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Kardi Ai Case Study

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Kardi Ai Technologies
Case study

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INTRODUCTION

Cardiovascular diseases are among the most common diseases worldwide. According to data from the World Health Organization (WHO), cardiovascular diseases or complications associated with them are the cause of approximately 32% of deaths each year, which is roughly one in three deaths. The Czech Republic ranks above this average in terms of mortality from heart disease. The proportion of deaths due to heart disease has increased significantly in the Czech Republic in recent decades and currently accounts for approximately 40% of all deaths per year, or nearly one in two deaths.

These alarming numbers, not only in the Czech Republic but also globally, are the result of a wide range of factors. Genetic predisposition and increasing average life expectancy, both of which are linked to the incidence of heart disease, play a significant role. People with hypertension, high cholesterol, diabetes, obesity, or other forms of genetic burden are also at increased risk. Recently, however, cardiovascular diseases have been increasingly common among younger people, such as those in their thirties. A major factor contributing to the development of cardiovascular disease in the younger population is a consumerist lifestyle, which places strain on the heart from an early age. Risk factors such as smoking, excessive alcohol consumption, an unhealthy and unbalanced diet, lack of exercise associated with sedentary jobs, and excessive stress can significantly increase the likelihood of developing cardiovascular disease.

An initial sign of existing cardiovascular disease may be cardiac arrhythmias, which themselves pose a risk of serious cardiovascular complications. Arrhythmias are heart rhythm disorders in which the heart beats too fast, too slow, or irregularly. This condition can lead to heart attack, stroke, or even early onset dementia.

A major problem with cardiac arrhythmias is that they are often asymptomatic. Although arrhythmia may manifest as heart palpitations, weakness, dizziness, or shortness of breath, a significant proportion of patients experience no symptoms at all. The problem is therefore often only discovered after a heart attack or stroke. The most common type of arrhythmia is atrial fibrillation, which affects an estimated half a million people in the Czech Republic, often without symptoms. This heart rhythm disorder increases the risk of myocardial infarction up to fivefold.

Asymptomatic arrhythmias, detected only after a stroke or heart attack, significantly complicate subsequent treatment and increase the risk of recurrence. This also places a significant burden on the national healthcare system, which spends considerable financial and human resources each year on the treatment of complications, long-term care, and rehabilitation of patients with cardiovascular disease.

However, even symptomatic arrhythmias pose a significant risk to the patients if they are not detected and treated in time. When individuals experience irregular heartbeat, nausea, or other symptoms of arrhythmia, they often consult their general practitioner. The most common diagnostic procedure is an electrocardiogram (ECG), which records the electrical activity of the heart for 10 seconds. However, the effectiveness of this test is very low, with arrhythmia being detected in only about 1% of cases, which is statistically insignificant. If the patient's symptoms recur or if the doctor has concerns, the patient is usually referred for Holter monitoring. However, there are often long waiting times for this test, sometimes several weeks or even months. The monitoring itself typically lasts 24 hours, which is significantly longer than a standard ECG. The disadvantage of Holter monitoring is its impracticality and low level of comfort. Electrodes are attached to the patient’s chest and connected to a device worn in a small pouch around the waist. The electrodes and the device itself make movement difficult and prevent contact with water. Although the detection rate of arrhythmias is higher with Holter monitoring than with a standard ECG, it remains relatively low, at approximately 5%. The main reason for such a low detection rate is the short monitoring time. Arrhythmias in patients often occur irregularly and in episodes. They can recur after weeks, months, or sometimes even half a year. The probability of an episode occurring during a short-term ECG or Holter monitoring is therefore very low.

The key to successful detection of arrhythmias, accurate diagnosis, and early initiation of treatment is long-term continuous monitoring of the heart's electrical activity. A device that meets this need has been developed by the Czech startup Kardi Ai. Its goal is to improve early diagnosis and reduce the high mortality associated with cardiovascular disease.

This case study focuses on the establishment and development of the Czech startup Kardi Ai. The study describes the founders ‘motivation, the development phases of the project, and the context in which the startup was created. Special attention is paid to the heart activity monitoring device itself, its operating principle, and the innovative features that distinguish it from currently available methods. It also includes an assessment of its contribution to clinical practice and an evaluation of its potential for further development.

