

# Medical Equipment and Economic Determinants of Its Structure and Regulation in the Slovak Republic

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## INTRODUCTION

Healthy population is a significant component in the process of economic growth of the country, because the full economic potential can only be achieved health. The health sector is affected by the innovation process, which includes skilled workforce healthcare sector is one of the largest in the European Union. Research and development in the health sector has the potential to reach 0.3% of gross domestic product. healthcare sector is one of the largest in the European Union, representing around 10% of the European Union gross domestic product and employs one in 10 workers with a higher than average proportion of workers with tertiary education. Support for human health is an integral part of the objectives of smart and inclusive growth and Europe 2020 (European Commission, 2011). An innovative development is necessary to exist to ensure the sustainability of the sector, as well as to achieve inclusive growth in the context of demographic change. It is not related only with the growing health needs of the population, but also pressure to increase the efficiency of the health system.

## BACKGROUND

Modern medical equipment and technologies enable efficient and rapid diagnosis and treatment of diseases, hence their deployment in the health system necessity (Rosina et al., 2014). In addition to the quantifiable economic savings also it happens to humane treatment, prevention of possible complications, and thus to the elimination of the additional costs in the event of subsequent medical care for patients. Timely and successful diagnostics will save unnecessary medical procedures according to experts who make up one third – analysis of the European Association of medical technology Eucomed. Modern medical technologies, modern approaches to diagnosis and treatment combined with early detection also allow to shorten hospitalisation time for some diseases from several weeks to a few days. Reducing the number of hospital admissions and inpatient treatment time and replace feature to make it by the day surgery has been a global trend lately (Gavurová & Šoltés, 2014). In addition to radical savings in the health system derived from therapeutic and diagnostic procedure in conjunc-

tion with application of the latest research findings and health technologies, the macroeconomic view on this issue is also important. Within the medical technology industry in Europe more than 500,000 people are employed, making it a production of medical technologies important element of the gross domestic product of individual European countries. Upgrading of medical technologies occurs not only to improve them, but also to their constant replacement of modern and innovative technologies in the short term. This is confirmed by the fact that, for instance in 2012 the European Patent Office received more than 10,000 patent applications in the field of medical technology and the number is increasing. It is related to the significant progress in research and development.

Despite the positive development of modern medical technology an important component in the process of successful diagnosis and treatment becomes their availability. Availability of advanced medical technologies in the Slovak Republic is not proportional and regionally balanced. There are various problems that have long-term systemic nature (Gavurová & Šoltés, 2014; Kneppo et al., 2014).

If we look at the situation abroad, the density of medical equipment in different countries varies considerably in the European countries – for instance in the case of devices for x-ray computed tomography and magnetic resonance imaging. The Greeks have ten times more magnetic resonance imaging devices for a person like the Hungarians, the Austrians three times more than the British. The Greeks have the most devices for x-ray computed tomography, there are three times more x-ray computed tomographs per person than the Dutch have or just like the Italians. The differences are evident not only among countries but also within countries. For instance, there are four-fold differences between trusts in the number of top medical equipment in the United Kingdom. If we conducted an international comparison of the other kinds of medical equipment in the country, we would have confirmed the existing significant differ-

ences between countries. Therefore, it is difficult to determine the optimal number in the country.

The primary objective of introducing and using of the variety of health technology is to improve the health of the population of the country. The Slovak Republic has still lacked standard procedures to govern the rational use of various diagnostic technologies. The negative consequences include unnecessary tests, which are also reflected in the economics of the Slovak healthcare system (Gavurová et al., 2014). There is no methodology to determine the optimal number of medical devices. Their introduction into medical practice is now accompanied with many obstacles. These are linked with the strategies of health insurance companies and with the waiting time for examinations -- waiting lists for procedures. Waiting, keeping the patient on the waiting list respectively, waiting time refer to the time between the placing of a patient on the waiting list and its disposal (Roberts et al., 2004). In relation to the effective healthcare, this is generally the time between approval and implementation of procedures (Mužik & Szalayová, 2013). According to the Organisation for Economic Co-operation and Development one of the reasons for the increase waiting lists has been a significant advance in surgical techniques and anaesthesia during the last two or three decades, what greatly have improved range, safety and efficacy of surgical procedures (Siciliani & Hurst, 2013). Many of the procedures have carried out at lower unit costs consequently a dramatic increase has occurred in demand for surgery, especially in effective – not acute – procedures, such as cataract surgery, hip surgery, or bypass in all the Organisation for Economic Co-operation and Development member countries. Waiting lists are a serious problem in these countries, including the Slovak Republic (Eriksson & Björnberg, 2009, Mužik & Szalayová, 2013). Long waiting times for efficient performances are typical for countries that combine health insurance with no or low deductibles and limited capacity of the patient (Siciliani, 2003). Fewer occurrences are

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