

# Latest developments and new challenges for Cancer patients in Intensive Care Unit

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## Abstract

It has been believed for years that cancer patients have not been referred to the Intensive Care Unit (ICU) because they have serious and potentially reversible acute illnesses. Fortunately, a variety of tests have shown that this is not the case. Today, the number of cancer patients in ICUs around the world is rising every year, and both longevity and quality of life are growing in the same way.

This progress is due to several causes, from progress in anti-tumour therapy to improved patient care in the ICU. We are working towards an individualized and dynamic approach that will be tailored to the form of tumor and the immune response of the patient. The prognosis of vital cancer patients is time-dependent and so ICU-intensive patients must face the difficulty of making a successful selection of patients for early admission and efficient diagnosis and care. Oncological and haematological disorders are one of the major causes of morbidity and mortality worldwide.

In view of the reality that cancer therapies have improved their effectiveness, correlated with stronger prognosis and increased life expectancy, it is foreseeable that the amount of cancer patients needing admission to ICU would continue to rise in the coming years, constituting an area of compulsory continuing education for intensive care staff.

Observational findings have demonstrated an increase, not only in terms of survival but also in terms of the quality of life of cancer patients seeking admission to the ICU. However, this is also notably worse than that of the general public at 3 and 12 months post-hospital discharge, particularly in haematological patients. Ageing, low functional status prior to ICU entry, and higher levels of multi-organ loss during ICU stay are independent predictors of lower quality of life.

A research published in France revealed comparable health results, with hospital mortality rates, 3-month mortality and 1-year mortality of 39%, 47% and 57% respectively (Azoulay et al. 2013). These findings are well away from classical research, which posed unacceptably high mortality rates that did not warrant intensive control of these populations.

There is no question that the change in the prognosis of cancer patients in ICU is multifactorial. Awareness of these variables is important for patient management and a challenge for sustainable change. Five primary elements can be highlighted:

### New anti-tumor treatments

Health and surgical care of cancer patients have improved dramatically. Chemotherapy in ICU, which is unimaginable until reasonably recently, can be a therapeutic alternative in selected critical patients. Treatment of tumor cells gradually targeted as shown by immunotherapy is usually successful and well tolerated. Laparoscopic surgeries reduced the duration and postoperative complications of several tumors. Also the most extreme procedures, such as cytoreductive surgery and heated intraperitoneal chemotherapy, involve a brief ICU stay when conducted by experienced teams.

### Requirements for entry to the ICU

We provide a better variety of patients who will benefit from access to the ICU. This is attributed, among other factors, to better cooperation between oncologists, haematologists and intensivists in the creation of management guidelines and admission requirements agreements. The decision whether or not to admit a cancer patient to the ICU is complicated and both the possible advantage and the risk of therapy being ineffective should be taken into account. Admission to the ICU of an oncology patient should be based on three principles:

- The rationale for admission needs to be reversible
- The patient has demonstrated an adequate quality of life and a prognosis of oncological illness and its treatment options support the use of extreme interventions.
- The patient or members of his or her families do not deny entry.

The prognosis of cancer patients in the ICU, as well as those with non-oncological disorders, depends on their performance status, the severity of acute disease and the number of organ systems that malfunction. Oncological diagnosis, tumor cycle, neutropenia, aplasia or the presence of metastases has little or no relation to the short-term prognosis of an ICU cancer patient.

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**Received** November 06, 2020; **Accepted** November 20, 2020; **Published** November 28, 2020

In general, cancer patients have a worse prognosis than non-cancer patients in ICU, particularly those with haematological malignancies. This is presumably due to being an immunocompromised patient and not developing cancer of its own. If we could assess the immunosuppression condition of critical patients in normal clinical practice, we would find a strong link with the condition and the prognosis. Over the next five years, improved awareness of the immune response in vital cancer patients, the potential to collect real-time evidence and the prospect of therapeutically modulating this response would represent an unprecedented step forward in enhancing survival.

Common prognosis ratings have very little utility in cancer patients and only ratings that measure organ function, Sequential Organ Loss Assessment (SOFA), Logistic Organ Dysfunction Score (LODS), better estimate mortality and are helpful in decision making. The short-term prognosis is mainly related to the number of defective organs (especially if more than 3), the need for intrusive mechanical ventilation (IMV) and the need for renal replacement therapy.

### Rate and precision

Cancer patients have different degrees of immunosuppression, making them more likely to have conditions, not just contagious ones, during their disease, and to respond adversely to these complications. Also small organ dysfunctions have been associated with an increase in mortality, making early ICU entry a better predictive determinant. It is highly important when an oncologist is admitted to an ICU with sepsis or acute respiratory failure. The risk / benefit of preventive admission to ICU should be considered in high-risk patients.

