Doctors often admit critically ill patients to intensive care for a limited time to test how well they might respond to treatment.

How long do we treat the critically ill?

Researchers are developing objective measures to determine whether critically ill cancer patients can benefit from intensive care.

Physicians often struggle when deciding about the appropriateness of exposing critically ill patients to intensive care; particularly in the case of cancer patients given poor prognoses who they feel might not gain substantive benefits by doing so. Doctors sometimes admit patients to the intensive care unit (ICU) for a limited time period to test whether they will benefit from the treatment. Until now, however, the optimal amount of time for an ICU trial has not been objectively determined.

Researchers at Harvard University in Boston, Massachusetts and King Abdullah International Medical Research Center in Riyadh set out to determine whether time-limited trials of aggressive ICU treatment for cancer patients could provide comparable patient survival to unlimited care, and if so, what the optimal length would be.

The team constructed a computer-based model using data from 920 critically ill patients admitted to a hospital in Boston, Massachusetts. The model simulates the clinical problem, gives scores to patients based on how well their organs are functioning, and calculates the probability of dying, improving, deteriorating or of discharge from ICU. The results were compared by using the model on data from three other sets of patients, 624 in total, in Boston and Riyadh.

The team found that critically ill cancer patients whose acute condition was less severe benefited most from longer trials of intensive care. Trials as short as one to four days were sufficient for patients with poor-prognosis solid tumors such as mesothelioma, glioblastoma, pancreatic cancer, and small-cell lung cancer.

"In cancer patients with poor prognoses, ICU physicians have to balance aggressive treatment with comfort measures," says the study's primary investigator, Mark Shrime, from Harvard Medical School in Boston. "Based mostly on expert opinion, physicians have often chosen to treat for 48 to 72 hours to help determine a patient's responsiveness to ICU care, but there has been little research to determine whether that is enough time," he says.

"Studies at the end of life to provide evidence-based recommendations can be performed, as we have demonstrated, instead of relying on expert opinion alone," says Shrime.

Shrime, M., Ferket, B., Scott, D., Joon, L., & Lai, P., *et al.* Time-limited trials of intensive care for critically ill patients with cancer: How long is long enough? *Jama oncol.* http://dx. doi:10.1001/jamaoncol.2015.3336 (2016).