The use of remote monitoring of patients with cardiac implantable electronic devices in Poland

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INTRODUCTION

Remote monitoring (RM) of patients with cardiac implantable electronic devices (CIED) allows physicians to regularly gather detailed information concerning the functioning of the devices, without the necessity for patients to present for an in-person examination (IPE) [1]. With the use of RM, vital parameters, such as the arrhythmia burden, pacing percentage, or thoracic congestion indicators, already proven to predict heart failure decompensation and worsen the patient's prognosis, can be routinely measured, and an appropriately timed response can be initiated. The recent guidelines of the European Society of Cardiology on cardiac pacing and resynchronization have introduced three recommendations regarding the use of RM in patients with CIEDs, including, for the first time, the possibility of increasing the periods between IPEs up to 24 months if the patient is monitored remotely [2]. Despite such recommendations, RM of patients with CIEDs in Poland is used in the minority of facilities, although exact data regarding this issue are not available. The purpose of this analysis was to investigate the implementation of RM in patients with CIEDs in Poland at the beginning of the third decade of the 21st century.

METHODS

The survey consisting of six brief either single- or multiple-choice questions was dispatched with the support of the Biotronik Polska (Poznań, Poland) among all electrotherapy centers which were on the correspondence list of the company in Poland between July and August 2021. The questions were designed to assess the utilization of RM, causes for the lack of its implementation, and perspectives of its initiation. The detailed survey can be found in the Supplementary material. Fifty centers sent their responses from 50. Approval of an ethics committee was not required for this analysis.

Statistical analysis

The data have been summarized and presented as absolute and relative frequencies.

RESULTS AND DISCUSSION

Of 50 centers that answered the questionnaire, 48% performed more than 300 procedures per year, while 36% between 100 and 300, as presented in Table 1. Among the 50 centers, 14 (28%) used RM; 57.1% used it for more than 5 years, while 28.6% introduced RM in the last 1–5 years. The primary form of RM utilization was as an addition to the conventional approach, as 50% of centers maintained the routine schedule of IPEs, and 42.9% of centers prolonged the periods between the consecutive IPEs if the patient was monitored remotely. Only in one center, RM was used as an equivalent of the conventional approach, and patients did not present for routine IPEs. In 72% of centers, RM was not used. The primary reasons for not implementing RM were the feasible generation of additional workload (94.4%) and lack of RM reimbursement (88.9%), while other reasons that were chosen much less frequently included legal uncertainties or no scientific evidence of RM effectiveness. Finally, 58.1% of respondents declared that their centers would introduce RM when its reimbursement was introduced, while 25.8% declared no such intention.

Although the IN-TIME randomized trial, as well as the TRUECOIN meta-analysis, which included IN-TIME and two other large ran-

Table 1. The answers to the survey regarding the use of RM in patients with CIEDs

Question		Number, n (%) of total (n = 50), if not indicated differently
Use of RM of CIEDs within the facility	Yes	14 (28)
	No	36 (72)
Duration of using RM	More than 5 years	8/14 (57.1)
	1–5 years	4/14 (28.6)
	Less than 1 year	2/14 (14.3)
The form in which RM is used	Patients attending IPEs as often as without RM	7/14 (50)
	Patients attending IPEs visits less frequently than without RM	6/14 (42.9)
	Patients not attending FU visits	1/14 (7.1)
Reasons for not using RM (may be more than one)	Lack of reimbursement	32/36 (88.9)
	Uncertainties from the legal point of view	3/36 (8.3)
	Generation of additional workload	34/36 (94.4)
	Unawareness of RM possibility	1/36 (2.8)
	Lack of sufficient evidence supporting RM	1/36 (2.8)
Number of electrotherapy procedures (implantations/replacements/lead extractions) performed per year	More than 300	24 (48)
	From 100 to 300	18 (36)
	Less than 100	8 (16)
If reimbursement is introduced in Poland will RM be implemented in your center (for centers not using RM)?	Yes	18/31 (58.1)
	No	8/31 (25.8)
	Maybe	5/31 (16.1)

