



ADULT CARDIAC DATABASE

Highlights of 2018

2018 has been an active year for the Adult Cardiac Database (ACD) and for participating centres. Earlier this year, the ACD benchmarking tool reached an important milestone for data collection in Europe and has also continued to develop useful features and benchmarking reports for the participating units.

More than 100,000 procedures

The ACD reached an important milestone in May 2018, hitting the target of 100,000 procedures in the benchmarking tool. By December 2018, this number has now reached over 120,000, and will continue to increase as cardiac units from 11 European countries collaborate with EACTS to provide adult cardiac data from 2010 onwards.

Control charts

Control charts were the latest tool implemented in the ACD, allowing comparisons of average monthly performance for an individual's hospital against the overall performance of all participating hospitals in the ACD. The purpose of these charts is to benchmark processes against other centres.

How do control charts work? The data are plotted in time order, and a control chart always has one central line for the rolling average from your hospital and upper lines for upper control limits – showing caution or action – with lower lines showing good/outstanding control limits. These control limits are determined from historical data from all hospitals.

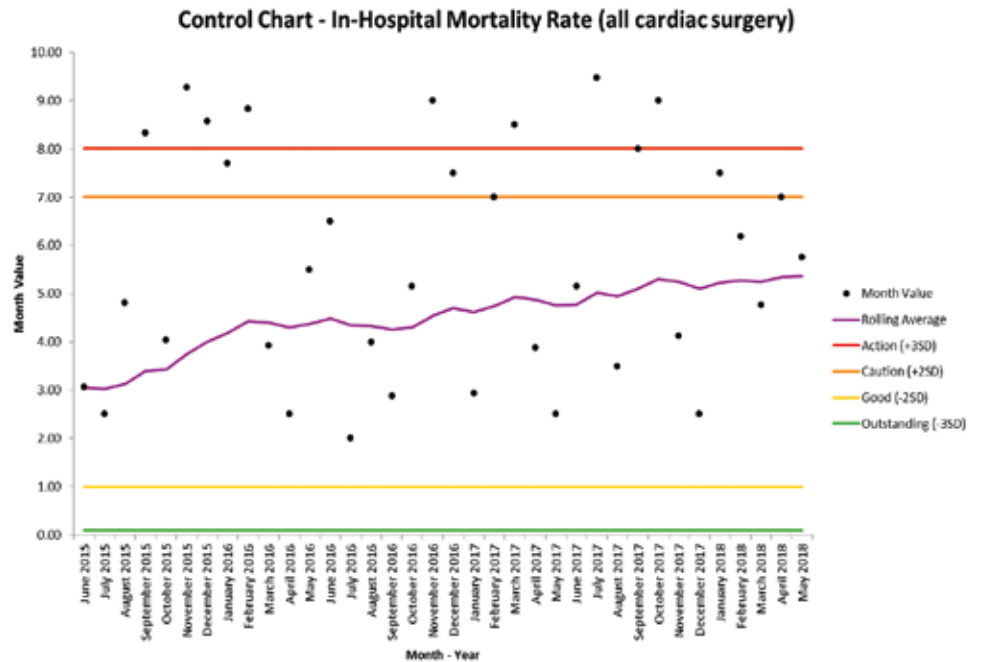
What else does the ACD benchmarking tool provide?

- Hospital selection page
- Patient profile
- Scatter view
- Procedure class breakdown
- Survival curves
- Control charts
- Clinical support tool
- Your patients' details
- Data completeness

The ACD tool also provides an ACD Updates page, and a downloads and metrics page for your hospital to access your centre's report (updated monthly), as well as a user guide, newsletters and a metrics dictionary to guide you through the statistical jargon of the database.

Centre reports

Participating centres can download their bespoke reports from the ACD benchmarking tool. This report provides a comprehensive overview of the centre's



cardiac data and contribution to the ACD, showing statistical analysis and comparisons of data including: completeness of data; volume of procedures; in-hospital mortality rate; re-operations for bleeding rate; and average post-operative length of stay.

