

## “My (critically ill) patient has only a pneumonia” – the risk of oversimplification and the evidence of post-ICU syndrome

### “MEU PACIENTE (CRITICAMENTE DOENTE) TEM APENAS UMA PNEUMONIA” – O RISCO DA SIMPLIFICAÇÃO EXCESSIVA E OS INDÍCIOS DE SÍNDROME PÓS-TERAPIA INTENSIVA

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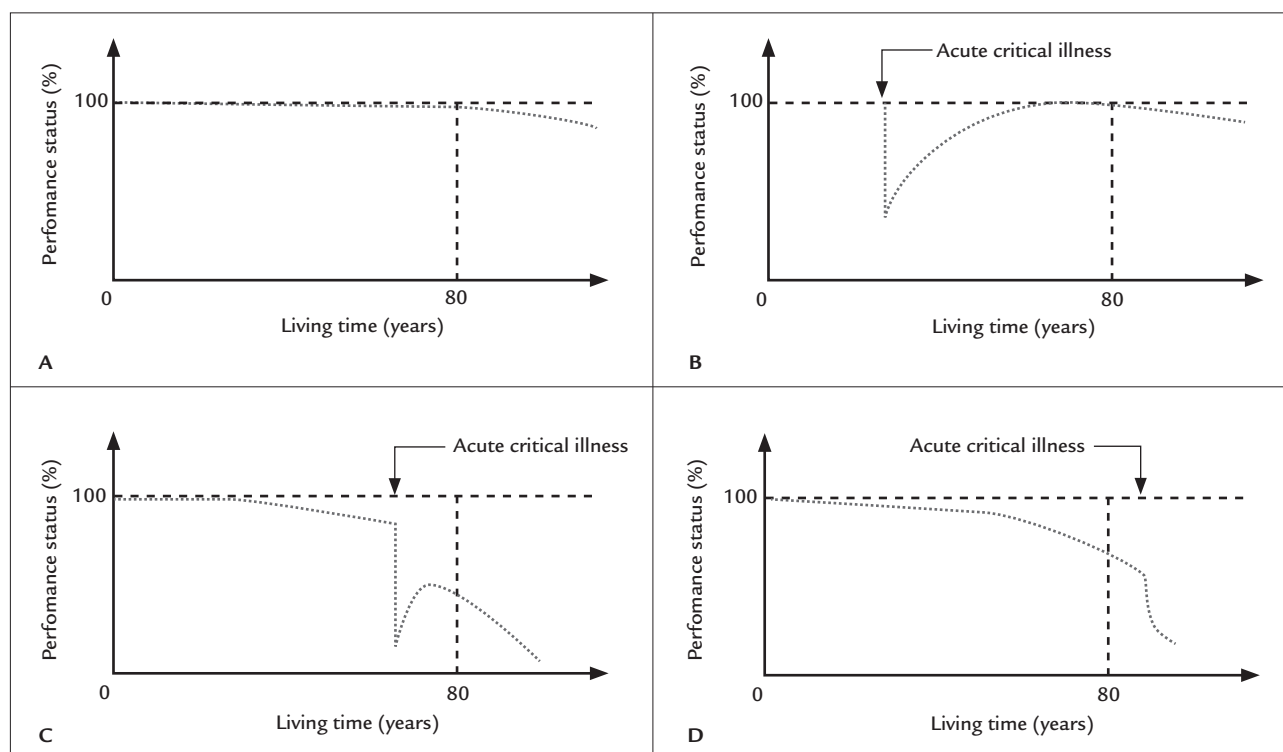
The rationale of Intensive Care Unit (ICU) mission is to delay death through continuous monitoring and organ function support, in order to get additional living time to achieve acute critical illness recovery along with some timely interventions during the disease onset. In the modern era, patient-centered outcomes, such as long term survival with quality of life and its effects on the family structure, became the target of clinical investigations in the ICU.<sup>1</sup> In spite of attractive biological plausibility, many pathophysiological-based interventions showed disappointing results after adequately designed randomized clinical trials; only adding costs to the care of the critically ill, without actual improvements in either survival neither quality of life.<sup>2,3</sup> Looking for patient-centered outcomes, many endpoints, such as long term physical, psychological and cognitive domains, as well as patient, family, and ICU team satisfaction with therapy have all been investigated, disclosing how devastating can an ICU stay be for the critically ill<sup>4</sup> and their families.<sup>5</sup>

Critically ill patients, both during their ICU stay and mainly after ICU discharge, are prone to experiencing pain, neuropathy, weakness, skin breakdowns, persistent organ function support, depression, anxiety, sleep disorders, post-traumatic stress disorder, confusion, concentration deficit, memory deficit, attention deficit, low processing speed, low visual spatial resolution ability, and low execution ability.<sup>4,6</sup> Within 1 to 5 years after ICU discharge, these factors ultimately result in difficult locomotion, falls, depression, poor social skills, and in up to 34% of patients a cognitive dysfunction compatible with mild Alzheimer's disease.<sup>7</sup> This physical, neurological, and psychological clinical scenario has been called the post-ICU syndrome.<sup>8</sup>