1 KARDI AI STARTUP

The idea to found the startup Kardi Ai was born on a March evening in 2023 in Olomouc, when two neighbors were discussing the difficulties associated with diagnosing cardiovascular disease over a glass of wine. It was during this conversation that cardiologist Tomáš Skála and his neighbor and patient, American entrepreneur Stephen Burke, came up with the idea of creating an affordable, convenient, and accurate system for monitoring heart activity that could significantly help both patients and cardiologists. Shortly thereafter, they invited David Skála, Tomáš Skála's brother, and Pavel Digaňa to join their team, and together they began planning the production of a revolutionary heart activity monitor.

Kardi Ai team

Initially, it was necessary to decide which technology to use for heart monitoring. Several options were available – watches, rings, or chest straps. All options were carefully researched and tested. In the end, the choice fell on a chest fitness strap. The other options did not perform well when used during sports, in water, or during sleep. Smartwatches, which often offer ECG measurement, proved to be problematic due to the measurement technique itself. The ECG data are estimated using optical sensing of blood flow in the vessels, which often

leads to distorted results. The chest strap appeared to be the most suitable option as it is comfortable and discreet to wear, waterproof, and capable of providing authentic ECG signals. The founders therefore partnered with the American company Polar, which has been manufacturing chest fitness straps since 1983, and began collaborating with them.

However, this was only the beginning of the development process. The next step was to create a mobile application that would record and analyze the measured data. The team therefore began developing artificial intelligence capable of independently evaluating ECG curves and alerting patients to potential problems in a timely manner. A detailed description of the functionality of the heart activity monitoring product is included in the following chapter of the study.

The first version of the chest strap with a compatible mobile app was released by the four co-founders in September 2022. Stephen Burke assumed the role of executive director, bringing more than 20 years of entrepreneurial experience in designing innovative solutions for hotels and healthcare facilities in the US, Europe, and Asia, as well as experience in investing in and building startups, which proved to be a significant asset for Kardi Ai. Professor Tomáš Skála became director of research, where he applies his extensive medical knowledge. Pavel Digaňa, a graduate of the Czech Technical University in Prague, took on the position of technical director, where he applies his many years of experience in IT management and software development for financial institutions, Czech eGovernment projects in the field of public administration, and applications for other commercial companies. David Skála, a graduate of the master's program in Financial and Capital Markets at Charles University, was appointed product director, with responsibility for managing product innovation and business strategies, drawing on his experience gained from implementing innovative IT solutions in banks in Vienna and Sydney, Australia.

Like most startups, Kardi Ai needed investor support to grow. In 2022, the company raised approximately CZK 8.5 million in seed funding. This sum was used to develop the monitoring device and launch its distribution. The investors at that time included Czech Depo Ventures, Bulgarian BrightCap Ventures, and several smaller investors from among family and friends. A subsequent investment round followed in November 2023, raising CZK 34.5 million. In addition to existing partners Depo Ventures and BrightCap Ventures, new investors also joined the financing: the Brno-based fund Purple Ventures, Ostrava-based Soulmates Ventures, individual investors associated with the informal group Garage Angels, and the Romanian fund Cleverage VC, which specializes in healthcare investments. The most recent investment round

took place in April 2025, during which the startup raised a total of CZK 28 million from existing investors (Depo Ventures, BrightCap Ventures, and Garage Angels) and new partners, including Lumus Investment Collective and another Czech angel investor. These funds are primarily intended to support expansion into international markets and the completion of clinical trials.

The startup has achieved significant global success in recent years and has won several prestigious awards. The project was ranked among the 50 most significant global projects by Health Tech World, an association that brings together international experts and innovators in health technologies. In 2024, the startup won the Czech Idea of the Year competition and also succeeded in the European Demo Day accelerator competition. In January 2025, it received an award in the Deloitte Technology Fast 50 competition in the Impact Stars category, and in September of the same year, it was named Best AI-enabled Startup of 2025 in Central Europe. In December 2025, Kardi Ai won the prestigious Health Tech Challengers award in the AI-Supported Healthcare category.