ACD goals for 2019

The Database Task Force has been working tirelessly to revise the ACD variables and definitions. The new data dictionary will be ready for centres in December 2018, and the updated data fields will be implemented in the ACD on 1 January 2019. For participating centres, this will mean reviewing their dataset and ensuring that it complies with the updated ACD dictionary. The ACD team will be available to support the hospitals throughout this process in 2019.

The Database Task Force will also be publishing the EACTS data validation protocol in 2019 for participating centres, which will serve as an advisory document for centres to follow and ensure data quality in the ACD.

Collaboration with the participating centres is a high priority for the ACD, and EACTS is happy to announce the beginning of the Quality Improvement Collaborative Working Group, which will consist of ACD hospitals' representatives who will play an essential role in driving quality improvement initiatives in cardiac surgery across Europe.

To join the Adult Cardiac Database and participate in quality improvement initiatives in cardiac surgery across Europe, please contact the EACTS Quality Improvement Programme via quip@eacts.co.uk

Dr Örjan Friberg

Database Task Force Chair

Since 2017 I have had the privilege of being Chair of the ACD Task Force. The ACD is growing rapidly in terms of the numbers of procedures, participating centres and countries. This is gratifying but also increases the demands for clear and universally adopted data definitions and defined processes of data validation.

During the past year we, the Task Force, have focused most of our work on the very fundamentals of a database – a thorough revision and update of all included variables with definitions, as well as analysing and trying to define the different steps and means of data validation required for achieving as high validity as possible for the data in the registry.

A new data dictionary with the updated list of variables was just finalised and will be released publicly in December. We also hope to soon publish the first Annual Report, which will reflect the growth of the Database, the trends in adult cardiac data and future developments.





EACTS
European Association For Cardio-Thoracic Surgery

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Annual Meeting
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Raising Standards through Education and Training



EUROMACS

Highlights of 2018

This year, the EUROMACS Registry has grown as a registry and pool of scientific data for research in the field of mechanical circulatory support. Data quality is continually ensured by providing centres with statistical analyses and on-site audits. Centres also continue to play a role in increased data quality through consistent communication between EUROMACS and data managers and other responsible staff.

See the highlights below from the EUROMACS Registry including research publications, the first EUROMACS Paediatric Report, and an interview with a contributing centre from 2018.

68 participating centres have now contributed more than 4,300 implantations of long-term assist devices and 22,000 follow-up records.

The EUROMACS Committee in 2018

At the end of 2017, Professor Jan Gummert and Professor Paul Mohacsi stepped down after almost 10 years as Chairman and Vice Chairman of the EUROMACS Committee. EACTS and the EUROMACS Committee are grateful for their contributions and the advancements made for the EUROMACS Registry during this time. On 1 January 2018, the EUROMACS Committee welcomed the new Chairman, Professor Bart Meyns, Chief of Cardiac Surgery at the University Hospitals Leuven, Belgium, and the new Vice Chairman, Dr Felix Schönraht, a senior consultant at the Department of Cardiothoracic and Vascular Surgery at the Deutsches Herzzentrum Berlin, Germany.

The EUROMACS Committee also welcomed Professor Steven Tsui, Chairman of the Cardiothoracic Advisory Group at NHS Blood & Transplant (NHSBT), UK and Professor Daniel Zimpfer, Director of Mechanical Circulatory Support at the Department of Cardiac Surgery and Director of Paediatric Cardiac Surgery, Medical University Vienna, Austria, as new members of the Committee.

The EACTS enables the first EUROMACS Paediatric Report

The first EUROMACS Paediatric Report was published in the *EJCTS* on 1 September 2018, with statistical support provided

by the Quality and Outcomes Research Unit (QuORU) of the University Hospital Birmingham. Data from 237 durable device implantations in 210 patients, originating from 25 European centres in 14 countries, could be analysed. A summary of this data shows that:

- Mean support time was 11.6 months (+16.5 months standard deviation [SD])
- 51% (n = 107) received a transplant at two years post ventricular assist device (VAD) implantation
- 82.4% (n = 3) of the children survived to transplant, recovery or are ongoing treatment at the last follow-up
- 17.6% (n = 37) died at two years. Cerebrovascular accidents were the main cause of death (24.3% of the deceased)

Devices: The relation between pulsatory and rotary/centrifugal devices was 46.8% versus 53.2%, respectively. This differed significantly from the adult cohort where only 3% of

patients had a pulsatory durable VAD.

