INTRODUCTION

The increased burden of chronic disease imposes a big challenge to health systems and to the economy. Almost all chronic patients have this disease throughout their life. Chronic diseases impose a significant burden on the patient’s quality of life and also affect their families and careers. Most patients suffer from chronic conditions throughout their life. Chronic conditions lead to poor work performance and discontinuity at work, hence result in loss in labour productivity. According to the estimates of the WHO, chronic diseases accounted for almost 60% of deaths in the world and 87% in high income countries [1, 2]. The proportion of deaths due to chronic diseases is projected to rise up to 69% in 2030 worldwide. Chronic conditions and diseases are the leading cause of mortality and morbidity in Europe [3].

Cardiovascular disease, diabetes, asthma, mental disorders, many types of cancer and HIV/AIDS are chronic conditions and require consistent care. Most chronic conditions are highly linked to ageing as well as lifestyle factors such as diet, exercise, smoking and sexual behaviour. Therefore, prevention and health promotion activities are effective in reducing the burden. However, most of the health care systems are structured according to acute conditions and are usually focused on treating the ill. The cost of treating chronic disease accounts for 50-80% of health care expenditures [4].

A need for specific approaches for consistent management of chronic conditions has become one of the challenges in health systems due to increased burden of chronic diseases with an ageing population in Europe and other advanced countries. Chronic disease management (CDM) has been implemented at various countries in order to prevent and reduce effects of chronic conditions. CDM can be defined as a structured and organized response to chronic health problems which can be done through coordination and integration of various services and resources. The aim is to attain continuous improvement in clinical outcomes and quality of services as well as the use of economic resources. Disease prevention, interventions for early detection and health promotion are among the core strategies which necessitate patient involvement and empowerment. These activities are also targeting to people at risk groups. There should be continuous monitoring and information flow about clinical outcomes and compliance with treatment guidelines. The prevention and care should be given at all levels of health care, i.e. primary, secondary and tertiary level, in addition to health promotion to the whole society. A wide range of health professionals and a multidisciplinary team are required. A chronic condition requires ‘coordinated’ and ‘integrated care’ at various levels of health and social care over an extended period [4, 5].

Key factors for successful chronic disease management

Various CDM strategies have been developed across Europe and the USA but most of them face substantial structural problems. Interventions generally focus on specific diseases rather than determinants. Patients often have several chronic diseases or conditions. They need care from different providers. Specifically defined target groups and regional factors should be examined. The effective intervention necessitates the ‘integrated approach’ in CDM. There has been a focus on integrated care projects during last decade, but the complexity of these
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programmes has been pointed out the most important challenge for successful implementation [8]. The successful programs should entail the following [1, 7]:

- targeting key risk factors, population and risk groups oriented via robust collection of information
- identify people with different levels of need
- use of evidence-based guidelines, treatment protocols, planned care pathways
- widespread disease prevention initiatives at all levels of care and cure
- active patient involvement; health education, empowerment, self-care
- comprehensive care and improved access throughout the entire disease cycle
- multidisciplinary team
- coordination and integration of the different components of care
- continuous and quality improvement
- stakeholders involvement including individuals, the voluntary and community organisations, private industry and public
- data-sharing among various workforce teams and stakeholders

Use of information and communication technologies (ICT) in chronic disease management (CDM)

When the key elements of successful implementation for CDM are examined carefully, information and communication technologies (ICT) may provide substantial means and input. The use of ICT in the organization and delivery of health services enables new modes of care. eHealth refers ICT tools and used in health care which require information and data flow through the internet and related technologies. The clinical decision support tools and systems with online access to research evidence, guidelines and patient information, targeted educational interventions using electronic health records and web-based portals can be provided using ICT. Clinical and administrative data both the patient and population levels can be stored and managed. More importantly eHealth enables to provide care and expertise at a distance [8, 9]. Such services are known as telemedicine which involves secure transmission of medical data and information, through text, sound, images or other forms needed for the prevention, diagnosis, treatment and follow-up of patients. Telemedicine services are mainly classified in two broad categories: service between health professionals/doctors (doctor to doctor) includes telesonultation, teleradiology and telepathology; and service or care from doctor to patient including telementoring, telehomecare, emergency care and internet based patient consultations [10]. Professional interactions include advice or case conferencing, remote access to health records and decision support among doctors. The remote professional-patient communication promotes supported self-care at home, self-monitoring and education. These services facilitate sharing of patient and medical information, continuous monitoring and doctor-patient interaction.

CDM encompasses ongoing management of chronic conditions during patient’s lifetime using evidence-based care. Remote monitoring allows for the collection of routine information on the health status of individuals outside the doctor’s office or hospital. This evidence can be collected through eHealth solutions. The use of evidence-based medicine can be supported through clinical pathways, electronic protocols and guidelines. This also forms a foundation for policy-making based on information. For chronically ill patients an estimated 90% of the care must be self-managed, outside the health system [11]. Care delivery must include prevention that includes action outside the health system. Patients need to be educated about health conditions, empowered to maintain their health and assisted in managing their chronic conditions or diseases. The specifically designed web pages may help to improve patient healthy behaviour and raise awareness about healthy living. It will become easier for distant services to be made available in remote areas through telemedicine which enhances health service capacity, its accessibility and help meeting demand.

The development of eHealth has been driven partly by technological advances. Their potential role has been highlighted by the European Commission for more than a decade in order to tackle issues due to ageing population, chronic conditions and rising healthcare costs. The European Commission’s action plan for a European eHealth area sets out several goals to member states [12]. The 2010 strategies and Lead Market Initiative indicated eHealth as one of the leading sector in the EU, with 12-13% growth potential per year in [13, 14]. The Commission’s deadline for the widespread deployment of telemedicine service is 2020. The results of the recent consultation on eHealth action plan for 2012-2020 marked a need to support deployment of research results and more flexible financing mechanisms for research and innovation should be provided. The research should outline the benefits and costs, effectiveness and usefulness of eHealth solutions [15].

CONCLUSION

The successful implementation for CDM requires an integrated approach which can be facilitated through use of ICT in health services. Monitoring chronic conditions will improve patient awareness and responsibility of their health and chronic conditions. ICT will improve health services quality and efficiency. It will become easier for distant services to be made available and help meet demand, enhancing health service capacity and its accessibility. Telemedicine and eHealth applications in CDM should be expanded and their integration into the health
system should be worked out. The lack of agreed set of definitions and lack of interoperability and safety in sharing patient and medical data, gaps in the relevant legislation and financing difficulties are among the obstacles for widespread use of ICT and hence eHealth solutions [8]. Effective operation requires strong leadership at the national, regional and organizational level. The government’s regulatory and supervisory role is imperative for successful implementation. The deployment of ICT in health services is a major infrastructural investment and the adaptation by health service providers to this infrastructure should be supported. Implementation will incur additional costs for service providers. Reimbursement rules may encourage and support CDM activities and data-producing services. In order to support reimbursement decisions, a need for a detailed documentation of eHealth solutions that take place in CDM is required. More research is needed to explore areas in which eHealth can be used as a means to integrate various stages of CDM: health promotion, prevention, diagnosis, treatment, care and follow-up. The research should entail the costs and benefits of such solutions. In addition, tasks and responsibilities of all actors that may involve in this process including patients, risk groups, health workforce (doctors, nurses, nurse practitioners, liaison nurses, community nurses, health workers), specialist on medical informatics and information technologies should be described. More importantly, all stakeholders’ including patients, policy makers, payers, health professionals’ should be informed about benefits of these applications and programmes and research results should be disseminated widely.

References