The startup currently collaborates with more than 30 hospitals and 140 cardiologists in the Czech Republic. Thanks to this cooperation, the app is continuously improved and has already detected more than 250 serious cases of arrhythmia over its three years of operation. In September 2024, the Kardi Ai application was granted the European CE MDR Class IIa certification for medical devices, which enables distribution throughout the European Union. However, for the device to be sold as a fully certified medical device, it is necessary to complete an additional clinical study regulated by the State Institute for Drug Control (SÚKL). This study was launched in March 2025 at the University Hospital in Ostrava and the University Hospital in Olomouc, involving a total of 150 patients.

The startup's primary goal for the future is to expand into foreign markets. This strategic plan was supported by a change in the company's management, when Stephen Burke, the former CEO, was replaced by Vlastimil Hrabal in April 2025. Hrabal, one of the first investors in Kardi Ai and a former COO, has many years of experience in managing and expanding Home Credit's foreign branches in Southeast Asia.

The first phase of expansion targeted neighboring Slovakia and Poland, followed by Bulgaria and Romania. These countries, like the Czech Republic, face a high incidence of cardiovascular disease, an overburdened healthcare system, and increasing demand for healthcare digitalization. In December 2025, the startup officially announced its entry into these four European markets through cooperation with selected hospitals and cardiologists.

In the next phase, the startup plans to enter the markets of the United Arab Emirates and India, and potentially other parts of Southeast Asia, where demand for innovative healthcare technologies is high. In mid-2025, this plan was strategically supported by joining the Asia Pacific Medical Technology Association (APACMed), which connects innovators, startups, and leaders transforming healthcare across the Asia-Pacific region. Ultimately, the startup plans to expand into North America, where the incidence of cardiovascular disease has increased rapidly in recent years.

Since its founding, the startup has actively presented its product at healthcare exhibitions and conferences. In preparation for its international expansion, it completed several foreign missions in 2025, supported by a grant from CzechInvest. Among the countries visited, where Kardi Ai presented its product and gained valuable insights into the local market culture and its specifics, were Poland, Slovenia, Bulgaria, Italy, Saudi Arabia, India, Singapore, and Thailand.

Presentation by Hrabal, CEO of the startup, at the Czech-Israeli Innovation Day on Smart Health, November 2024, Prague

The story of Kardi Ai proves that even a small team with a bold vision can contribute to solving one of the most pressing problems in healthcare today. By combining medical knowledge, technological innovation, and investor support, the company is pushing the

boundaries of early diagnosis of heart disease. If the company succeeds in fulfilling its expansion plans, it could significantly improve the quality of life for millions of patients not only in the Czech Republic, but also far beyond its borders.

1.1 Startup Business Model

Kardi Ai's business model is based on the sale of chest straps and mobile app licenses. Customers can choose the duration of their license, with Kardi Ai offering quarterly, six-month, and annual licenses for its app. Once a license expires, satisfied users can reactivate it. The startup's costs for each new user increase only marginally, while revenues remain recurring. This makes the model economically efficient. This structure generates stable, recurring revenue and enables the company to finance the long-term development and expansion of its services. The startup therefore offers not only a device, but primarily a service based on continuous monitoring of heart activity through artificial intelligence.

Kardi Ai combines two market approaches. It cooperates with hospitals and cardiologists who use the device with their patients (B2B model) and also sells it directly to end users through pharmacies and e-shops (B2C model). The more affordable Beatwell option further expands the offer to the general public, increases brand awareness, and encourages users to switch to the fully certified solution in the future.

The main sources of revenue include app subscriptions, the sale of licenses to healthcare facilities, and margins from hardware sales (in cooperation with Polar). Costs are mainly associated with software development, medical device certification, and marketing. Potential risks include dependence on an external supplier of chest straps and varying legislative requirements across individual countries. In the future, cooperation with health insurance companies could be a suitable step, as it could help cover the cost of the equipment for high-risk patients within preventive healthcare programs.

A major commercial advantage of Kardi Ai´s products is their easy expandability into foreign markets. From an economic perspective, strategic international expansion represents a logical next step. The product is technologically universal and does not require significant modifications for use in different countries. Only localization of the mobile app and administrative interface is necessary, which minimizes associated costs. In addition, cardiovascular disease is a global issue, creating demand for similar solutions beyond the Czech Republic. The digital nature of the service enables rapid scaling and distribution without the

need for complex physical infrastructure, significantly reducing barriers to entry into new markets.