Abbreviations: CIED, cardiac implantable electronic device; IPE, in-person examination; RM, remote monitoring

domized trials, demonstrated the survival benefit of daily RM transmissions over conventional IPEs, the data on the improvement of outcomes with RM are conflicting [3, 4]. In Poland, the randomized trials demonstrated a reduction in the combined endpoint of all-cause mortality and hospitalization for cardiovascular reasons in patients with implantable cardioverter-defibrillator (ICD) and cardiac resynchronization therapy-defibrillator (CRT-D) monitored remotely [5], while in another single-center trial, the number of hospitalizations for progression of HF and all-cause death in patients with CRT was reduced with the use of multiparameter RM [6]. Therefore, it can be assumed that with the introduction of more advanced algorithms and technologies, including synchronising devices with patients' smartphones instead of the presently used transmitters, the number of patients monitored remotely might increase.

Nonetheless, the results of the European Heart Rhythm Association (EHRA) survey conducted in 2015 demonstrated that in 43 centers that responded to the questionnaire, RM was available in 74% of patients with ICD, 69% of patients with CRT, and only 22% of patients with a pacemaker [7]. In our survey, which did not assess the type of devices, RM was not used in 72% of centers, with the most frequent causes being concern about generating additional workload and the lack of RM reimbursement. It has been demonstrated that the mean (standard deviation [SD]) annual workload for every patient monitored remotely is approximately 1.1 (0.15) hours, and in the recent analysis of the large cohort, more than 50% of patients transmitted at least 1 alert during one year [8, 9]. Therefore, with no doubt, in the case of RM introduction, there is a great need to create dedicated facilities with established workflows to effectively monitor patients and properly identify those in the greatest need of a rapid clinical reaction.

In 2018, the Polish Agency for Health Technology Assessment and Tariff System (AOTMiT) positively recommended the reimbursement of RM in patients with ICD or CRT-D, giving the green light for wider adoption of RM in the Polish electrotherapy facilities [10]. However, since then, no reimbursement has been introduced, which according to our survey, is one of the most important obstacles for RM implementation. The results from the SILCARD registry demonstrated that during the three-year follow-up, the RM of patients with ICD and CRT-D resulted in a median cost reduction of 33.5%, which was more prominent in patients with a CRT-D (P <0.001) [11]. In the Health Technology Assessment report of the Health Quality Ontario, the estimated cost reduction achieved with RM could be approximately $14 million during the first five years of its use [12]. Therefore, apart from a probable improvement in patients' outcomes, reimbursement and wide adoption of RM could result in large savings for the national healthcare provider.

The primary limitation of our study is that it reflects the experiences of a fraction of electrotherapy facilities in Poland, as only 50 centers responded to the survey. Moreover, the lack of differentiation between types of devices prohibits generalizing the data to different device types. Such differentiation is important as the frequency of remote transmissions and the contents of the alert transmissions could vary depending on the type of the device, therefore generating different workloads for monitoring centers. Finally, the article describes the overall utilization of RM in the Polish electrotherapy facilities; however, the detailed

characteristics of the motivation for RM introduction were not evaluated. For instance, in some facilities RM could have been introduced as a result of a device recall. That means that the decision to introduce RM was not prompted by the facility's interest in RM but by the necessity to monitor the possibly malfunctioning device more closely.

In conclusion, our study demonstrates that only a minority of centers in Poland use RM of patients with CIEDs, and the primary barriers for its wider implementation are concerns about additional workload and lack of RM reimbursement.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

Conflict of interest: MT: scientific consultations for Boston Scientific, Biotronik, Abbott, Medtronic. MD: lecture honoraria from Biotronik. MG: lecture and consultations honoraria from Biotronik, Medtronic, Abbott, Boston Scientific. JK: educational support (course fees) from Biotronik. MN is an employee of Biotronik Polska; MG: none declared.

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