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Regional sepsis care in Catalonia: comparative insights from a secondary analysis of the European Sepsis Care Survey

Adrian Ceccato^{1,2,3,16*}, Christian S. Scheer^{4†}, Ricard Ferrer⁵, Maria Luisa Martinez¹, Berta Cisteró⁶, Juan Carlos Yébenes⁷, Josep Trenado⁸, Carol Lorencio⁹, Adam Linder¹⁰, Daniela Filipescu^{11,12}, Evgeny A. Idelevich^{13,14}, Evangelos J. Giamarellos-Bourboulis¹⁵, Antonio Artigas^{1,2} and the European Sepsis Care Study Group

To the editor:

Increasing the resources available in healthcare settings to improve the detection of sepsis can significantly reduce mortality rates. These resources could include advanced diagnostic tools, sepsis screening protocols and ongoing medical education for healthcare providers, ensuring they are equipped to identify sepsis in its early stages [1]. Policies should advocate integrating sepsis detection systems into existing healthcare frameworks. The regional government of Catalonia has promoted such an action plan since its establishment in 2015. This action plan includes a programme called Sepsis Code, which was developed by seven scientific societies and the prehospital emergency department, and has been

approved by healthcare policy stakeholders and implemented since 2017 [2]. Similar programmes have been implemented for other time-dependent diseases. The programme includes an organisational model according to hospital levels of care and locations, suggested training programmes (including an app), screening tools, and an automated registry.

This study aims to compare the quality of healthcare in Catalonia, a Spanish region with a programme for the rapid diagnosis and treatment of sepsis, with data from centres in the rest of the European Union.

Data from the European Sepsis Care Survey (ESCS) was used to analyse sepsis care in Catalan hospitals and

[†]Adrian Ceccato and Christian S. Scheer contributed equally.

*Correspondence:

Adrian Ceccato
aartigas@tauli.cat

¹Critical Care Center, Hospital Universitari Parc Taulí, Institut d'Investigació Innovació Parc Taulí (I3PT-CERCA), University Autonomous of Barcelona (UAB), Sabadell, Spain

²Centro de Investigación Biomédica en Red en Enfermedades Respiratorias (CIBERES), Instituto de Salud Carlos III, Madrid, Spain

³Intensive Care Unit, Hospital Universitari Sagrat Cor, Grupo Quironsalud, Barcelona, Spain

⁴Department of Anaesthesiology, Intensive Care Medicine, Emergency Medicine and Pain Medicine, University Medicine Greifswald, Greifswald, Germany

⁵Intensive Care DepartmentSODIR Research GroupVall d'HebronInstitut de Recerca. Medicine Department, Hospital Universitari Vall d'Hebron, Barcelona Autonomous University, Barcelona, Spain

⁶Emergency Department, Institut d'Investigació, Hospital Universitari Parc Taulí, Innovació Parc Taulí (I3PT-CERCA), Sabadell, Spain

⁷Servei de Medicina Intensiva, Hospital de Mataró, Mataró, Spain

⁸Servei de Medicina Intensiva, Hospital Mutua de Terrassa, Terrassa, Barcelona, Spain

⁹Servei de Medicina Intensiva, Hospital Universitari Dr. Josep Trueta, Girona, Spain

¹⁰Faculty of Medicine, Department of Clinical Sciences Lund, Division of Infection Medicine, Lund University, Lund, Sweden

¹¹Department of Anaesthesiology and Intensive Care, Prof Dr CC Iliescu Emergency Institute for Cardiovascular Diseases, Bucharest, Romania

¹²University of Medicine and Pharmacy Carol Davila, Bucharest, Romania

¹³Institute of Medical Microbiology, Friedrich Loeffler, University Medicine Greifswald, Greifswald, Germany

¹⁴Institute of Medical Microbiology, University Hospital Münster, Münster, Germany

¹⁵4th Department of Internal Medicine, Medical School, National and Kapodistrian University of Athens, Athens, Greece

¹⁶Parc Taulí University Hospital, Parc Taulí 1, 08208 Sabadell, Spain



compare it with data from 25 other countries of the European Union [3].

The survey was conducted online using the survey software LamaPoll, platin version (Lamano GmbH & Co. KG, Berlin, Germany). Data analysis was done by SPSS-IBM statistics version 26.0 and Excel. The study complies with the EQUATOR network reporting guidelines CHERRIES [4] and CROSS [5] and was registered at ClinicalTrials.gov (Identifier: NCT05059808).