2 KARDI AI PRODUCTS

Currently, the startup Kardi Ai offers two innovative products – Kardi Ai and Kardi Ai Beatwell. Both operate on a similar principle. The foundation is an elastic chest strap equipped with a Polar H10 ECG sensor, one of the most advanced and accurate ECG measurement system currently available, whose quality has been confirmed by a professional study comparing various chest straps with Holter monitoring. This strap is waterproof, comfortable, discreet, and suitable for all-day wear. The second essential component of both products is a mobile app that can be downloaded for free to a smartphone with the Android or iOS operating system. The app uses an artificial intelligence-based algorithm capable of detecting cardiac arrhythmias.

During the development of the application, the first step was to train the artificial intelligence to distinguish real cardiac signals from interfering artifacts and noise and to disregard them in order to prevent distortion of the results. Such noise can be caused, for example, by a hit to the chest or interference from other electrical devices. The second phase of development involved processing one million heartbeats, which were carefully annotated by doctors. Each heartbeat was reviewed, described, and evaluated to determine whether it was physiological or required attention, and if so, with what degree of urgency. The objective was for the artificial intelligence to learn to detect arrhythmias in the ECG curve, thereby facilitating the work of doctors. Artificial intelligence can only learn from the date provided by humans. Therefore, the more described heartbeats it obtains, the more accurately the system can perform evaluation. Doctors continue to evaluate additional heartbeats and provide detailed descriptions, which are used to further improve the Kardi Ai algorithm.

This phase of development also included a clinical trial at the University Hospital in Olomouc, which aimed to test the effectiveness of the newly created product in comparison with conventional ECG measurement. A total of 161 individuals were enrolled in the study (54 hospitalized patients, 53 outpatients, and 54 healthy volunteers). When comparing ECG curves obtained from the Polar H10 chest strap with those from a standard 12-lead ECG, doctors were able to reliably determine the basic heart rhythm in the vast majority of participants: 94.4% of hospitalized patients and 100% of outpatients and healthy controls. The lower percentage among hospitalized patients can be explained by the higher incidence of artifacts associated with more frequent tremors, greater frailty of patients, and accidental contact with the chest strap during examinations or other hospital procedures. Nevertheless, the accuracy of the Kardi Ai product is comparable to commonly used hospital ECG devices, such as Holter monitors or

standard ECGs. However, a significant advantage of Kardi Ai compared with these methods is that patients do not need to wait for an appointment with a doctor or undergo ineffective, short-term, and uncomfortable monitoring. Kardi Ai products are available immediately, either through the startup's official e-shop or via a network of partner retailers (e.g., Pilulka, Dr. Max, Benu). This allows users to monitor their health activity virtually continuously at home, which significantly increases the likelihood of early detection of arrhythmia and timely initiation of treatment.

The following subchapters provide a detailed comparison of the differences and similarities between the two Kardi Ai monitoring models.

2. 1 Kardi Ai

The chest strap and the Kardi Ai mobile app were first introduced in 2022. In the beginning, they were intended exclusively for cardiology clinics, where doctors offered them to patients as part of a testing phase. This approach enabled the startup to collect valuable user data, which were subsequently used to gradually improve the app. This phase, during which Kardi Ai was not yet available for retail purchase, served primarily to build a more extensive database of heart records, verify the effectiveness of the solution, identify user preferences, and assess interest among cardiologists and their patients.

This business model proved to be very successful. Kardi Ai currently cooperates with more than 30 hospitals and 140 cardiologists throughout the Czech Republic. Since 2024, when the Kardi Ai system was officially recognized as a medical device with European MDR IIa certification, it has also been available for purchase outside healthcare facilities. The annual cost of this solution is approximately CZK 5,000. By obtaining MDR IIa certification, Kardi Ai has become the only certified solution for long-term heart rate monitoring in the world.

