



Worldwide clinical intensive care registries response to the pandemic: An international survey



1. Introduction

The COVID-19 pandemic presented a major challenge to Intensive care units (ICU). ICU registries responded by capturing and reporting findings that guided resource allocation, informed policy, and generated time-critical data via observational and clinical research [1-3]. The LOGIC (Linking of Global Intensive Care) [4] consortium of national ICU Registries conducted an international survey to describe the changes in structure, data, funding as well the role of ICU registries for public reporting, data sharing and research during the pandemic.

2. Material and methods

An electronic questionnaire (online supplementary material) was developed by the authors and iterated by pilot-testing by 4 registry coordinators. IRB approved the study and waived the need for informed consent (CAAE: 44181021.3.0000.5249 - D'Or Institute for Research and Education, Rio de Janeiro, Brazil). An invitation was sent by email to a single member of each national registry. Only registries that were collecting Covid-19 specific data were included. Standard descriptive statistics were used.

3. Results

We invited 25 ICU registries, of whom 18 (72%) responded from a total of 21 countries; 8 from Europe, 5 from Asia, 2 from Oceania, 4 from South America, 1 from Africa and 1 from North America. In 2020, two national registries were not collecting data specifically on Covid-19 patients in the ICU. As a result, we analyzed data from 16 registries (representing 19 countries); ten from high-income countries (HICs) and six from low-and-middle income countries (LMICs) (Table 1-ESM). Two collected data as a response to government requests. Most (55%) registries (6 of 10 from HICs) reported no specific funding and only one received governmental funds. Similarly, 11 out of 16 registries integrated data collection into the existing registry platform. Seven of 16 (5 in LMICs) captured data exclusively relying on manual data entry. Two created independent data capture structures for COVID-19. Intermediate care and high-dependency unit patients were enrolled by nine registries (56%) where of 3 registries also included the wards.

Approval to capture new data was needed by 14 registries. Individual ICUs from all registries had access to reports. Six ICU registries made data publicly available and seven shared data with governmental agencies. Nine of 16 registries shared data with other ICU registries or benchmarking initiatives, and three shared data with international organizations such as ISARIC and WHO. Data from eight registries (80%) from high-income countries were used by scientific societies or government agencies for strategic planning, while only one (16.7%) from LMICs used it.

All registries provided data for research; All 16 registries used data in clinical research, six (three in LMICs) shared data for Randomized Control Trials (RCTs), and two for systematic reviews. A summarized comparison between main responses of LMICs and HICs is provided on Fig. 1.

4. Discussion

In the context of a pandemic, in which there is a multifactorial overload of health systems and an urgent need for rapid responses, our data shows that registries were able to organize their response providing data for capacity planning, tracking of severity and treatment trends, sharing data with governmental agencies, and contributing to clinical studies [5]. In addition, the previous existence of national registries, facilitated the data collection on ICU COVID-19 patients without the need

Table 1
Countries and their respective national registries.

Country	Name of National Registry	Website
Argentina	SATI-Q	www.satiq.net.ar
Australia	ANZICS CORE	www.anzics.com.au
Brazil	UTIs Brasileiras	utisbrasileiras.com
Canada	iCORE	NA
England	ICNARC case-mix program	https://www.icnarc.org
Finland	Finnish Intensive Care Consortium	NA
Iceland	Icelandic ICU registry	NA
India	IRIS	www.irisicuregistry.org
Japan	JIPAD	https://www.jipad.org/
Kenya	Kenya Critical Care Registry, CCAA (Critical Care Asia and Africa)	NA
Nepal	NICRF, CCAA (Critical Care Asia and Africa)	NA
Netherlands	NICE	https://www.stichting-nice.nl
New Zealand	ANZICS CORE	www.anzics.com.au
Northern Ireland	ICNARC case-mix program	https://www.icnarc.org
Norway	Norwegian intensive care and pandemic registry	https://helse-bergen.no/norsk-intensivregister-nir
Pakistan	PRICE, CCAA (Critical Care Asia and Africa)	https://searchpk.org.pk/
Scotland	SIGSAC	https://www.sicsag.scot.nhs.uk/index.html
Uruguay	UCIs Uruguayas	ucisuruguayas.com
Wales	ICNARC case-mix program	https://www.icnarc.org

¹On behalf of JIPAD Working Group.