Fifty-five percent (21/38) of hospitals in Catalonia with intensive care units (ICUs) were included, representing 100% (17/17) of public tertiary hospitals. These Catalan hospitals were then compared with 691 centres from the European Union (including hospitals from other Spanish regions). Compared with the EU, hospitals in Catalonia had a higher rate of screening programmes implemented in the emergency department (95% [19/20] vs 53% [293/550] $p < 0.001$), and general wards (80% [16/20] vs 45% [255/568] $p = 0.002$). The rate of sepsis screening programmes was not different in Catalan ICUs (79% [15/19] vs 61% [354/585], $p = 0.10$) (Fig. 1). Standardised sepsis management protocols in the emergency department were more prevalent in comparison with the EU (100% [20/20] vs 57% [309/544] $p < 0.001$), as well as in general wards (85% [17/20] vs 42% [234/554] $p < 0.001$) (Fig. 1), but not in the ICUs where standardised management was high in both settings (90% [17/19] vs 72% [412/575], $p = 0.088$). Similar comparisons were performed, including only university hospitals, and in comparisons with other hospitals from Spain and are included in the Supplementary (Table S1 and Figs. S1 and S2).

Hospitals in Catalonia had more quality improvement programmes of any kind than hospitals in the EU (63% [12/19] vs 27% [159/598], $p < 0.001$) (Fig. 1). The number of staff involved in sepsis training (as teacher or student) from the EDs and ICUs was similar in Catalonia and the EU, but lower in Catalan wards. Meetings scheduled for case discussion and training were more common in Catalonia than in the EU but this did not achieve statistical significance (83% [10/12] vs 66% [105/159], $p = 0.218$). In

Catalonia, more quality indicators are recorded, especially time-to-antibiotics (50% [10/20] vs 16% [99/633], $p < 0.001$) and bundle compliance (55% [11/20] vs 12% [72/633], $p < 0.001$).

This retrospective post-hoc analysis revealed that, hospitals in Catalonia had better sepsis management and screening indicators than similar hospitals in the EU. At the same time, there were more sepsis programs implemented in Catalonia. This analysis was prompted by the high participation rate of tertiary hospitals from Catalonia in the survey, and the need to draw local conclusions for improvement in a region where a programme had been in place for five years prior to the survey. Since its implementation, the Sepsis Code has significantly impacted the management of sepsis in Catalonia. Hospitals and healthcare centres that have adopted the Sepsis Code have reported improvements in the early recognition and treatment of sepsis. One of the most significant impacts of the Sepsis Code has been a reduction in sepsis related mortality rates [6, 7]. Also, improvements in managing this condition has been reported in emergency department [7].

The main limitation of this study is that the results are based on a survey. While the information provided by department heads and consultants is considered reliable, it has not been audited or verified. Another important limitation is that a higher proportion of tertiary and university hospitals in Catalonia were included. Although we conducted sensitivity analyses showing similar results when comparing only university hospitals, we were unable to compare smaller hospitals. Additionally, we lack complete data on the number of hospitals in each included country and their complexity. A strength of this study is the high participation rate of hospitals in Catalonia, which represents all public tertiary hospitals with intensive care units.

In conclusion, hospitals in Catalonia, a region with a sepsis management programme (Codigo Sepsis) promoted by healthcare policy, have higher rates of sepsis screening and standardised sepsis management.

