Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

uso de electrocatéteres de fijación pasiva[5], principalmente la dislocación del electrodo, lo que exige en el caso de MTT tradicionales del uso, en ocasiones, de diversos electrodos, así como del riesgo de perforación por reiterada manipulación. Así mismo, dado que los generadores de pulsos son reutilizados, en este sentido no se incrementa el gasto total del procedimiento. El objetivo por tanto de presentar esta técnica es la seguridad que supone para el paciente portar un electrodo más estable que el tradicional, evitando dislocaciones del mismo. Dado que en la unidad de los autores el número de implantes de MTT es baja por la corta espera hasta el implante del dispositivo definitivo, el implante de MTTFA por vía femoral se emplea fundamentalmente en situaciones de espera de resolución de la causa de la bradicardia (intoxicaciones, necrosis miocárdida o miocardidtis), en espera de realización de estudio ecocardiográfico completo (realizado en la unidad) para determinar el tipo de dispositivo definitivo (generador tradicional, resincronizador y/o desfibrilador) o porque el paciente se ha presentado durante días no laborables.

En conclusión, y teniendo en cuenta que se trata de una serie corta de pacientes, según nuestros resultados el uso de MTTFA implantados por vía femoral es una modalidad segura de estimulación temporal, siendo necesarios más estudios con grupos poblacionales mayores, multicéntricos y en los que también se analicen los resultados en comparación con electrodos de fijación pasiva, reforzando con esto la transcendencia que tienen los servicios de medicina intensiva en electroestimulación cardiaca a nivel nacional.

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COVID-19 Severity Index: A predictive score for hospitalized patients

COVID-19 Severity index: sistema de prediccion para pacientes hospitalizados

Dear Editor,

The way in which outbreaks affect countries depends on multiple factors and its impact is difficult to foresee[1]. However, the numbers of infected people and casualties are evidence that despite attempts to plan, the global healthcare systems remain unprepared[2]. The intensity of staffing and the sophisticated training required for the care of patients with viral infections during pandemics, result in the fact that a relatively small number of patients can easily overwhelm healthcare systems[3].

The identification of variables related to worse outcomes is key for triaging and adapting the intensity of care that each patient requires, allowing effective strategic planning and better administration of human and material resources. Moreover, the need for a sensitive and predictive model is mandatory to avoid a delayed recognition of severely ill patients or those at risk of presenting further complications[4].

During the early phase of COVID-19 pandemic Liao et al. propose an early warning score based on an adapted version of the National Early Warning Score 2 (NEWS-2) adding *age* as a variable, based on actual evidence of being an independent risk factor for survival[5].

Considering the high number of patients admitted with COVID-19, a specific early warning system (EWS) including laboratory test results, clinical features and radiological findings, could improve the detection of high-risk patients for optimization and a better management of hospital resources, mainly relevant in low-income countries[6,7].

COVID-19 Severity Index was developed as a triage tool based on the NEWS-2 score[8], that could rapidly and reliably be used by frontline healthcare personnel to identify high-risk patients. For the construction of this index, a narrative review was conducted to generate a list of possible predictors based on clinical signs and symptoms, comorbidities, laboratory and radiographic findings. After initial identification of 44 predictive variables of worse outcome, they were subjected to a 2-round Delphi process with participants from different countries around the world, diverse backgrounds and multiple areas of expertise.

PARAMETERS	3	2	1	0	1	2	3
Age (years)				≤60	61 - 64	≥65	
Male gender			yes	no			
Heart failure			yes	no			
COPD			yes	no			
Diabetes with end - organ damage			yes	no			
Chest X - Ray*				Normal or without bilateral infiltrates	Bilateral infiltrates		
Respiratory rate (breaths per minute)	≤8		9 - 11	12 - 20		21 - 24	≥25
SpO_2 (%)	≤91	92 - 93	94 - 95	≥96			
SpO_2 (%) in COPD	≤83	84 - 85	86 - 87	≥88			
Suplemental O_2	yes			no			
Systolic BP (mmHg)	≤90			90 - 219			≥220
Pulse (Beats per minute)	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Temperature (°C)	≤35		35,1 - 35,5	35,6 - 37,9	38 - 39	≥39,1	
Dyspnoea		yes		no			
D-Dimer** (ng/ml)				≤1000	>1000		
Lymphocytes* (per mm^3)				≥1000	<1000	≤500	
Platelets* (per mm^3)				≥10000	<10000		

Figure 1 COVID-19 Severity Index. * Chest x-ray should be analyzed on admission but it will be reconsidered when a new one is performed. ** If laboratory test results have more than 48 h, they will not be considered. COPD: chronic obstructive pulmonary disease.