Conclusion: The one-year survival rate seems to be satisfactory in this report. Device malfunctions, including pump-chamber changes due to thrombosis were the most frequent adverse event. A comparison between registries shows that outcome data differ with, for example, the Pedimacs report (North-American data). One of the most striking differences is the waiting time for a heart transplant. Whereas almost 50% of the paediatric patients in North America had a transplant within the first six months after a VAD implant, in Europe, only 33% of patients at six months and 38% at 12 months had a transplant. These numbers reflect the lack of suitable donor organs in Europe, which leads to significantly longer support times.

Availability of research data in EUROMACS contributes to quality improvement

Dr Alexander Bernhardt, who is responsible for the heart transplant and mechanical circulatory support programmes at the University Heart centre in Hamburg, Germany, spoke to *EACTS News* earlier this year to talk about his perspectives on EUROMACS: past, present and future.

Highlights of the interview can be found



Alexander Bernhardt

below. For more, be sure to read the full interview published in Saturday's issue of the *EACTS Daily News* at this year's Annual Meeting, available at: <https://www.eacts.org/resources/newsletters/>.

Dr Bernhardt, you're one of the surgeons who has participated in EUROMACS since the beginning of the Registry. What motivates you to keep on providing data for so many years?

My colleagues and I enter data from our patients on mechanical circulatory support into the EUROMACS Registry on a structural basis. There are two main reasons to do so: First, we contribute consistently to a database to administrate all relevant clinical data for these patients; secondly, we are able to obtain anonymised data from all participants for scientific study projects. The leading principle is that you can't manage it when you can't measure it; this keeps us motivated to register relevant therapeutic data.

What insights have you gained from EUROMACS?

I must say that you can always pose any questions to EUROMACS and promptly get the answers. Over the years, this service has been very helpful, and most important are the possibilities to obtain data for scientific projects. The results of these projects have given us insights into the consequences of therapeutic treatments as we practise them.

Can you expand more on that?

At our Hamburg University Heart Center, we've been able to obtain data from EUROMACS that has made it possible to do analyses on factors such as gender differences and the outcomes of isolated RVAD implantations in patients with right heart failure. These data have been published in peer reviewed journals.

A source for scientific data

The focus of the EUROMACS Registry is to promote scientific research for the care of patients with end-stage heart failure and who have received mechanical circulatory support.

Any contributor of data can approach the EUROMACS Registry to obtain a standard

application form, in which the applicant must summarise the data from the EUROMACS Registry required to conduct the research, as well as outlining the strategy of the publication. Evaluation of the proposal will then be reviewed by the EUROMACS Research Sub Committee, who check it against several required criteria:

1. Provision of an elaborate study plan in which the hypothesis, statistical methods, and use of the data are described in detail.
2. An opinion of the statistician concerning methods.
3. Differences and new assumptions/theses compared to current literature and ongoing studies.
4. Definition of the additional value, clinically or scientifically, expected to emerge from the results of the study.

Between 1 January 2016 and 1 December 2018, thirty-five proposals were submitted to the EUROMACS Committee. Seven studies have been published, and one study has been published in the *EJCTS*.

Research Publications in 2018

1. Gender differences and outcomes in left ventricular assist device support: The European Registry for Patients with Mechanical Circulatory Support; January, 2018

Christina Magnussen, Alexander M. Bernhardt, Francisco M. Ojeda, Florian M. Wagner, Jan F. Gummert, Theo M.M.H. de By, Thomas Krabatsch, Paul Mohacsi, Meike Rybczynski, Dorit Knappe, Bjoern Sill, Tobias Deuse, Stefan Blankenberg, Renate B. Schnabel, Hermann Reichenspurner, on behalf of the EUROMACS Investigators.

