

# The 1-year anniversary of the *European Heart Journal – Digital Health*

Peter de Jaegere<sup>1\*</sup>, Joost Lumens<sup>2</sup>, and Nico Bruining<sup>1</sup>

<sup>1</sup>Department of Cardiology, Erasmus MC, Dr Molewaterplein 40, 3015 GD Rotterdam, The Netherlands; and <sup>2</sup>CARIM School for Cardiovascular Diseases, Maastricht University Medical Center, Maastricht, The Netherlands

Some letters may have been written never meaning to be sent, to paraphrase the Moody Blues (1967). But we, the Editors of *EHJ – Digital Health* write and send this letter to express our greatest respect and gratitude to the many people and groups who helped us on this journey. First of all, we want to thank the Board of the European Society of Cardiology (ESC) for their decision to add *EHJ – Digital Health* to the ESC Journal family and to grant us the responsibilities of managing the Editorial Board and Editorial Office.<sup>1,2</sup> This is not an easy task since the digital health (DH) arena is characterized by an explosion of mindboggling technological innovations, cutting transversally through all cardiology subspecialties. It was a bold decision with its challenges and rewards.

Our sincere appreciation also goes to all clinicians, scientists, and other healthcare professionals from different backgrounds, regions, and institutions who had the courage and determination to support the Journal by submitting their scientific work to us or by sharing their thoughts via Letters to the Editor or the recently launched CardioPulse Digital series. As mentioned in our previous editorials, one of our primary goals is to connect all DH stakeholders in cardiovascular care through publications and education, stimulating communication, and knowledge transfer.<sup>1,3</sup> What we have achieved would not have been possible without the outstanding work of the reviewers, who—with the authors—are the pillars of the success of the Journal. One may easily forget that a review process concerns not only a single but repeated and engaged effort. Reviewers are consulted again to verify the responses to their comments and—depending on the decision of the Editorial Board (e.g. major revision)—for (an)other critical revision(s) until a final decision is made by the Editorial Board.

Last but not least, our gratitude goes to the outstanding support of the publisher's team (Oxford University Press) with whom we have structured conferences to streamline review and publishing, not to mention frequent *ad hoc* consultations.

Thanks to the willpower and the work of all mentioned above, the Journal has already submitted an application to be indexed in the relevant medical literature indexes. We hope to hear more in 2022.

These are pivotal stepping stones in the Journal's ambition to strive for further growth, recognition and impact.

An anniversary is a moment during which one stands still to celebrate and to look back on what has been achieved. It can also be used to reflect on what needs to be done next to meet the Journal's assignment, while keeping in mind the mission of the ESC, namely to reduce of the burden of cardiovascular disease ([www.Escardio.org/The-ESC/About](http://www.Escardio.org/The-ESC/About)). Dissemination of clinical-scientific information through the publication of papers and through education and congresses is fundamental to meet this goal. Regarding the latter, the Editorial Board at *EHJ – Digital Health* is proud to share that it recently took part in the ESC Digital Summit (October 2021), during which authors and delegates presented and discussed a selection of papers published in our Journal.<sup>4–6</sup>

Digital transformation of healthcare cannot be ignored anymore and is boosted by a combination of rapid ground-breaking innovations such as (i) the detection of the human condition and/or disease (sensors worn by the individual at home, after hospital discharge), (ii) data transfer techniques and, hence, connectivity (e.g., 5G, STARLINK, . . .), storage (e.g., cloud-based), and analysis (e.g., deep learning) plus (iii) computing power (e.g., emerging of spatial and quantum computing) in combination with the development of the Digital Twin via the coupling of statistical and mechanistic modelling.<sup>7–11</sup> Conceptually, one may envision a society in which DH technologies empower early preventive interventions (lifestyle changes) to the healthy individual or timely therapeutic interventions for the (a)symptomatic patient. In case of emergency, diagnostic information can be transferred for automated analysis, facilitating therapeutic and treatment planning before the arrival of the patient in the hospital. Where transfer from one hospital to another is not possible, tele-surgery may be considered. The advantage of automated analysis of data collected from the cardiovascular system, whatever its nature (e.g., electrocardiogram, echocardiography, cardiac computed tomography), is that it may help the physician to spend more time on patient and family guidance and disease management, besides the unveiling of conditions that may not have been expected.<sup>3,4,12</sup>

\* Corresponding author. Tel: +31 107036969, Email: [p.dejaegere@erasmusmc.nl](mailto:p.dejaegere@erasmusmc.nl)

