

## Glycemic Control in Patients Hospitalized in Intensive Care Units: Nursing Role

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Glycemic control in patients hospitalized in Intensive Care Units has been a matter of particular importance in recent years. The potentially harmful consequences of hyperglycemia have led to several investigations into intensive insulin treatment strategies aimed at tight glycemic control [1,2].

Poor glycemic control increases morbidity, mortality as well as patient stay in ICUs. Common risk factors include sepsis, severe trauma, extensive surgery, and myocardial infarction. Possible underlying mechanisms include insulin resistance, even in non-diabetic patients, and the release of stress hormones. Revised clinical practice guidelines for the management of patients with sepsis and septic shock recommended a protocol approach to control hyperglycemia. However, designing insulin delivery protocols remains a challenge for clinicians, as most are unsuccessful in achieving blood glycemic targets without increasing the rate of hypoglycemia among patients in the intensive care unit [3,4].

ICU nurses play a fundamental role in monitoring and evaluating insulin therapy. This allows them to have a correct clinical judgment to proactively reduce the effects of hypoglycemia and hyperglycemia in the ICU, while at the same time providing safety margins for patients [5].

The implementation of strict control of glucose levels in ICUs has been shown to be beneficial in relation to mortality in critically ill patients. Because hypoglycemia is likely to be a risk indicator for serious illness or death, it is important to have continuous glycemic control in ICUs. The trials showed that intensive glucose

control could reduce mortality among ICU patients while also reducing morbidity. Therefore, tight glycaemic control in some ICU patients may improve disease outcome [6].

In many studies of tight glycaemic control, intensive treatment of hyperglycemia in the ICU resulted in frequent iatrogenic hypoglycemia. Hypoglycemia in the ICU is difficult to recognize since most patients are intubated and sedated, so the level of contact cannot be assessed. But it can be identified by changes in vital signs during monitoring. Also, the nurse is responsible for the correct dose of insulin and the correct time of taking the samples. On the other hand, following a protocol dramatically increases the nurses' workload. Also, the complex algorithms accompanied by complex mathematical calculations can lead to errors and, by extension, to nurses' dissatisfaction and discrediting the validity and effectiveness of the protocol. Sometimes the nurses proceed with an informal conversion of the protocol [7].

Over the past decade, several studies of predefined risk factors for hypoglycemia in critically ill patients have been performed. Common risk factors reported are severe sepsis, septic shock, inotropic support, reduction of food intake without adjustment of insulin infusion, preexisting diabetes, mechanical ventilation, hepatic or renal failure, and increased disease severity [8]. Nurses play an important role in glycaemic control in critically ill patients. They are responsible for the correct and safe implementation of protocols and medical instructions, the correct reception of sugar values and the clinical evaluation of patients in case of hyperglycemia or hypoglycemia.

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