

Blood glucose monitoring. Nationwide multicentre study[☆]



Monitorización de la glucemia en cuidados intensivos. Estudio multicéntrico nacional

To the Editor,

According to the clinical practice guidelines on the management of sepsis,¹ insulin should be administered after 2 consecutive glucose measurements > 180 mg/dL, and glucose levels should be kept between 110 mg/dL and 180 mg/dL. These guidelines recommend using arterial blood samples to control glycemia and studying them with blood gas analyzers. Point-of-care glucometers should only be used when the patient is a catheter-carrier subject, to draw venous or arterial blood samples, and the only alternative available is capillary puncture.² State-of-the-art glucometers are very promising because of their reliability.³

Within the framework established by the national multicenter MOviPre study (Analysis of early mobilization in the intensive care setting in Spain) and, since hyperglycemia is a risk factor for muscle weakness, the collaborating investigators were asked whether their ICU had a protocol for glycemic control implemented and, when necessary, what the optimal glycemic range was, type of blood sample drawn, and type of analyzer used.

A total of 89 ICUs were surveyed, most of them polyvalent ICUs (74.2%) from public (97.8%), and teaching hospitals (87.6%) (Table 1).

A total of 10% of the ICUs had not implemented any protocols for glycemic control as opposed to 15% that did have protocols implemented but without a proper definition of the optimal glycemic range was; 62.9% of all ICUs used ranges between 110 mg/dL and 180 mg/dL (Table 1).

A total of 85.4% of the ICUs used capillary puncture and 94.4% point-of-care glucometers for glycemic control. Only 36.2% of all glucometers used were the Accu-Check[®] model, a glucometer capable of reducing the bias generated by the hematocrit when measuring glycemia while only 1 ICU (1.2%) used the state-of-the-art Stata-Strip[®] glucometer.

The results confirm the findings of García del Moral-Martin et al.⁴ in Andalusia, Spain from a large and homogeneous national sample in terms of representativity by autonomous community. Indeed, although the evidence on how to monitor glycemia was first published over 5 years ago, it still has not made through the routine clinical practice. Although nurses rather draw samples from the arterial catheter, this is not a common practice to avoid the loss of blood associated with the volume of rejection, even though there are extraction methods with return systems to avoid the risk of anemia and any complications associated with cardiac catheterization (such as infection, catheter patency, thrombosis, and arterial ischemia).⁵ If a point-of-care glucometer should be used then it should be state-of-the-art

Table 1 Distribution by autonomous communities and characteristics of the ICUs surveyed.

	N = 89	%
<i>Distribution by autonomous communities</i>		
Murcia	6	6.7
Cantabria	3	3.4
Aragon	7	7.9
Extremadura	2	2.2
Asturias	4	4.5
Navarre	2	2.2
Galicia	5	5.6
Valencia	14	15.7
Madrid	18	20.2
Basque Country	3	3.4
Catalonia	16	18
Castile and León	2	2.2
Castile-La Mancha	2	2.2
Canarias	1	1.1
Andalusia	4	4.5
<i>Hospital beds</i>		
< 200	7	7.9
200-500	31	34.8
> 500	51	57.3
<i>Type of ICU</i>		
Cardiac	4	4.5
Coronary	4	4.5
Medical	6	6.7
Polyvalent	66	74.2
Surgical	6	6.7
Trauma	3	3.4
<i>ICU beds</i>		
0-10	34	38.2
11-25	46	51.7
26-50	9	10.1
<i>Protocol of IV insulin</i>		
No	10	11.2
Yes, without a target glycemic range	15	16.9
Yes, with targets between 80 and 110	8	9
Yes, with targets between 110 and 140	39	43.8
Yes, with targets between 140 and 180	17	19.1
<i>Type of sample used</i>		
Capillary	76	85.4
Venous	1	1.1
Arterial	12	13.5
<i>Measuring method</i>		
Point-of-care glucometer	84	94.4
Blood gas analyzer	5	5.6

device,³ that is practically unavailable in the ICUs studied.

The management of glycemia in the critically ill patient requires recommendations that should include the proper glycemic range, the minimum requirements that any insulin therapy protocol at the ICU setting should meet to reduce variability during glycemic control, and how to transition to intermittent subcutaneous insulin therapy.

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Both scientific societies, the Spanish Society of Intensive and Coronary Unit Nursing (SEEIUC), and the Spanish Society of Intensive and Critical Care Medicine and Coronary Units (SEMICYUC) should back the recommendations made by experts and professionals from other specialties to facilitate the reading of glycemic levels, and implement the current evidence available on glycemic control and monitoring.

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Conflict of interests

None reported.

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The importance of self-protection plans in times of pandemic[☆]



La importancia de los planes de autoprotección en momentos de pandemia

Dear Editor:

The current pandemic situation caused by SARS-CoV-2 has made hospital boards of directors have to change their management substantially to be able to adapt to the immense flow of patients received to the point that it has looked like practicing medicine in war times.

In this context, hospitals, and intensive care units (ICU) alike have had to keep taking care of all the other ordinary diseases and conditions by adapting the services offered to the new reality. Also, the standard risks associated with safety and the ER at the hospital setting have multiplied following the collapse experienced during most of the pandemic.

Hospitals and ICUs alike have sustained several incidents and catastrophes to the point of having to evacuate these facilities, totally or partially. This has led to the death of patients who could not be evacuated due to the difficulties involved in their transfer, especially critically ill patients whose complexity and vulnerability is much greater. This reality has become complicated during the COVID-19 pan-

demic because the extreme severity of the patients adds to the problem of biosafety for the healthcare personnel because the high transmissibility and transmission of the virus requires much more complex measures for evacuation purposes.^{1,2} As an example of this, we should mention that just when we were being hit by the worst part of the pandemic, several fires were declared in the ICUs of large hospitals, like the fires reported in Saint Petersburg, Russia (May 2020), and Romania (November 2020). A total of 5 and 10 patients, respectively, were killed in these fires, all of them with COVID-19. No one could be evacuated.

It is of paramount important to design a self-protection plan that should include an evacuation plan properly drafted and based on the current legislation. Also, this plan should be compiled in a physical document approved by the competent authorities, delivered to all the healthcare workers involved, and updated on an ongoing basis. Also, following this plan should be mandatory for all hospitals and ICUs, as a matter of fact, to this date, the design of such a plan is highly recommended by bodies like the World Health Organization (WHO).³

We have a self-protection program available in our ICU, and a classification or triage system to prioritize evacuations that is implemented by the treating physician of every patient on a daily basis.⁴ Therefore, we always take into consideration, on the one hand, the patient's clinical situation and need for life support, and on the other hand, the therapeutic effort received by the patient and type of isolation he requires.

If an evacuation is mandatory in a situation of pandemic, the system of triage works by prioritizing the transfer of

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