Kardi Ai works on the principle of the Polar H10 chest fitness strap equipped with an ECG sensor, which is positioned directly on the chest near the heart. This represents a significant advantage compared, for example, to smartwatches, which measure only blood flow in the wrist arteries. Data from the sensor are transmitted via Bluetooth to the mobile app. Pairing the strap with the app is very simple, users simply scan the QR code on the packaging and the connection will be made automatically. Heart activity monitoring begins automatically once the strap is worn, with no limitation on the duration of use. Thanks to its comfortable and discreet design, the device can be used during normal daily activities, sports, sleep, and even swimming. The longer and more frequent the device is used, the higher the probability of

detecting potential arrhythmias. The recorded ECG curves in the app are evaluated by artificial intelligence, which are capable to detect the seven most common types of arrhythmias:

- Atrial fibrillation,
- Supraventricular extrasystoles,
- Ventricular extrasystoles,
- Supraventricular tachycardia,
- Wide complex tachycardia,
- Bradycardia (with a heart rate below 40 beats per minute),
- Tachycardia (with a heart rate above 220 beats per minute).

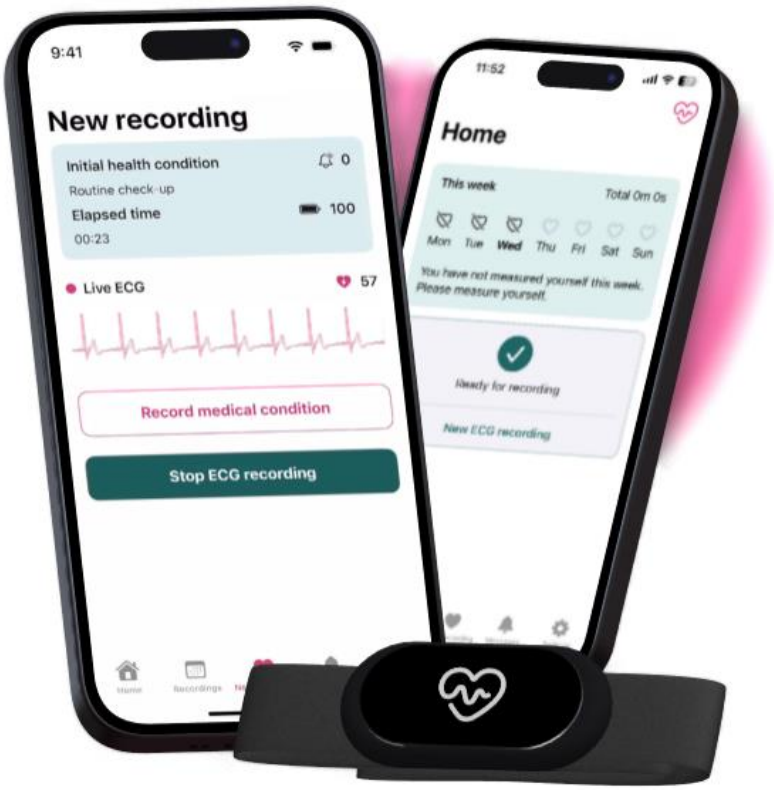
If an irregularity in the heart rhythm is detected, the user is immediately notified through a colored risk indicator:

- Shades of green – none or minimal risk,
- Yellow – irregular values that are not life-threatening, but consultation with a doctor during the next scheduled visit is recommended,
- Shades of orange – high risk, immediate medical attention required.

Doctors have access to their patients' data via a secure web interface, where they can view continuous records or download detailed reports for selected time periods. If a life-threatening condition is detected, the doctor is automatically notified and can immediately initiate appropriate treatment without delay. Cardiologist Jiří Plášek from University Hospital Ostrava, where Kardi Ai monitors are used for hospitalized patients, highlights the immediate AI-based evaluation of ECG recordings and automated doctor notifications as major advantages. He also emphasizes the stable contact of the chest strap with the patient's body, unlike traditional Holter electrodes, which frequently become detached. Ambulatory cardiologists offering Kardi Ai devices to their patients particularly appreciate the higher detection rate of arrhythmias compared to conventional ECG measurement methods, the possibility of continuous monitoring in a home environment, and the system´s efficiency in alerting them to imminent risks, allowing prompt initiation of treatment.

Another advantage of the app is that patients experiencing subjective symptoms can record the time of their occurrence and provide their doctor with a specific time frame for more detailed evaluation. Kardi Ai has a 30% success rate in detecting arrhythmias, which is significantly higher than that of a conventional ECG (1%) or Holter monitor (5%).

All user data are securely stored in cloud storage. By connecting patients and doctors, Kardi Ai serves as an effective tool for people at increased risk of cardiovascular disease (e.g., those with genetic predisposition, obesity, hypertension), for patients experiencing symptoms (e.g., chest pain, rapid heartbeat), and for patients after cardiac treatment or heart surgery, where it enables early detection of potential recurrence.



