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EDITORIAL COMMENT

Cardiac device remote monitoring in 2022: Are digital and remote monitoring synonymous with ease and improvement?

Monitorização remota de dispositivos cardíacos em 2022: digital e remoto são sinónimos de facilidade e melhoria?

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Since the first pacemaker implant in 1958, the complexity and number of cardiac device (CD) implants have grown exponentially.[1] The consequent overload of healthcare services by these patients with growing complexity and longevity requires a more efficient, automatized and simplified approach.[2]

The Covid-19 pandemic was an incentive to introduce remote monitoring into standard of care, underlining its many virtues, already highlighted in other areas such heart failure.[3,4] Remote monitoring has promised to revolutionize the post-implant care of CD, enabling timely detection and clinical intervention in earlier stages of the disease or during device malfunction. This would lead to cost reduction, relief of healthcare workers and ultimately, to improved care.[5–8]

The recent Heart Rhythm Expert Consensus Statement recommends (class IA) that all patients with a CD should have access to remote monitoring in post-implant care.[9] However, its implementation has not been as fast and linear as expected.[10]

Remote monitoring is a safe and practical tool and has demonstrated its value in specific clinical contexts. Varma et al., in the study TRUST with 1339 patient, comparing usual care with daily remote monitoring, observed earlier detection of CD malfunction in the remote monitoring group.[6] The ECOST sub-analysis, from Laurence Guédon-Moreau et al., demonstrated a 50% reduction in patients with inappropriate shocks at two years' follow-up.[11] The ability of CDs to detect early atrial fibrillation has also been recognized. The clinical meaning of these findings is being evaluated in clinical trials such as NOAH.[12]

The current role of remote monitoring in the surveillance of events and security is highlighted in the current recommendation of use in American (class IE) and European (class IC) guidelines when previous security alert regarding any component of a device.[9,13]

In this edition, Oliveira et al. present the results of a multicenter randomized trial PORTLink, comparing remote monitoring (using Carelink system from Medtronic®) with the usual care of patients with an implanted defibrillator (with or without resynchronization). With a limited sample of 134 patients (54% new implants), it was possible to demonstrate decreased in person consults and healthcare workers and patients were pleased (95%) at one year follow-up.[14]

However, adherence to remote monitoring in the real world is not granted or automatic. Varma et al., in a large study with 269 461 patients, only 47% used remote monitoring, with a decrease to only 8% at one year follow-up.[15]

The ALTITUDE trial suggested a reduction in mortality of patients with CD and remote monitoring and it was correlated to the frequency of use. However, the results need to be confirmed in a randomized multicenter

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trial. Mortality reduction could be significatively associated with early use or monitoring after defibrillator implant (under three months), mainly if the monitoring is frequently used.[15–17]

Healthcare networks should be organized in order to provide improved communication and connection between all agents. The system requires a greater level of patient education and the costs inherent to this type of system need to be better defined and characterized.[10]

In the real world, many patients overload the healthcare network with rare symptoms. In these cases, artificial intelligence can be valuable, especially for implanted monitoring devices and gadgets linked to smarthpones.[18] Apple and Stanford University's trial in the atrial fibrillation detection field has shown its groundbreaking value.[19]

The advantages of digital and remote care should be counterbalanced against the role of in usual in person care. Each contact with the patient is an opportunity for treatment optimization and lifestyle change. The impact of digital and remote care on the relationship between physician and patient is yet to be described.

It would be too simplistic to think that remote monitoring is useful for all patients with a cardiac implanted defibrillator. Clear inclusion and exclusion criteria should be better defined, according to patient adherence and clinic advantages evidenced in randomized trials.

Remote monitoring is not free of security and privacy issues. Its use is under strict cybersecurity regulation from the European Union.[20] This regulation restricts access to data. Hospitals are facing these new challenges and need to be quickly prepared to adapt to this new scenario.[20] Remote monitoring creates major opportunities to improve care and should be implemented. Cybersecurity experts should promote technical solutions, taking into consideration the legal requirements and also a stimulating medical and scientific working environment.

The collection of multiple vital signs from different devices is growing. The 'pandemic' growth will have an important impact on cardiovascular prevention and will contribute to earlier therapeutic interventions. Remote monitoring will continue to be challenging and should be used wisely with the collaboration of all healthcare entities.

Conflicts of interest

The authors have no conflicts of interest to declare.

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