

High risk of death in the year after ICU discharge; more hospital days linked to higher mortality

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Nearly one in five intensive care unit (ICU) survivors die within one year, and increased hospital use is among the factors associated with a

higher risk of death, reports a UK population-based study in the January 2019 issue of *Critical Care Medicine*.

Older age, multiple medical conditions, and certain [organizational factors](#) linked to "high system stress" in the [hospital](#) and ICU are also risk factors for death in the year after ICU [discharge](#), according to the new research by Tamas Szakmany, MD, Ph.D., EDIC, DESA, FRCA, FFICM, of Cardiff University and colleagues. "Our results will help to inform discussions with [patients](#), family members, and healthcare professionals of the consequences of surviving an admission to ICU," the researchers write. The paper was posted online today, and will be published in the January 2019 issue of *Critical Care Medicine*.

'Big Data' Study Explores Risk Factors for One-Year Mortality in ICU Survivors

The study included more than 40,000 patients who discharged alive from adult ICUs in Wales between 2006 and 2013, identified using the Secure Anonymised Information Linkage (SAIL) databank. The researchers analyzed individual and organizational [risk factors](#) for death at one-year follow-up after ICU discharge. They also compared hospital use in the year before and after the ICU stay for patients who lived versus those who died.

Overall, 19.4 percent of patients died. Most deaths occurred within three months after ICU. As expected, risk of death was higher for patients with older age and multiple medical conditions (comorbidity). Mortality was also higher for patients who required multiple forms of organ support and those with longer ICU stays.

Certain organizational factors were also associated with increased mortality. Patients with expedited discharge from the ICU due to critical

care bed shortage were at higher risk of death, as were those who were discharged in the evening. These organizational factors suggest that "Care process factors indicating high system stress were associated with increased risk," Dr. Szakmany and coauthors write.

Patients who died also spent more total days in the hospital, before and after their ICU stay. Before ICU admission, the rate of hospital use was 57 days per 1,000 days for patients who died, compared to 28 per 1,000 days for patients who survived. After ICU admission, hospital use was 412 per 1,000 days for patients who died versus 88 per 1,000 days for patients who survived.

More than half of ICU survivors were readmitted to the hospital during the year after ICU discharge. About half of deaths occurred after ICU discharge but before being discharged from the hospital. Among patients who survived until hospital discharge, the one-year mortality rate was 10.8 percent. Mortality after ICU discharge was higher in two regions with higher levels of socioeconomic deprivation and the least amount of ICU beds per 100,000 population.

Especially with the aging of the population, the demand for critical care services is rising. "[A] clear understanding of the short- and long-term consequences of intervention is essential if access to critical care resources is to be robust, transparent, and equitable," according to the authors.

"Our study shows that one in five patients die within one year of ICU discharge, and that patients who spent longer time in the hospital in the previous year are more likely to die despite surviving an ICU stay," Dr. Szakmany commented. "This information will become very important when we explore the values of our patients and make collaborative decisions about using an invasive and expensive resource."

Dr. Szakmany added: "It appears that at peak times of demand for limited number ICU beds, patients can be disadvantaged by early discharge, which carries higher risk of [death](#). Patients living in geographic areas with high level of social deprivation but limited ICU capacity appear to be at higher risk. We need more detailed understanding on the effects of the potentially modifiable factors to optimize service delivery and improve long-term outcomes of the critically ill."

More information: Tamas Szakmany et al, Risk Factors for 1-Year Mortality and Hospital Utilization Patterns in Critical Care Survivors, *Critical Care Medicine* (2018). [DOI: 10.1097/CCM.0000000000003424](https://doi.org/10.1097/CCM.0000000000003424)

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