Introduction

The use of information and communications technology (ICT) is often seen as an important element of response to the challenges faced by modern health systems. The expected benefits include such different effects as: improving the availability and quality of health services, reducing expenditure, reducing the frequency of hospitalization and visits to emergency facilities, improving patient safety, and improving the management of a healthcare facility. It is worth remembering that modern medicine is based on digital technologies. Practically all modern diagnostic devices are computerized and in many specialties, computer support of therapeutic procedures is also used. To control the course of the disease, patients use portable computerized measuring devices. There is an increasing number of reports indicating that decision support systems based on artificial intelligence can be of valuable help for the clinician. Today, the field of ICT applications in health care is referred to as e-health, and the e-health environment consists of IT systems implemented in health care facilities, enabling communication between participants of medical contact, facilitating the monitoring of the course of the disease, as well as health resources available on the Internet. This issue of "Scientific Issues of Health Protection. Public Health and Governance" is devoted to the presentation of selected topics related to the use of modern technologies with the objective of tackling the challenges faced by the health care system and public health.

Early this century, high-profile reports were published that indicated the threats that the health care system poses to the patient. In search of strategies leading to the improvement of patient safety, in addition to organizational changes or limitation of burdens for health care workers, the use of various e-health solutions was also indicated. The most important of these solutions are electronic medical record, computer-aided decision support systems, mobile devices that provide physicians with access to knowledge databases and systems enabling computerized physician order entry. The last-mentioned category of solutions is addressed in two articles published in this issue of the journal. The authors of the article titled *E-prescription. Selected legal and functional aspects* have reviewed the legal conditions that are required when a prescription is to be entered into the health care system. Undoubtedly, an e-prescription can bring not only the considerable benefits associated with improving the patient's safety and quality of life, but also those related to the reduction of unnecessary spending on medicines or rationalization of the conducted pharmacotherapy. However, the implementation of a system allowing the issuing of electronic prescriptions remains a big challenge. Especially if we take into account such issues as ensuring an adequate level of ICT infrastructure development in all entities participating in the e-prescription service or the need to prepare the service providers for the use of the new tool. The article titled *Study of the impact of implementing an electronic prescription with barcode scanning on the time of response to the patient's needs in the field of pharmacotherapy* presents the results of the analysis of the impact that electronic medical orders in a hospital facility have on the time of response to the patient's pharmacotherapy needs. The author assessed the process of electronic order completion from picking the medicines to delivering medicines to a patient.

One of the most exponentially growing areas of health today is mHealth. Its development is related to the availability of mobile telephony, especially smartphones, and advanced wireless sensory devices. One of the manifestations of the popularity of mHealth are the many thousands of health applications available for mobile phones in online stores such as GooglePlay or AppleStore. However, the importance of health cannot be viewed through the lens of the number of available mobile applications. In fact, the key importance of mobile solutions results from the possibility of their inclusion in a comprehensive patient support system that can independently record the severity of symptoms and the results of measurements relevant to the patient's disease parameters, and then send them to the monitoring centre providing 24-hour support. Installing an isolated mobile application with no possibility of providing patient with feedback information from a health care professional or monitoring centre, is not enough. The more so because many users are quick to stop using solutions that do not provide adequate interaction. Only the integration of the mobile application with the health care system can bring the expected benefits related to the continuity of care and strengthening the role of the patient. mHealth does not only provide new support options for patients with chronic diseases, but it also impacts our lifestyle and health behaviours in various ways. In many reports published by institutions conducting market analyses, wearable devices have been identified as one of the most promising areas due to their increasing use and the many areas in which they may potentially be useful. Supporting wellbeing, healthy lifestyle, fitness and sports activities are one of the most important areas of application for such devices. The authors of the article titled *mHealth – areas of application and the effectiveness of interventions* have attempted to show what the applications are of mobile solutions in medical care and health promotion. The evidence available to date suggests that interventions based on the use of mobile applications can bring significant benefits in terms of better control of disease progression and greater independence of patients with chronic diseases, while mobile interventions aimed

at health promotion create an opportunity for effective behaviour change and a healthy lifestyle. The article titled *The interest of primary care patients in using health applications for mobile devices* presents the results of a sample survey conducted on a significant group of patients. The study provides an interesting insight into the relationship between self-reported health and the use of such applications.

Interesting solutions for elderly people are of great interest. In 2008, the Ambient Assisted Living programme was initiated by the member states of the European Union. As part of the annual competitions financed in half from the funds made available directly by individual countries, and in other half from the budget for research and development of the European Commission, projects are promoted that encourage the use of ICT in various areas of elderly peoples' lives and that have a chance of rapid commercialization. A review of the projects carried out under this programme shows that elderly people can be offered many forms of support through IT systems and, as a result, their sense of security and independence can be increased, control of their health and activity can be improved, and social contacts can be idensified. In view of the strong tendency of aging in modern societies, this area of technology development at the interface between e-integration and e-health is given priority in many countries. The author of the article titled *Innovations in elderly care: Key success factors* took on the challenge of presenting the factors determining the success of the implementation of innovative solutions addressed to elderly people.

The last article in this issue of the journal – *Health technology assessment of medical devices* – is devoted to non-drug technologies evaluation strategies. Non-drug technologies can be used for diagnostic and therapeutic purposes as well as replacement products in people with disabilities. While the decision-making processes with regard to the reimbursement of medicines based on the principles of health technology assessment are clearly defined, in the case of non-drug technologies the situation does not seem as clear. The article presents the causes of difficulties related to the application of the principles of health technology assessment in relation to non-drug technologies against the background of regulations in force in Poland and the European Union.

In this issue of "Scientific Issues of Health Protection. Public Health and Governance" you will also find a presentation of the ITHACA project carried out with the participation of the Małopolska Voivodeship Marshal Office, which illustrates an initiative relating to tendencies that involve the use of innovative strategies for active and healthy aging. The project is an excellent opportunity to get acquainted with the achievements of other regions in this area.

I encourage you to take some time to read this issue of the journal. I believe that the proposed topics will meet your interest, and may they also be an inspiration for future initiatives and projects.

Mariusz Duplaga