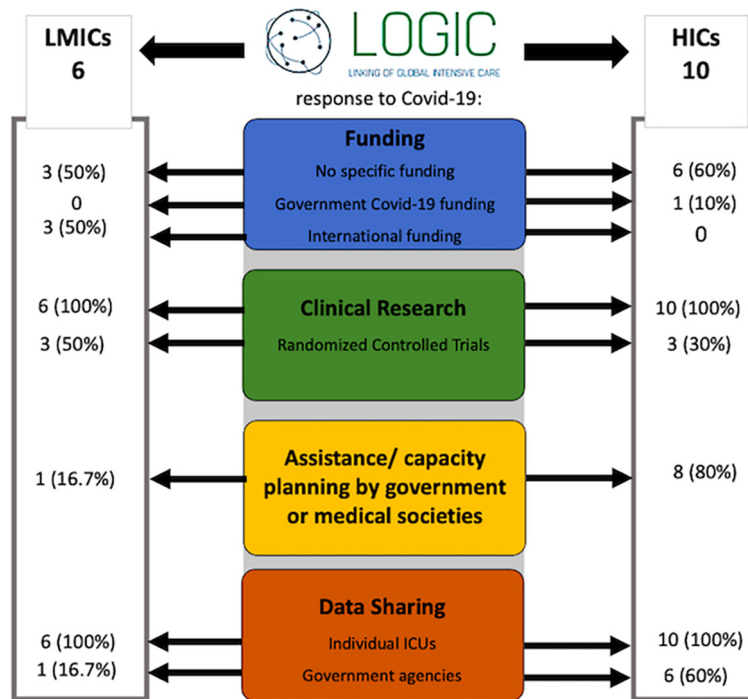


Fig. 1. LOGIC (Linking of Global Intensive Care) response to Covid-19 pandemic in low-middle-income countries (LMICs) and high-income countries (HICs). The figure shows the number of positive responses to questions related to national registries funding during the pandemic, and the use of these registries in clinical research, assistance/capacity planning and data sharing. ICU = Intensive Care Unit.

for specific funding. It is noteworthy that only one national registry had government investment specifically in the fight against Covid-19. Our data showed that manual data entry was more frequent in LMICs. This should alert need for funding and capacity to allow better data integration and sustainability of such projects. We have no detailed information on how data was used by ICUs and its effectiveness to build capacity or improve outcomes. Discussions about the importance of international benchmarking as a way of contributing to improve the delivery of care of critically ill patients are growing, with national registries having a fundamental role to increase the transparency of case-mix and outcomes as well as to improve structural organization, research, and processes.

5. Conclusion

The response of existing quality registries during the pandemic shows their potential value in times of crisis. Funding, legal aspects, transparency use of data for research purposes and governmental use, varied, with even greater variation when LMICs and HICs are compared. Global initiatives such as this survey can help registers to learn and show possibilities for the use of their data in the post-pandemic to support the worldwide critical care community.

Authors' contributions

The writing committee designed, drafted, and revised the present manuscript.

Financial support

Drs. Salluh and Soares are supported in part by individual research grants from CNPq and FAPERJ.

Dr. Kumar is partially supported by Wellcome Trust grant (WT-215522) for his role as National Coordinator, IRIS.

Dr. Martin Sigurdsson is supported by Landspítali Science Fund for COVID19 related projects.

Availability of data and materials

Not applicable.

Ethical approval and consent to participate

IRB approved the study and waived the need for informed consent (CAAE: 44181021.3.0000.5249 - D'Or Institute for Research and Education, Rio de Janeiro, Brazil).

Consent for publication

All authors reviewed and approved the final version of the manuscript.

Declaration of Competing Interest

Drs Salluh and Soares are co-founders and shareholders of Epimed Solutions, a cloud-based analytics company. Dr. D.A. Dongelmans is unpaid chair of NICE foundation.

The other authors declare that they have no conflicts of interest.

Acknowledgements

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcrc.2022.154111>.

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