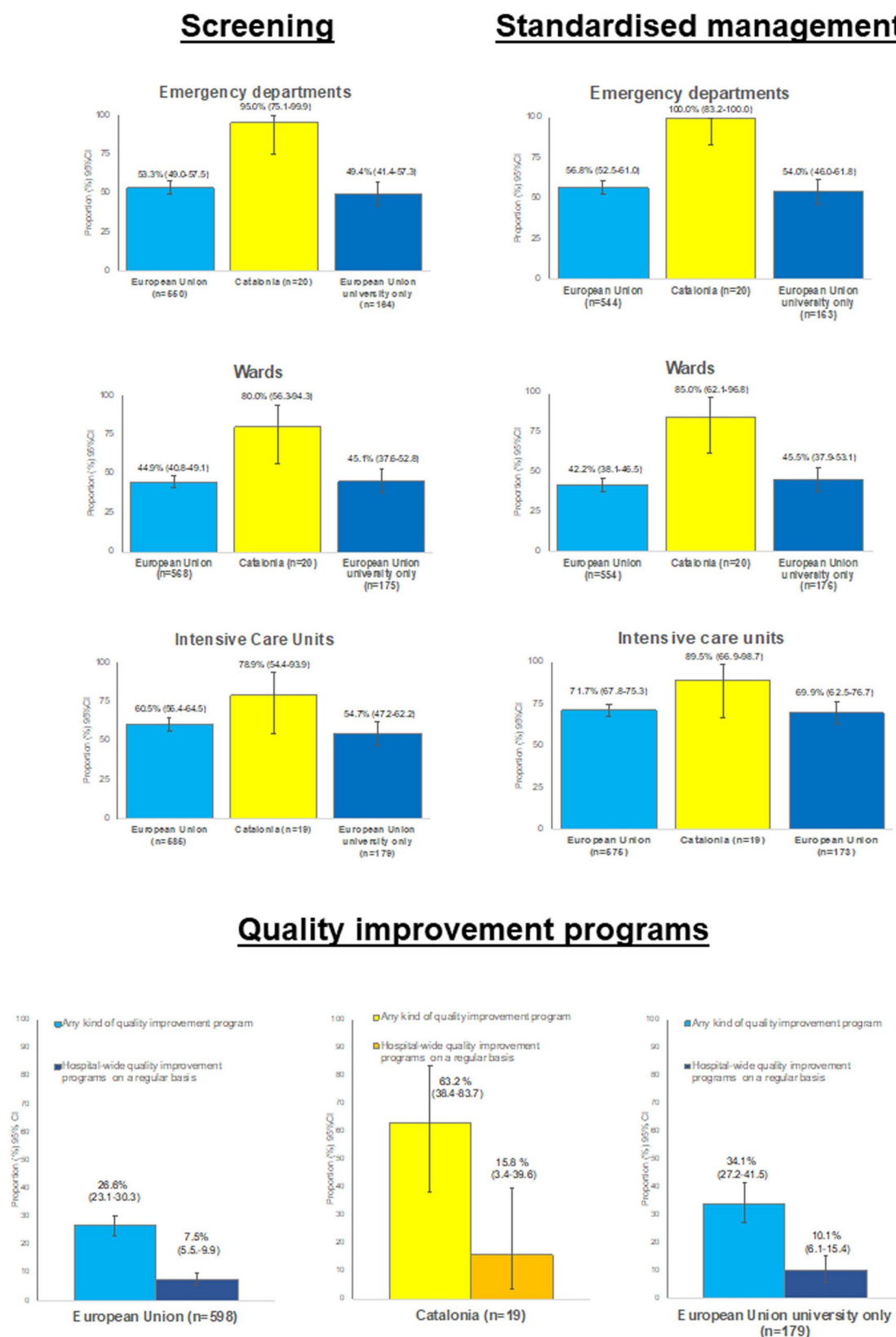


Fig. 1 Screening, standardised sepsis management and quality programs in hospitals from the European Union, and Catalonia. Data is presented as percentage with 95% confidence intervals (CIs)

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13054-025-05507-3>.

Supplementary material 1

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European Sepsis Care Study Group Collaborators:

