

In 1997, a multidisciplinary Bioethics Task Force of the American Thoracic Society (ATS) published an extensive and detailed advisory statement on the fair allocation of intensive care resources (358). The ATS Task Force proposed five principles and 12 position statements in regard to fair allocation of resources. Among the principles, the group sustained that: 1) "ICU care, when medically appropriate, is an essential component of a basic package of health care services that should be available for all"; and 2) "The duty of health care providers to benefit an individual patient has limits when doing so unfairly compromises the availability of resources needed by others." Among the position statements, the group affirmed that: "access to ICU care requires that patients have sufficient medical need"; "whenever feasible, patients should give their informed consent for initiation and continuation of ICU care"; "when demand for ICU beds exceeds supply, medically appropriate patients should be admitted on a first-come, first-served basis"; "access for marginally beneficial ICU care ... may be restricted on the basis of its limited benefit relative to cost"; "prior to health care institutions limiting access to ICU care on the basis of limited benefit relative to cost, prerequisites for efficient use of health care resources, fair redistribution of savings, and public disclosure must be fulfilled"; "health care institutions and their providers should ensure availability of ICU beds by matching supply to medical need"; and "health care institutions and their providers should limit access to ICU resources by means of explicit policies that are made known to patients and the public."

The ATS Task Force recommendations mention a first-come, first-served basis for ICU admission, whereas the SCCM Ethics Committee recommendations indicate that patient benefit be considered. However, in the most recent recommendation by the participants in the Eldicus study consensus process (186), 100% of respondents stated that decisions should not be made on a first-come, first-served basis. In addition, despite the fact that most of the participants represented practiced in ICUs where patients frequently had to be refused ICU admission, they agreed that patients should be refused ICU admission only when the chance of survival was exceedingly low: the agreement levels for refusing admission were 48% if the chance of survival was less than or equal to 1% (one in 100); 65% if the chance of survival was less than or equal to 0.2% (one in 500); and 77% if the chance of survival was less than or equal to 0.1% (one in 1,000). There seems to be a shift away from obligations to patients already hospitalized, perhaps because of the recent pandemics/disasters and resultant planning, and more of an emphasis on age. There was 100% consensus that "Age should never be the sole determining factor in triage decisions" and "Physiological status is more important than chronological age in triage decisions." These principles notwithstanding, during epidemics or mass disaster conditions when benefit is even more difficult to determine, a first-come, first-served approach may have to be used.

Truog et al (423) provided a taxonomical framework of rationing in critical care for further development through empirical evidence and ethical analysis. They divided rationing

decisions into three main categories: decisions made on the basis of external constraints, those made on the basis of clinical guidelines, and those made on the basis of clinical judgment. Hurst and Danis (424) further advanced this framework by dividing clinical judgment into three categories: decisions made on the basis of triage (e.g., limited time, limited beds, and limited staff), those made on the basis of fixed resources (e.g., insufficient blood supplies), and those made on the basis of physician opinion (e.g., assessment of individual benefit or cost). The authors also outlined a proposal to apply the proposed rationing framework. In an innovative approach to gain a better understanding of this complex problem, Strosberg (425) has recently experimented with simulations, including role-playing and incorporating organizational theory perspective. However, despite our growing concerns about rationing for over two decades (426, 427), to date, no practical or consistent guidelines exist to systematically allocate scarce intensive care resources (423).

Future Directions and Research

Recommendation:

- Further research is needed on all aspects of rationing critical care resources to narrow the current gaps in allocating scarce resources (ungraded).

Cook and Giacomini (428) have suggested that investigating rationing is central to understanding the practice of medicine as we approached the new millennium. As our understanding continues to improve with the increasing body of knowledge in this area, the limited role that bedside clinicians and ICU directors play in the management of ICU resources must be taken into account (419). Some bedside clinical interventions, such as identification of those at the end of life with the intent of reducing LOS and costs, do not seem to be matched with significant cost savings (373). Some have suggested that a better approach may be to improve efficiency in ICU settings by increasing our reliance on information technology and increasing the role of telemedicine in the delivery of critical care, but studies to support these assertions are needed (429–432). Recent experiences of various healthcare systems utilizing "tele-ICU" have been reported to be positive (433); however, in a study including more than 4,000 patients, Thomas et al (434) were not able to demonstrate a significant impact of electronic ICU systems on LOS or on ICU or hospital mortality rates. It is still too early to fully understand the multidimensional aspects and impact of the use of this technology in the delivery of critical care services, and the topic demands further study (430).

The misutilization of scarce or expensive resources remains a present and future important problem that needs to be addressed. We must educate primary care physicians, cardiologists, pulmonologists, hematologists, oncologists, and other clinicians to talk to their patients with serious illnesses and determine the patients' real wishes. Patients should be provided with proper advance care planning (a process through which patients, in consultation with their relatives and physicians, make individual decisions regarding their current and