The pace at which effective care is placed in motion will have a direct effect on the prognosis. The implementation of extra-ICU rapid response teams, extra-ICU patient evaluation teams or specialized initiatives for some pathologies (sepsis code) has contributed to improvement in this area. In a significant percentage of vital cancer cases, we have no reliable diagnosis and these cases have a poorer prognosis.

Non-invasive or minimally invasive diagnostic methods such as computed tomography (CT), lung and cardiac ultrasound, thermodilution and/or pulse wave tracking and early examination of bronchoscopy samples (bronchoalveolar lavage and tracheal suction) should be the foundation of early diagnosis. There are also complex oncology patients in the category of acute time-dependent pathologies who have been shown to improve prognosis with immediate intervention protocols: code myocardial infarction, code stroke or code sepsis. Why not code cancer if we need to be extremely reliable and fast in our diagnostic and therapeutic response to cancer patients?

### Strengthening service measures in the ICU

This is particularly true for respiratory assistance, both non-invasive mechanical ventilation (NIMV) and high-flow nasal cannula oxygen (HFNC). The requirement for tracheal intubation and IMV was found to be the key risk factor for short-term mortality in onco-haematological patients admitted to ICU. Given the increase in longevity due to the use of protective artificial ventilation, based on various clinical trials), NIMV has been prescribed as an initial therapy for respiratory failure in these patients as it greatly decreases the need for tracheal intubation and IMV, prevents related complications and increases prognosis. It is important to remember that in patients who choose a non-invasive ventilation strategy and subsequently require tracheal intubation, both short-term and long-term mortality is significantly higher; therefore, invasive support should not be delayed if permitted.

### Trial of the ICU

In the group of patients we've questions on the attitude to be taken, it might be advisable to hold out an ICU trial, that's to mention, admission to the ICU without therapeutic restrictions for a minimum of 72 hours, with frequent and periodic re-evaluations, with a view to not perpetuating unnecessary treatments and prolonging the suffering of patients and their families. The ICU trial is predicated on a study published by Lecuyer et al. (2007) which found no statistically significant variation at the time of admission to the ICU that differentiated between survivors and non-survivors.

However, none of the patients who required increased organ support measures survived after 72 hours. Thus, if, at that point, the patient experiences a failure of three or more organs or a worsening of the previous multi-organ failure, vital expectations are minimal and it might be advisable to need action to limit the therapeutic effort (Prieto del Portillo et al. 2014). During this way, not only can we avoid unnecessary treatment or suffering of patients and relatives, but we'll also participate within the prevention of conflict between ICU staff and burnout.

Admission to ICU does not necessarily involve taking all the necessary measures for as long as possible. We need to take into account a wide range of options. Patients may be admitted with the intention of providing unrestricted treatment for at least five days and reassessed on the basis of their evolution. It is possible to enter for haemodynamic or renal support and to limit IMV. We can even sign up to optimize comfort measures or reduce high-flow nasal goggles or IMV dyspnoea in patients with poor prognosis. Decisions must even be taken here in a multidisciplinary way (intensivists, oncologists and hematologists) and in agreement with the patient and also the members of the family.

All therapeutics alternatives might indeed be considered and individualized, counting those customarily considered restricting variables like ICU chemotherapy or extracorporeal layer oxygenation (ECMO) in patients with extreme headstrong respiratory failure. Another issue is how early oncologists or intensivists ask support and help from ICU. Unfortunately, experience has shown that valuable time is lost, which is to the detriment of the patient, until he would transferred to the ICU. Unfortunately, this ascertainment goes beyond the scope of this text. We reserve that we'll analyze it plus its extension in another article.

## Conclusion

There is no doubt that the human and technical resources available to us vary greatly between centers and countries. If we can maintain the functional status of cancer patients, we will dramatically improve their quality of life. And that, together with being able to stay on their cancer therapies.

ICUs have focused on acute disease care for many years and have ignored the emotional side of patients and families. In cancer patients, this is most apparent. We need to humanize ICUs, expose them to members of the family, reduce noise, incorporate psychologists into our work teams, value patients' circadian rhythms, and make the environment less inhospitable and more human.

For cancer patients, we are heading towards individualized care and this also allows us to take individualized and complex support steps. 'All or nothing' should no longer be the admission criterion and therapeutic interventions in ICUs and should be tailored to each patient and their wishes. At the end of life, the ICU still has to be able to provide consistency.

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**How to cite this article:** Michailidou , Evangelia Michail. "Latest developments and new challenges for Cancer patients in Intensive Care Unit" *J Integr Oncol* 9(2020): \*\* doi: 10.37421/jio.2020.9.354