

Title: RESULTS, BENEFITS AND CHARGES FOR INTENSIVE CARE OF THE CRITICALLY ILL PATIENT - UPDATE 1982

Authors: D.J. Cullen, M.D., R. Keene, R.N., J.M. Kunsman, D.L. Caldera, R.N., C. Waternaux, Ph.D.

Affiliation: Department of Anesthesia, Massachusetts General Hospital, Boston, Massachusetts 02114

Introduction. Critically ill patients demand and receive disproportionate resources to maintain life and hopefully progress towards a successful recovery. As resources become even more limited, justification of intensive care is being increasingly scrutinized. Also, the nursing shortage has forced patient triage to become a routine event in many ICU's. Therefore, quantitative data are needed to: 1) determine severity of illness which mandates the need for intensive care; 2) continue examining outcome from critical illness; and 3) develop prognostic indices, if possible, to aid triage decisions.

Methods. Critically ill patients were defined as requiring continuous physician and nursing care, a nurse:patient ratio of at least 1:1 and frequent changes of orders and therapy. A broad spectrum of surgical patients excluding those following cardiopulmonary bypass were studied. Detailed demographic information, daily critical care data and Therapeutic Intervention Scoring System points¹ were obtained on 199 consecutive critically ill patients (8% of our ICU population). The clinical course, outcome (in terms of survival or death, and ICU success or failure), and charges for hospitalization, blood and blood products were recorded. If the patient recovered from that critical illness for which he entered the ICU, or stabilized so that intensive care was no longer required, the ICU was deemed successful in completing its mission. Otherwise the patient was classified as an ICU failure. Follow-up data re quality of life indices were obtained at one, six and twelve months after admission to the study. (with informed consent and approval by the research committee).

Results. 199 patients (115 males, 84 females) averaging 62 years of age comprised the study population. By one month, 114 patients (57%) died, increasing to 138 patients (69%) at 12 months. 118 patients (58%) were ICU failures at one year. At one month, many survivors were still hospitalized although one-third had returned home. By 12 months, almost all survivors were home. At one month, most patients were not completely ambulatory and 17 of the 85 survivors were not able to provide for their own self care. By one year, 45 of the 61 survivors (74%) were freely ambulatory. Mental function improved rapidly since 55 of 85 survivors (65%) were fully alert at 1 month. 39 of 61 survivors (64%) were functioning as productively as prior to illness one year later.

The disease process for which these patients were hospitalized is an important factor in determining outcome. For example, ICU success rate in critically ill patients following emergency major vascular surgery was 30% while following surgery for gastrointestinal bleeding, cirrhosis and portal hypertension was 17%. Conversely, patients who suffered massive trauma or who underwent elective major vascular procedures and then became critically

ill had an ICU success rate of 67%.

Hospitalization charges: Monetary data were obtained on 189 of the 199 critically ill patients. The total hospitalization charge (excluding physician fees) was \$4,116,231, an average of \$22,000 per patient. The total blood charge was \$729,630, 70% of which went to the 117 patients who ultimately became ICU failures. Only 100 of the 189 patients were billed directly, the average bill being \$1,856 or 9% of their total hospitalization charge. Compared to a previous study of equally critically ill patients, the one year mortality rate was similar but the quality of life in this current series of survivors improved. At one year, more patients were: fully recovered (79% vs. 44%); returned to full productivity (64% vs. 43%); capable of independent self care (13% vs. 2%). Fewer patients were still hospitalized or in a nursing home (3% vs. 16%).

Discussion. These results are optimistic because 42% of the patients were successfully managed out of their critical illness and 31% of the patients survived to one year. Our objective data based on many laboratory indicators of critical illness, state of consciousness, and need for respiratory, cardiovascular and renal support demonstrate that these patients were too critically ill to have survived in the absence of intensive care. Compared to recent and past reports from other adult and pediatric ICU's on similarly critically ill patients, our mortality results are similar. When compared to the outcome from neonatal intensive care, adult outcome is much worse particularly when one considers the cost per year of life expectancy.²

Although predictive schemes may help determine which patients on the extreme end of critical illness are unsalvageable, the vast majority of critically ill surgical ICU patients deserve a trial of intensive care in order to determine the possibility of a successful recovery.

References

1. Cullen DJ: Crit Care Med 2:57-60, 1974.
2. Shannon DC, et al: Crit Care Med 9:94-97, 1981.