Kardi Ai innovative solution

2. 2 Kardi Ai Beatwell

Kardi Ai Beatwell was developed in mid-2025 as a more affordable alternative to the original Kardi Ai monitor. Like the primary model, it uses the Polar H10 chest strap with an ECG sensor and a mobile app. Unlike Kardi Ai, however, Beatwell does not have European medical device certification and is therefore not subject to the same regulatory criteria. As a result, it is significantly less expensive to purchase, with an annual cost of approximately CZK 2,000.

Although it is not a certified medical device, Beatwell can serve as a useful indicator of the user's overall cardiovascular health. The app analyzes the ECG curve and heart rate and calculates the so-called Beatwell score. The higher the score, the more stable the heart rhythm. The results are presented in the form of a color traffic light, ranging from green (stable rhythm)

to yellow to orange (unstable rhythm, with a recommendation to consult a doctor). The Kardi Ai Beatwell monitor now also allows users to record physical activity during which your heart rate is measured.

The main difference compared to Kardi Ai is that Beatwell cannot be connected to a doctor, therefore responsibility for monitoring and interpreting results lies solely with the user. In case of repeated warnings from the app, users are advised to proactively consult a cardiologist and discuss their symptoms.

Beatwell thus represents a suitable alternative, especially for young, active people and athletes who want to monitor their health and are seeking an affordable solution. The differences between the two Kardi Ai monitors are clearly explained in the following table.

	Kardi Ai	**Kardi Ai Beatwell**
European healthcare certification	YES (CE MDR IIa)	NO
Annual price	~ CZK 5,000	~ CZK 2,000
Connection with a doctor	YES (web interface for physicians, alerts in case of serious patient condition)	NO (monitoring by user only)
Availability	Cardiology clinics, pharmacies (available for sale here since 2024), startup e-shop	Freely available for sale in pharmacies and e-shops
Functions	ECG and heart rate measurement, detection of seven types of arrhythmias, recording of health problems, traffic light alerts, data export	ECG and heart rate measurement, Beatwell score, traffic light alerts, physical activity recording, data export
Target group	People at increased risk of cardiovascular disease, cardiac patients, post-operative patients, people with symptoms of heart disease	Active people, athletes; those who want a cheaper monitor just for their own overview
Risk	The doctor has access to data and can intervene	Users monitor their own health and receive alerts

Comparison of Kardi Ai and Beatwell monitor parameters

DISCUSSION

Kardi Ai monitors represent a significant challenge and an opportunity for today's healthcare system. Clinical studies and user data indicate that they are capable of detecting approximately 30% of arrhythmias. Compared to a conventional ten-second ECG measurement (1%) or Holter monitoring (5%), this represents a significantly higher detection rate. Early detection of arrhythmias can significantly improve patients' quality of life. Continuous heart monitoring allows arrhythmias to be detected before clinical symptoms appear. This enables early treatment and prevention of serious complications such as myocardial infarction, stroke, early onset dementia, and other diseases that limit the patients for a long term. As a result of these complications, the affected individuals often find themselves in a difficult life situation – they may require long-term and demanding rehabilitation, lose their ability to work and consequently their job, and in the most severe cases become dependent on lifelong assistance from others. This situation places a burden not only on families, but also on professional healthcare and social care services.

According to data published in 2025 by the European Society of Cardiology, the estimated economic impact of cardiovascular disease in the European Union reached €282 billion, which corresponds to approximately 11% of total healthcare expenditure in the EU. These costs could be significantly reduced through the broader use of Kardi Ai monitors as a preventive tool, thanks to the prevention of complications and reduction in hospitalizations. The quality of the ECG recordings provided by the monitors is nearly comparable to that of hospital ECG machines.

Compared to a traditional ECG, however, the Kardi AI monitor offers a comfortable, discreet (not visible under clothing), and waterproof solution available in all sizes. Due to its unobtrusive design, users are minimally aware of wearing it and experience little to no restriction in daily activities. Another major advantage is that the production capacity of these monitors is virtually unlimited, allowing any interested individual to purchase a personal device with the app. This fundamentally differs from hospital ECGs and Holter monitors, which are limited in number in healthcare facilities and are often shared among hundreds to thousands of patients annually. In addition, these hospital monitors are very expensive to purchase, and patients often face long waiting times. In contrast, the Kardi Ai monitor is available at a fraction of the cost and can be used almost immediately, without the need to make an appointment at a healthcare facility. An additional benefit is the partial shift of monitoring and preventive care

from physicians' offices to the home environment, enabling healthcare providers to dedicate more time to patients requiring acute care.