In a Brazilian public single center experience,<sup>9</sup> during the first year after an ICU discharge of 690 patients, 27% of survivors died (18% before hospital discharge), 40% were re-admitted to the hospital, 18% were re-admitted to the ICU (unplanned re-admissions), 52% needed at least one emergency visit and 11% needed psychological/psychiatric support. The number and severity of organ dysfunctions, as well as the age of patients were associated with post-critical illness burden in a time dependent fashion.

It was interesting to note that severity of organ dysfunction was consistently associated with death and post-ICU syndrome; however, the underlying disease was not associated with these outcomes.<sup>8,9</sup> Consistent with this, an Australian cohort of severe influenza A (H1N1) pneumonia patients who needed a median of 11 days of extracorporeal respiratory support (ECMO) demonstrated that, despite a low mean age (36 years old), notable absence of comorbidities and a high severity of disease measured through the APACHE II score (20 points), patients reached a high eight-month survival (86%) and yet, out of these surviving patients, only 26% returned to work after 8 months of follow-up due to the acquired disabilities.<sup>10</sup>

Therefore, multiple organ failure syndrome negatively and hugely impacts the patient's quality of life, and must be considered and interpreted as a severe illness added to underlying conditions, as shown in Figure 1. For instance, a patient with a non-small cell metastatic pulmonary cancer presenting with normal performance status, admitted to the hospital with pneumonia progressing to severe multiple organ failure syndrome, is frequently treated with the rationale of “having only pneumonia”. In light of current evidence, this idea is unfortunately a fallacy, and this patient has a great disease burden derived from



**FIGURE 1** An empirical model of the burden of acute critical illness patterns, that is, the post-ICU syndrome impact on performance status. Panel A shows the lifetime of a normal subject without acute critical illness during life; Panel B shows the lifetime of a normal subject with an acute critical illness during life; Panel C shows the lifetime of a subject with a severe underlying disease with an acute critical illness during life; and Panel D shows the lifetime of a frail subject with an acute critical illness during advanced age life.

pneumonia, which probably will decrease importantly his quality of life, and therefore his performance status during the post-ICU syndrome (Figure 1, Panel C).

When the burden of acute critical illness is expected to be heavy enough in a patient with a severe underlying disease, both the patient's and his or her family's life values and end-of-life preferences must be taken into consideration to provide treatment recommendations that are in the patient's best interest. In a United States single center sample, for instance, the real values of critically ill patients as preserved cognitive and/or physical function were assessed in lesser than 33% of patients.<sup>11</sup> Furthermore, enhanced communication skills and techniques among the ICU team and patients and their families, simply based on patient's values and preferences are associated with less conflict, higher family and ICU team satisfaction, and less post-traumatic stress disorder and depression in the family.<sup>12</sup> In Brazil, the great barriers to achieve this adequate communication strategy are end-of-life and legal knowledge.<sup>13</sup>

Many of those described patients will survive acute critical illness and can potentially achieve outcomes com-

patible with their values afterwards. In this way, the ICU concept of delaying death could be applied within certain ethical and moral limits (the concept of proportionality of therapeutics), without physicians' therapeutic obstination.<sup>14</sup> In this context, for instance, a time-limited ICU trial can be purposed, or withholding or even withdrawal of already initiated organ support, according to the local experience and culture. Furthermore, by applying the proportionality concept, some clinical investigations have shown that an early palliative care consultation in specific acute situations as decompensated severe chronic obstructive pulmonary disease (COPD),<sup>15</sup> metastatic non-small cell lung cancer,<sup>16</sup> and frail patients with acute surgical pathology is associated with fewer interventions, a higher survival time and, not less important, with improved quality of life.<sup>17</sup>

In conclusion, survival of critically ill patients has remarkably improved,<sup>18</sup> resulting in survival of patients with severe disabilities in need of continued assistance and multidisciplinary care for a long period of time, situation known as the post-ICU syndrome. Some patients,

especially those with severe underlying conditions, such as advanced heart failure (NYHA III – IV), advanced COPD (Gold IV), metastatic malignant neoplasms, frail elderly patients and others must have their life-values and end-of-life preferences assessed ideally before, but also after acute critical illness onset. This goal can only be achieved through adequate communication strategies with patients and their families. Those preferences guide a proportionality-based care during acute critical illness, which is associated with improved survival, improved quality of life, fewer conflicts, and more satisfaction of patients, families and the whole ICU team, and are perfectly in line with the mission of being a physician.

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