© The Author(s) 2021. Published by Oxford University Press on behalf of the European Society of Cardiology.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact [journals.permissions@oup.com](mailto:journals.permissions@oup.com)

Yet, as Hegel has elegantly tutored, a thesis demands an antithesis for the sake of thoughtful reflections and to move wisely forward in a reasonable and responsible way. This is also the role of the Editors. We may dream, but we also need to remain judicious. Technology cannot and may not stand by itself. It must serve a goal (e.g., reduction of disease burden, patient comfort, a better society, ...) and will complement, but not replace, human intelligence.<sup>3,13–15</sup> After all, artificial intelligence is created by human intelligence and, henceforth, human oversight, supervision and regulation must predominate everything we envision, develop or do. It is in this spirit and attitude that the Editors want to respond to the task given by the ESC, and its responsibility towards society, in close collaboration with all who strive with their heart and soul for improvement of cardiovascular medicine. With a feeling of humility and respect, we wholeheartedly thank all those who have supported us in this crucial first year. Per ardua ad astra.

**Conflict of interest:** none declared.

## References

- Bruining N. Welcome on behalf of the Editors! Letter from the editor. *Eur Heart J Digit Health* 2020;**1**:1–2.
- Cowie MR. Building the new digital world: launch of the *European Heart Journal - Digital Health*. *Eur Heart J Digit Health* 2020;**1**:3.
- de Jaegere P, Lumens J, Bruining N. The 12-lead surface electrocardiogram: a sheet of paper or a realm of concealed information asking for deep learning analysis. *Eur Heart J Digit Health* 2021;**2**:356–357.
- Ladejobi AO, Medina-Inojosa JR, Shelly Cohen M, et al. The 12-lead electrocardiogram as a biomarker of biological age. *Eur Heart J Digit Health* 2021;**2**:379–389. <https://doi.org/10.1093/ehjdh/ztab043>
- van der Velden RMJ, Verhaert DVM, Hermans ANL, et al.; TeleCheck-AF Investigators. The photoplethysmography dictionary: practical guidance on signal interpretation and clinical scenarios from TeleCheck-AF. *Eur Heart J Digit Health* 2021;**2**:363–373.
- Kalra A, Kumar A, Nowacki AS, et al. Mapping and quantification of the twitter footprint of cardiologists. *Eur Heart J Digit Health* 2021;**2**:374–378.
- Corral-Acero J, Margara F, Marciniak M, et al. The 'Digital Twin' to enable the vision of precision cardiology. *Eur Heart J* 2020;**41**:4556–4564.
- de Jaegere P, De Santis G, Rodriguez-Olivares R, et al. Patient-specific computer modeling to predict aortic regurgitation after transcatheter aortic valve replacement. *JACC Cardiovasc Interv* 2016;**9**:508–512.
- van Loon T, Knackstedt C, Cornelussen R, et al. Increased myocardial stiffness more than impaired relaxation function limits cardiac performance during exercise in heart failure with preserved ejection fraction: a virtual patient study. *Eur Heart J Digit Health* 2020;**1**:40–50.
- Galli V, Loncaric F, Rocatello G, et al. Towards patient-specific prediction of conduction abnormalities induced by transcatheter aortic valve implantation: a combined mechanistic modelling and machine learning approach. *Eur Heart J Digit Health* 2021;**2**:606–615.
- Varma N, Cygankiewicz I, Turakhia M, et al. 2021 ISHNE/HRS/EHRA/APHRS Collaborative Statement on mHealth in arrhythmia management: digital medical tools for heart rhythm professionals: from the International Society for Holter and Noninvasive Electrocardiology/Heart Rhythm Society/European Heart Rhythm Association/Asia Pacific Heart Rhythm Society. *Eur Heart J Digit Health* 2021;**2**:7–48.
- Al Hinai G, Jammoul S, Vajih Z, Afilalo J. Deep learning analysis of resting electrocardiograms for the detection of myocardial dysfunction, hypertrophy, and ischaemia: a systematic review. *Eur Heart J Digit Health* 2021;**2**:416–423.
- Bond R, Peace A. Towards a digital health future. *Eur Heart J Digit Health* 2021;**2**:60–61.
- de Jaegere P. Artificial intelligence for automated ECG analysis: an experimental study revealing knowns and mysteries: still a long pathway ahead? *Eur Heart J Digit Health* 2021;**2**:125–126.
- Fraser A, Asselbergs FW. Artificial Intelligence in cardiology: the debate continues. *Eur Heart J Digit Health* 2021;**2**:721–726.