Background: Despite the increasing use of ventricular assist devices (VADs), gender differences in indications, haemodynamics, and outcome are not well understood. We examined gender differences and gender-specific predictors for perioperative outcome in patients on ventricular support. **Methods:** Multicenter data of 966 patients (median age 55 years, 151 women) from the European

Registry for Patients with Mechanical Circulatory Support (EUROMACS) were analyzed. Median follow-up was 1.26 years.

2. Second Annual Report from the ISHLT Mechanically Assisted Circulatory Support (IMACS) Registry; June, 2018

James K. Kirklin, Rongbing Xie, Jennifer Cowger, Theo M.M.H. de By, Takeshi Nakatani, Stephan Schueler, Rhiannon Taylor, Jenny Lannon, Paul Mohacsi, Jan Gummert, Daniel Goldstein, Kadir Caliskan, and Margaret M. Hannan.

The second annual IMACS registry report includes over 14,000 patients from 35 countries. Survival, adverse events, and an updated risk model is presented. Continuous flow pumps continue to dominate the world's experience. One and Two-year survival remains at 80% and 70%. Congenital heart disease and biventricular support are the most dominant risk factors. The database is poised for major novel analyses.

3. The European Registry for Patients with Mechanical Circulatory Support (EUROMACS): first EUROMACS Paediatric (Paedi-EUROMACS) report; July, 2018

Theo M.M.H. de By, Martin Schweiger, Hina Waheed, Felix Berger, Michael Huebler, Mustafa Ozbaran, Bohdan Maruszewski, Carlo Pace Napoleone, Antonio Loforte, Bart Meyns and Oliver Miera, on behalf of the clinicians who contributed data.

Objectives: EUROMACS is a registry of the European Association for Cardio-Thoracic Surgery (EACTS) whose purpose is to gather clinical data related to durable mechanical circulatory support for scientific purposes and to publish annual reports. Because the treatment of children with end-stage heart failure has several significantly different characteristics than the treatment of adults, data and outcomes of interventions are analysed in this dedicated paediatric report.

Approved and finalised research publications are made available on the EACTS website at <https://www.eacts.org/quip/euromacs/euromacs-scientific-articles/>



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EACTS European Mechanical Circulatory Support Summit

The third edition of the EACTS European Mechanical Circulatory Support Summit took place in Berlin, Germany from 1 to 3 November, 2018. Some 300 participants from 35 countries attended.

One of the largest and most exciting events in short- and long-term mechanical circulatory support (MCS) worldwide, the excellent scientific programme highlighted the latest developments in the specialty and provided attendees with a glimpse into the future. The interactive lectures, unusual case reports, panel discussions and keynote talks were presented by a global faculty of leading surgeons, cardiologists and intensive care specialists.

We are extremely grateful to our industry partners for their continuing support of the Summit and for contributing to the insightful 'Updates' session on the final day which provided an extensive overview of the current and prospective devices available.

The ever-popular Rising Stars Quiz was even more interactive than in the past. Delegates were encouraged, via the medium of the Summit App, to test their knowledge against five teams of junior doctors and a team of 'shining' legendary stars in the



MCS field. Congratulations to our worthy winners from Italy, Marina Comisso, Giacomo Bianchi and Vittoria Lodo, and also to our Audience Winner, Frédéric

Vanden Eynden, from Belgium.

We look forward to welcoming you to the fourth edition of the Summit next year in Prague, Czech Republic. Further details

are to follow in the next edition of *EACTS News* and via the EACTS Academy website: <https://www.eacts.org/educational-events/programme/>.



(Left to right): Vittoria Lodo, Giacomo Bianchi, Marina Comisso (Quiz winners), Evgenij Potapov (Local Programme Chair), Frédéric Vanden Eynden (Audience Winner), Nafiska Chala and Konstantinos Magkoutas (Quiz 2nd place)