In the future, it would be advisable to involve the Ministry of Health and health insurance companies in supporting early prevention by partially or fully covering the cost of the Kardi Ai monitor for high-risk patients. Such measures could significantly reduce the costs associated with acute treatment and long-term rehabilitation following heart attacks or strokes, which often require lifelong care and cost the healthcare system billions of Czech crowns annually.

The Kardi Ai monitor is important not only for the prevention of cardiovascular disease, but also for patients already undergoing treatment. It allows continuous monitoring of a patient's condition, provides timely warnings of deterioration, and enables doctors to verify the effectiveness of treatment and optimize its settings. As a result, patients may not need to attend frequent in-person check-ups. The device also encourages patients to take an active role in managing their own health, promotes responsible behavior, and gives them the opportunity to proactively monitor their condition.

The monitor may also play an important role in patients following heart surgery, especially after ablation, as it allows monitoring of potential postoperative complications and recurrence of arrhythmias. Continuous monitoring provides patients with an increased sense of safety and reassurance. Knowing that potential problems can be detected in a timely manner may also reduce stress and anxiety related to health concerns.

Kardi AI monitors are further characterized by their long service life. The chest strap can last for several years, and thanks to regular software updates, the algorithm can be continuously refined and new features introduced without the need to purchase new equipment. Updates are conveniently delivered to users through the mobile app. The combination of durable hardware and flexible software development ensures that the Kardi Ai monitor is not only an effective medical solution, but also a cost-efficient and sustainable option for both patients and the healthcare system.

However, Kardi Ai monitors also have certain limitations that must be acknowledged. Although they report a 30% arrhythmia detection rate (compared to 5% for Holter monitoring), they are capable of identifying only the seven most common types of arrhythmias. In contrast, an experienced cardiologist may detect less common cardiac abnormalities from an ECG recording obtained through a standard ECG device or Holter monitor. In the future, expanding

the algorithm to include additional types of arrhythmias may represent an opportunity for further development. In patients with pacemakers, there is also a risk that ECG recordings may be distorted by pacing impulses, making physician evaluation essential. However, future algorithm training may enable the system to filter out such stimulation artifacts.

Another disadvantage is the requirement to carry a mobile phone during monitoring, as data are transmitted via Bluetooth. However, this is not always possible, for example during certain sport activities, and there is also the risk of the phone battery unexpectedly running out during measurement. Some users also report increased battery consumption when actively using the app. The chest straps themselves are not rechargeable and rely on replaceable button batteries, which may be considered environmentally unfriendly with frequent use. In addition, if the battery depletes at an inconvenient time, such as during travel, immediate replacement may not be possible. A future improvement could involve integrating a rechargeable battery into the chest strap.

Another major limitation is that a significant proportion of older patients, for whom cardiovascular disease prevention is particularly important, do not own a smartphone. And even if they do, using the app and chest strap can be perceived as complicated and discouraging. A similar barrier may exist among some doctors, especially older cardiologists, who may not be open to new technologies and may hesitate to implement such devices in practice due to unfamiliarity or insufficient training, thereby depriving their patients of the opportunity to use the monitor. Practical seminars and training sessions could therefore represent an appropriate solution, allowing physicians to test the device and gain hands-on experience with its functionality.

The last disadvantage that needs to be mentioned is the possibility of skin irritation, particularly in individuals with dermatological problems or allergies to the materials used in the chest strap. Some users may also perceive continuous daily wear as unhygienic.

Despite these limitations Kardi Ai monitors represent a significant opportunity to at least partially relieve the burden on an overloaded healthcare system, which will face a growing number of patients with cardiovascular problems as a result of the aging European population. With further development of algorithms, adaptation to specific patient groups, and gradual increase in the availability of monitors, Kardi Ai appears to be a promising tool that can significantly contribute to improving prevention, early diagnosis, and the overall quality of care for cardiology patients.