EPIMED MONITOR SYSTEM PERFORMANCE

Estimation of ICU Length of Stay

ICU Efficiency

*The evaluation of ICUs **efficiency** is an **important** step for the **management of these units***

Over time, the monitoring and analysis of efficiency indicators allow the evaluation, of an ICU and its comparison with other units, besides helping to identify modifiable factors for quality improvement, cost reduction and efficiency gains.

Among the main indicators are clinical outcomes, especially mortality rates and ICU length of stay. Risk-adjusted assessments with the use of predictive scores and models are essentials for the correct interpretation of these parameters.

In a scenario, where there is mounting pressure for increased efficiency in the hospital sector, safely reducing hospitalization time, especially for patients in the ICU, has been a widely recommended strategy. It is essential to reliably estimate the duration of hospitalizations for an adequate implementation of such a strategy.

Estimating the ICU length of stay can be useful for a number of measures leading to the unit efficiency, including:

» Identify high-risk long-stay patients and implement specific care plans for them;

» Estimate and plan the capacity of attendance and flow of the ICU (vacancies for elective surgeries and transfers of patients);

» To allow benchmarking through risk-adjusted measures, thus comparing, in a fair way, the average length of stay amongst different ICUs.

The Epimed Performance Module of predictive analyses estimates the length of stay and the risk of ICU long-stay, providing relevant information for decision making and healthcare, operational and strategic benefits.

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01 What is an ICU long-stay?

The current definitions of long-stay vary (7, 10 or 14 days) according to the profile of units and patients. However, we believe that this reasoning does not lend itself to correctly evaluating what is, in fact, a long-stay, since the main diagnosis of the patient influences substantially the definition of what would be adequate or normal.

As an example, we can imagine that an 8-day ICU stay is long for a postoperative period of myocardial revascularization surgery (MRS), where the mean is a 3-day stay, but not for a patient with community-acquired pneumonia, where the mean is an 8-day stay.

Thus, our definition of a long-stay is the duration above the 90th percentile determined from a database of more than 1.4 million patients. With this in mind and considering the previous example, an MRS-postoperative patient would have a long-stay whenever it exceeded six days, while a severe community pneumonia patient exceeded 15 days.

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02 How to use the ICU Length of Stay Estimate Plug-in?

The system can be used via the web or on mobile devices, facilitating the implementation at the bedside. Generally, the unit interface (bed panel) and individual patient data can and should be used as guides and qualifiers for case discussion in the multi-professional round on a daily basis.

The unit and hospital reports, in turn, have a more advisory role to be used in management, performance evaluation, and periodic planning.

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03 What should I do if my patient has a significant risk of long-stay?

While obtaining the early identification of patients with an ICU long-stay moderate or high-risk a series of measurements can be performed, among them we highlight:

» Maximum implementation of prevention protocols that can reduce the length of stay (e.g., superficial sedation, early mobilization, prevention of infections)

» Communication with family, assistant staff, hospital management, discussion with the health insurance provider about hospital admission expectations

» Preparation of transitional care (e.g., semi-intensive care unit, transition to rehabilitation or home-care)

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04 What to do when my patent's length of stay exceeds the estimated time?

Exceeding up to 10-20% can be considered reasonable considering that we speak of estimates. However, if the patient significantly exceeds the estimated time, it is an opportunity for a more detailed assessment to identify the possible causes. It is common in these cases to identify adverse events (many of them preventable), lack of adherence to best practices (e.g., deep sedation, inadequate thromboprophylaxis), or non-medical (social/economic) situations that not only explain the discrepancy but may also serve for improvement in subsequent patients or to alert to the need for staff trainings, educational measures or protocol implementation/review.

Another important aspect here refers to logistical issues (no vacant bed or absence of semi-intensive unit beds). Such factors, when identified (along with the metric "hospital discharge decision mean time to the effective decision time" generated by the Epimed ICU Monitor system) can assist in the institution planning for the required flow and dimensioning of these beds.

05 How can the length of stay estimate help me plan my patient's care in the first days of ICU stay?

Hoy la mayoría de las UCI tienen dificultades para implementar todos los protocolos asistenciales disponibles. La identificación de pacientes de alto riesgo puede ser un modo de optimizar la implementación de protocolos de alta complejidad o costo, tales como: la movilización precoz, la aspiración subglótica, entre otros.

Adicionalmente, aunque no constituye una meta, sino una estimación, la duración esperada de la internación puede ser un factor adicional para la reevaluación constante de la viabilidad de alta así como para la planificación anticipada de alta (meta de acreditación hospitalaria). La utilización de la herramienta en dispositivos móviles (tablets y smartphones) permite la introducción del elemento en las discusiones al borde de la cama y en la ronda multiprofesional.

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06 How can the length of stay estimate help me plan the flow of patients in my unit?

When identifying high-risk patients or with high long-stay estimation, managers can optimize resources and determine that these are the priority patients to be evaluated.

In fact, when we work the extremes, that is, prioritize each day so that more qualified professionals and seniors immediately evaluate patients whose length of stay estimate is too short or too long, we have a greater opportunity to optimize resources by discharging more quickly those low-risk ICU patients and making early interventions in the most complex ones.

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07 How can the estimated length of stay help me communicate with hospital managers, medical staff and insurance companies?

The constant pressure exerted on ICU teams by financing sources is an undeniable reality. Lack of adequate tools that provide transparency and focus the appropriate discussion on long-term patients is a common problem for ICU and hospital managers. This vacuum generated by the lack of adequate information has brought to the day-to-day of the institutions models that charge unattainable results since the imposed metrics come from systems not validated in the Brazilian reality (e.g., models with North American or European benchmarking) or of financing sources-arbitrated numbers based on risk ratings for noncritical patients.

In this sense, the use of the ICU Length of Stay Estimate Plug-in can be used to subsidize this discussion, especially of high-risk of long-stay patients with reliable data, robust model and produced with a large population of robust model and produced with a large population of Brazilian critical patients.

In addition, it is a tool to be used in a complementary way to the SRU (Standard Resource Utilization, an ICUs efficacy assessment tool already available in the Adult ICU Epimed Monitor system).

Through the ICU Length of Stay Estimate Plug-in, ICUs can assess their efficiency either globally or by diagnostic category. This diagnostic assessment is a unique differential for ICU patients and can be a valuable contribution to package-oriented, DRGs or value-based payment models.

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08 How can the length of stay estimate help me plan the transitional care?

Early identification of high-risk of long-stay patients can provide concrete support. So that as soon as these patients are stable they begin rehabilitation processes in the hospital or in post-acute or transitional care hospitals. It may also be decisive in the earlier prioritization of the use of a semi-intensive unit vacancy or even a request for in-home care.

09 How can the length of stay estimate help me communicate with patients and their families?

The ICU Length of Stay Estimate Plug-in can provide concrete and less subjective elements, and therefore, improve the prognostic predictive capacity of ICU professionals. With these elements you can advance the dialogue with patients and their families and thus adjust their expectations.

10 How can the length of stay estimate help me meet the goals of the accreditation processes?

Today, discharge planning is part of the goals proposed by international accreditation models. By estimating the length of stay and the risk of long-stay, the ICU Stay Time Estimate Plug-in can be a crucial element in meeting this goal currently required by JCI and international accreditations.

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