SCORE	CLINICAL RISK	ALERT LEVEL	NURSING SURVEILLANCE	RESPONSE	SOLUTION
0-2	Low	Green	Every 12 hours	Standard nursing surveillance	General ward
3-5	Moderate	Yellow	Every 6 hours	Frecuent nursing surveillance	General ward
6-7	High	Orange	Every 2 to 3 hours	Intensive nursing surveillance and physician notification	Evaluate intensive care admission
8 or more	Critical	Red	Continuous monitoring	Immediate physician notification	Intensive care unit

Figure 2 COVID-19 Severity Index risk chart.

At the stage of analysis, each answer was given a number between 0 and 3 (high (3), moderate (2), minimal (1), not applicable (0)) based on the strength of the answer[9]. The number for each domain was tabulated to calculate a weighted effect (WE) to help determine the selection threshold. The WE was calculated following the formula below:

$$\textbf{Weighted Effect} = \text{Predictive Potential} \times 2 + \text{Reliability} - \text{Resources or Training}$$

e.g. : $\textbf{Weighted Effect}_{\text{Asthma}}$

$$= \text{Moderate}(2) \times 2 + \text{Moderate}(2) - \text{Minimal}(1) = 5$$

WE was calculated for each variable and each expert's opinion. The sum of the WE's for a given variable was ranked for further selection of those with the greatest value.

Afterwards, a threshold was chosen based on a desired number of predictors. Then, variables with WE above the threshold were included in a final set of predictor variables. Those variables below the threshold were carefully reviewed by the research team and discharged or included in Round 2 for re-evaluation depending on the value obtained. Any additional variables proposed by participants were also evaluated in Round 2.

A final set of selected variables was combined with a modified NEWS-2 score to generate the COVID-19 Severity Index (Fig. 1). Patients were divided into four risk categories based on their score (Fig. 2).

This score was studied to test its potential predictive capacity for ICU transfer 24 and 48 h elapse of time. A group of 220 patients with confirmed infection were evaluated; 19 of which were unexpectedly transferred to the ICU; 17 were transferred during the first three days, one at day 5 and another one at day 6 from admission.

A comparison between *COVID-19 Severity Index*, NEWS score adapted by Liao et al.[5] and NEWS-2 score was made. All three EWS were measured on the first, second and third day after hospital admission. For those who were initially admitted into general wards and were later transferred to the ICU, the score was retrospectively applied for the 24, 48 and 72 h prior to the ICU admission, with the intention to identify whether if there were parameters that could predict the need of a more intensive monitoring or not.

A comparative analysis of the area under the curve (AUC) for the different scores evidenced a better capacity of the *COVID-19 Severity Index* to predict the need for ICU admission. When applied 24 h prior to transferal, the AU-ROC for our score was 0.94 vs. 0.88 for the modified NEWS score developed by Liao et al., and 0.80 for NEWS-2 (Fig. 2). When applied 48 h prior to ICU admission, the AU-ROC for COVID-19 Severity Index was 0.88, 0.84 for the modified NEWS and 0.62 for NEWS-2.

The digital medical record was electronically set for an automatic calculation and constant update of the COVID-19 Severity Index as soon as the latest laboratory results and vital signs were recorded. This provided real-time information for deciding the most suitable area of care for each patient[10].

Specifically designed for the current COVID-19 pandemic, *COVID-19 Severity Index* serves as a reliable tool for strategic planning, organization and administration of resources by easily distinguishing hospitalized patients with higher risk and need of a prompt ICU transfer.

Declarations

Ethics approval

This project has been approved by the Ethics Committee for Research Protocols at Hospital Italiano de Buenos Aires (Cod. 1290)

Consent of publication

Not applicable.

Data availability statement

All relevant data are within the manuscript and its supporting.

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Conflict of interests

Authors have declared that no competing interests exist.

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Detección al alta de UCI de la fragilidad y necesidades paliativas del paciente crítico en colaboración con atención primaria

Detection of frailty and palliative needs from discharged critical care patients in collaboration with primary care

Sr. Editor:

Nuestra población envejece, y con ello aumentan las patologías crónicas relacionadas con la edad. Esto condiciona un aumento en el número de personas de edad avanzada, pluripatológicas y con reserva funcional escasa[1]. Todo ello supondrá que el número de pacientes frágiles en nuestras unidades de cuidados intensivos (UCI) seguirá creciendo[1]. Estos pacientes sufren mayor discapacidad al alta, tienen más posibilidades de acabar ingresando en un centro sociosanitario, una mayor mortalidad y experimentan convalecencias más largas[2,3].