A. Scharf, Adam Leoniuk, Adam Linder, Adrià Albis Guimet, Adriana América Da Silva, Adriana Cataldo, Agata Dąbkowska, Agnieszka Glusek, Aikaterini Ioakeimidou, Alberto del Castillo Blanco, Albertus Beishuizen, Aldona Szczepańska, Alejandro Martin-Quiros, Alejandro Rodriguez, Alessandra Oliva, Alessandro Manfredi, Alessia Franceschi, Alessio Bertini, Alessio Maroccia, Alexander Koch, Alexander Nicko, Alexandre Bleibtreu, Alfonso Arizmendi Demay, Ali Rezaei, Aliaksei Kazachonak, Alicja Bartkowska-Śniatkowska, Almudena Alonso Ojembarrena, Alvise Tosoni, Marco Daverio, Ana Margarida Correia, Ana Maria Munteanu, Anabela Bártolo, Anamaria Harabor, Anani Akpabie, Andrea Carsetti, Andrea Magaard, Andreas Ekman, Andreas Hecker, Andreas Nowak, Andreas Ostermeier, Andreas Prengel, Andreas Sielenkämper, Andreas Thierbach, Andriy Krystopchuk, Andrzej Pihowicz, ANeverk Crombach, Angela Liebke, Anita Lukic, Anja Heymann, Sebastian Baßeler, Anja-Tamara Lange, Anna Antes-zupa, Anna Efthymiou, Anna Eklund, Anna Lukaszewska, Anna Meuronen, Anna Patrizia Poli, Anna Radlińska, Anna Rekas-Dudziak, Anne Floor Heitz, Annelies Tacx, Anni Pulkkinen, Annmarie Lassen, Antonella Frattari, Antonello Viola, Antonija Vrbanić Šutalo, Antonio Carneiro, António Manuel Pereira De Figueiredo, Antti Mäkelä, Arion-Björn Paulus, Armin Sablotzki, Armin Seibel, Arne Röhrs, Athanasios Chalkias, Axel Nevrerhaus, B. Anuszkiewicz, Balazs Kadar, Bartolo Michelangelo, Bea Van den Poel, Belinda De Simone, Benjamin Sasko, Bernd Müllejan, Bernhard Birmes, Bernuy Galvez Cesar, Berta Cisteró, Birgit Gottschlich, Biserka Mustac-Hlebec, Björn Jäschke, Boris E. Sakakushev, Bozidar Duplancic, Bruno Van Herendaal, Bushra Ibrahim, Anna Mansson, Caitriona Rayner, Calancia Cosmin, Carla Hopper, Carlos Triginer, Carlo Pallotto, Carmen Lauterbach, Carmen Rosa Fraga Quintana, Carolina S Romero, Caroline Riske, Caterina Gentili, Christian Byhahn, Christian Keuneke, Christian Prause, Christian Schlotzke, Christina Lydon, Christine Weis, Christoph Büttner, Christoph Dodt, Christoph Peter, Christoph Plank, Christophe Aveline, Cinzia Barletta, Claudia Gutsche, Claudia Holzbauer, Constantin Bodolea, Cordula Thörmer, Johan Courjon, Cristian Cobilinschi, Cristina Honorato, Cristina López Viloria, Csaba Kopitkó, Dagmar Engemann, Dan Corneci, DaNeverl Bender, DaNeverla Ionescu, DaNeverle Orso, Daphne Annika van Rijssel, David Andaluz Ojeda, David Honan, David Míra, Dietmar Dörschner, Dietrich Keller, Dimitrios Schizas, Dimitris Bliamplias, Dirk Hinz, Dirk Meininger, Ditte Gry Strange, Djillali Annane, Astrid Schwurack, Dokoula Carine, Dominik Einweg, Dorel Sandesc, Ilse Van Cotthem, Eefje Verwulgen, Elena Chircov, Eleni Karlafti, Elina Riiohioja, Elisabeth Montel, Elora Pavla Matanović, Els-Marie Rolén, Else van den Berg, Erica Sermijn, Ester Rovira Lázaro, Etienne Javouhey, Eva Schaden, Evangelia Michail Michailidou, Eveny Winklaar, Evgeni Dimitrov, Evgeni Nikolaev, Evi Voets, Ewa Zabul, F. Xavier López Altimiras, Fabio Caramelli, Fabrizio D'Acapito, Fausto Catena, Ferran Llopis, Filip Abedinov, Filip Triest, Filippa Nikolaou, Filippo Luciani, Fiona Moore, Florescu Simin Aysel, Florian Berteau, Florian Prätisch, Florian Schache, Florian Seidlitz, Florin Teodor Bobirca, Francesca Greco, Francesca Lelli, Francesco Flores, Francisco Jose Ezponda, Franco Apra, Frank Fröhlich, Frank Hendrich, Frank Schleibach, Frank Wolffgramm, Frank Zoerner, Frank-Günter Mewes, Frank-R. Klefisch, Fredrik Schiöler, Friedrich Afflerbach, Fritz-Ulrich Hahne, Gabor Nardai, Gabriel Chiriack, Gabriel Petre Gorecki, Gabriele Racanelli, Gabriele Wolz, Gabriella Bottari, Gabriella Parisi, Garri Slobodianiuk, Genoveva Cadar, Georg Fritz, Georg Kreuzer, George Notas, George Sakka, Georgi

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Author contributions

CS, RF, AL, DF, EI, EGB, and AA participated in protocol development, study design, and study management; AC, CS, EGB, and AA interpreted the data. CS participated in the statistical analysis. AC, wrote the draft. RF, JT, CL, JY, and AA performed centre recruitment and data collection. European Sepsis Care Study Group collaborators participated in data collection. All authors read and approved the final version of the manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study received ethical approval (BB 124/21) from the ethics committee of the University Medicine Greifswald, Germany, where data have been collected and processed. All participants gave their consent to participate electronically. Participation was not possible without this consent.

The study was registered at <https://clinicaltrials.gov/> (Identifier: NCT05059808), registration date 2021-08-31.

Consent for publication

The manuscript contains not individual person's data in any form. Availability of data and materials. The data used for this analysis can be made available upon reasonable request for up to five years. For further information, please contact the corresponding author.

Competing interests

Christian S. Scheerhas received funding from the European Sepsis Alliance for the conduction the European Sepsis Care Survey and funding from Becton and Dickinson for the technical realization of the project. Consulting fees from Becton and Dickinson. The other authors declare have no conflict of interest.

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