New open-source platform accelerates research into the treatment of heart arrhythmias

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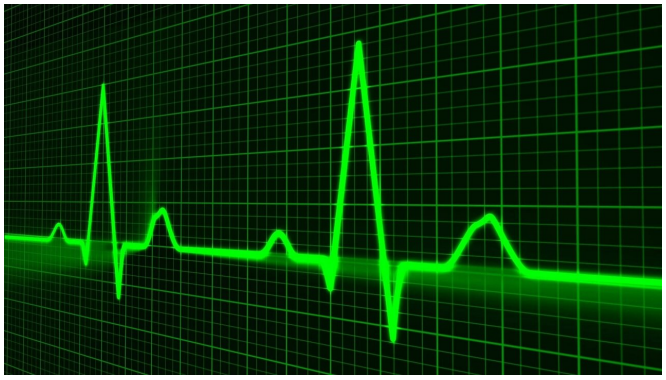

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An open-source platform, OpenEP co-developed by researchers from the School of Biomedical Engineering & Imaging Sciences at King's College London has been made available to advance research on atrial fibrillation, a condition characterized by an irregular and often fast heartbeat. It can cause significant symptoms such as breathlessness, palpitations and fatigue, as well as being a major contributor to stroke and heart failure.

Current research into the condition involves the interpretation of large amounts of clinical patient data using software written by individual research groups.

But a new study recently published in *Frontiers in Physiology* shows that the OpenEP platform, developed in collaboration between King's College London, the University of Edinburgh, Invicro, a Konica Minolta Company, Guy's and St Thomas' NHS Foundation Trust and Imperial College London, is capable of doing close to 90 per cent of the types of analyses that are performed in contemporary electrophysiology studies, enabling researchers to focus on their specific hypothesis or research question.

Having a standardized way of using data processing techniques can also help to make them reproducible for other scientists.

Lead author, Dr. Steven Williams, Honorary Senior Lecturer at King's School of Biomedical Engineering & Imaging Sciences said the platform lowers barriers of entry to electrophysiology research.

"For clinicians who may wish to do this sort of research but have not been able to before because of the significant barriers, many of these are now overcome. It is now possible to get the clinical data into a standardized format using the OpenEP and analyze it without writing specialized programs," Dr. Williams said.

Dr. Williams said as the code is open source, the research community can verify that the methods are implemented correctly and update them, if required.

The software contained in the platform has been under development for ten years and has been used in a number of electrophysiology research projects at King's College London.

In addition to its impact on atrial fibrillation research, OpenEP is already being used for research into other arrhythmias by collaborating institutions.

Dr. Nick Linton, Consultant Cardiologist & Senior Lecturer at Imperial College London and a senior author of the study said: "We hope that OpenEP will foster collaboration with new and existing

researchers in this exciting area of cardiology. Arrhythmias are a leading cause of morbidity in the UK, and we are confident that OpenEP will help to accelerate progress towards innovative treatments."

More information: Steven E. Williams et al. OpenEP: A Cross-Platform Electroanatomic Mapping Data Format and Analysis Platform for Electrophysiology Research, *Frontiers in Physiology* (2021). DOI: 10.3389/fphys.2021.646023