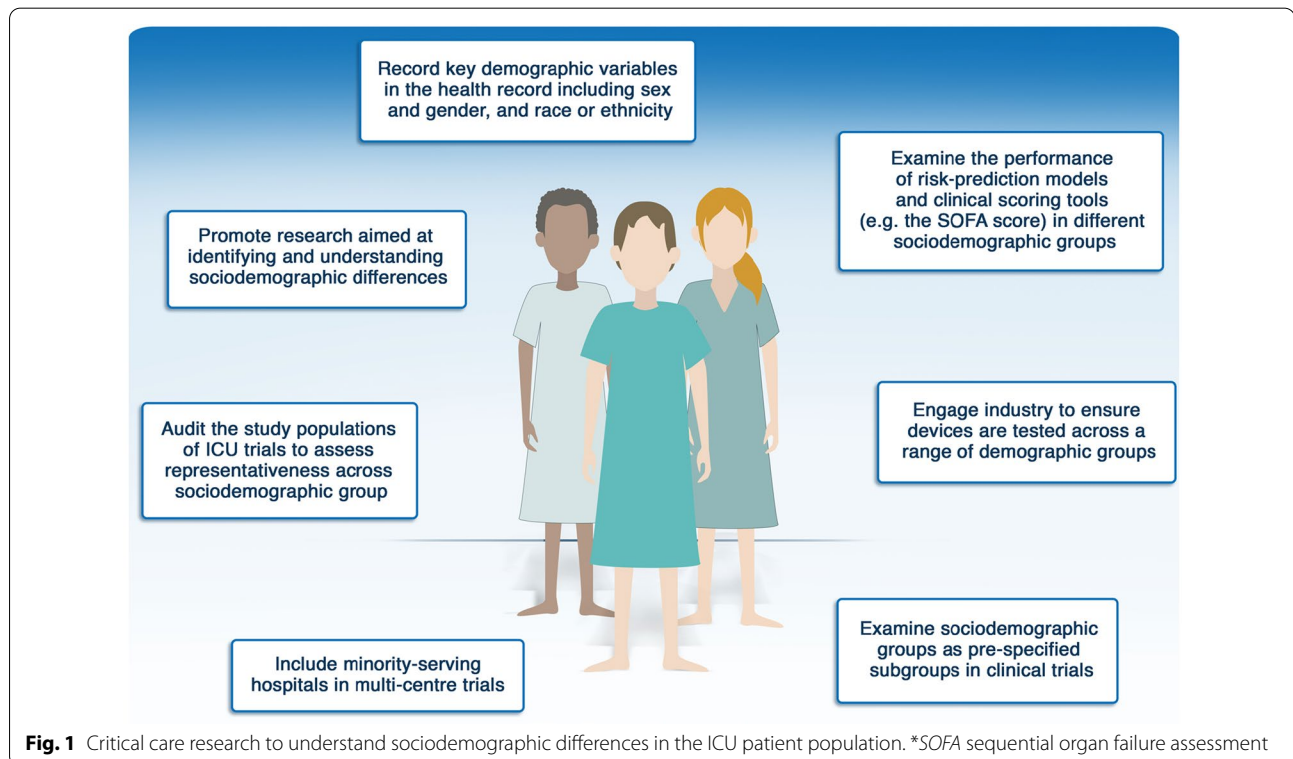
However, there is quite consistent evidence that women are less likely to receive vital organ support like mechanical ventilation, or renal replacement therapy, even after adjustment for confounders such as admission diagnosis

and illness severity. [4–6] Women are also relatively more likely to have a limitation of medical treatment or 'Do Not Resuscitate' order [4]. It will be important to establish whether this is explained by systemic differences in the preferred intensity of treatment of female and male patients, differences in limitations of medical treatment defined by clinicians or some combination of these factors.

Contemporary ICU research tends to conflate sex (a biological distinction) and gender (one's personal identity as a man, a woman, or another gender). Examining sex and gender separately will help to untangle the complex interplay of biological factors, health risk exposures and systemic bias in the observed differences between groups [4]. Moving beyond binary definitions (man/woman) will also allow understanding of gender-based minority groups in the ICU, including transgender and gender-diverse patients.

Socioeconomic status

The coronavirus disease 2019 (COVID-19) pandemic highlighted disparities in outcomes from critical illness across socioeconomic groups, even within the same geographic region or health care system. Compared to people living in more affluent neighbourhoods, those living in socioeconomically deprived areas were relatively more likely to contract COVID-19, more likely to require intensive care admission and more likely to die [12, 13].



They were also cared for in hospitals experiencing disproportionate clinical demand, which may lead to disparities in care compared to hospital experiencing less strain. [12]

There are similar socioeconomic gradients in mortality from sepsis and other critical illnesses leading to prolonged ventilation [14]. A recent systematic review and meta-analysis demonstrated higher short-term mortality in ICU patients with the most deprived socioeconomic circumstances, compared to those with the least deprived circumstances [15]. Importantly, these findings were robust to sensitivity analysis that considered only studies adjusting for confounders such as co-morbidity, age and organ dysfunction at presentation.

In contrast to the evidence regarding socioeconomic status and mortality, there is a relative paucity of research examining a possible relationship between socioeconomic status and intensity of ICU treatment. It will be crucial to establish if such an association exists.

Pursuing equity: the path forward

‘What’s new’ in critical care is not a new intervention or medication: it is an appreciation that sociodemographic factors may be associated with both the intensity of treatment we provide in the ICU and the patient’s response to such treatments. Therefore, research examining sociodemographic differences in critical illness is essential (Fig. 1). High-quality retrospective studies can highlight differences in illness severity, trajectory, and treatment between sociodemographic groups, an essential first step to understanding and addressing potential disparities between groups. Clinical trials should enroll populations representative of the intended target population and examine key sociodemographic factors in pre-specified subgroups to identify any heterogeneity of treatment effect. Attending to sociodemographic differences in this way can open new pathways to improving outcomes in the diverse communities of critically ill patients we serve.

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Declarations

Conflicts of interest

The authors declare that they have no conflict of interest.

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Received: 12 October 2023 Accepted: 12 December 2023

Published: 18 January 2024

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