Por todo ello, debería plantearse la detección precoz de la fragilidad y ser consciente de su utilidad pronóstica como complemento a las escalas habituales centradas en la mortalidad (APACHE, SAPS3, etc.). Así podríamos reorientar nuestros esfuerzos hacia adelantar conversaciones empáticas y honestas centradas en la planificación compartida de los cuidados, respetando los deseos, las preferencias y los valores de nuestros pacientes y sus allegados[3]. Además, detectarla la fragilidad al alta podría suponer una ayuda en la continua toma de decisiones clínicas y mejorar la eficiencia del sistema sanitario.

El Plan de Salud[4] de Cataluña de 2011-2015 se centró en intentar priorizar la prevención y la atención a las personas que padecen enfermedades crónicas avanzadas. Los equipos de atención primaria (EAP) mediante la herramienta NECPAL (NECesidades PALiativas)[5] identificaban dos perfiles de personas frágiles: los pacientes crónicos complejos (PCC) y los que precisan de un modelo de atención a la cronicidad avanzada (MACA) con la idea de poderles realizar un plan de cuidados individualizado (Plan Individualizado de Intervención Compartido [PIIC]) que incluía una planificación de decisiones avanzadas (PDA). Todo ello se registra en la historia clínica compartida de Cataluña (HCCC) para intentar facilitar la toma de decisiones.

La herramienta NECPAL fue diseñada por el observatorio Qualy-ICO-CCOMS y se ha validado en nuestro entorno para identificar a personas en situación de enfermedad crónica avanzada, pronóstico vital de 12 meses y necesidad de atención paliativa de cualquier tipo, por lo que precisan la activación de planes específicos[5] (ver material suplementario).

Dado el nuevo paradigma poblacional las importantes y persistentes barreras en la toma de decisiones sobre adecuación del tratamiento de soporte vital (ATSV) y cuidados al final de la vida[6] que obliga a los intensivistas a tener que decidir al respecto, y en consonancia con el Plan de Salud[4] de Cataluña, nos propusimos ser más proactivos en la detección de estos pacientes, hacer un seguimiento pronóstico e intentar detectar precozmente sus predecibles necesidades paliativas.

En este contexto, durante 6 meses consecutivos se comprobó en todos los pacientes dados de alta de nuestra UCI si estaban identificados como PCC o MACA y si disponían de PIIC y/o PDA. Si lo estaban, pero no tenían PIIC y/o PDA, se realizaba interconsulta a la enfermera de enlace (EE) con los EAP, registrándose el tiempo hasta su implementación. Al resto, a través de NECPAL, se identificaron los pacientes con necesidades paliativas y se comunicó a la EE para facilitar su identificación como PCC/MACA y realización de su PIIC y PDA. Finalmente, durante un año de seguimiento se comprobó cuántos eran finalmente catalogados y si tenían su PIIC y PDA cumplimentada.

El estudio fue aprobado por el comité ético del centro. Al no realizarse ninguna intervención diferente a la práctica habitual, no fue necesario solicitar el consentimiento informado a los pacientes o sus representantes.

De los 471 pacientes dados de alta, el 24,6% (n = 116) resultaron ser NECPAL positivos con predominio de varones (66,4%, n = 73) y edad media de 66,3 ± 13 años. La mortalidad al año fue del 28,9% (n = 33). De todos ellos, 16 (13,7%) eran previamente PCC (n = 14) o MACA (n = 2), teniendo 9 (56,2%) su PIIC realizado y solo en uno de ellos también la PDA. Tras el año de seguimiento y las pertinentes interconsultas a la EE se habían conseguido 10 PIIC (62,5%) y 4 PDA (25%). De los otros 100 pacientes NECPAL positivos al alta, en 5 no se pudo obtener información de la HCCC, quedando 95 pacientes. Al año, el 25,2% de ellos (n = 24) fueron catalogados como PCC (n = 20) o MACA (n = 4) por parte de los EAP, si bien el 75% (n = 18) se catalogaron como tal a los 6 meses. En este mismo período de tiempo se realizaron casi el 60% (58,3%, n = 14) de los PIIC y las 2 únicas PDA conseguidas durante todo el año de seguimiento (fig. 1).

Existen experiencias previas con la herramienta NECPAL[5] en otras poblaciones para detectar a pacientes crónicos con necesidades paliativas[7], incluso intentando predecir su mortalidad[8]. Bajo nuestro conocimiento, es la primera vez que se utiliza para detectar las necesidades paliativas de los