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THE IMPACT OF eHEALTH ON THE EUROPEAN ECONOMY¹⁰

Healthcare systems are at risk due to increasing demand, spiralling costs, inconsistent and poor quality of care, and inefficient, poorly coordinated care processes. Governments are developing a variety of initiatives as a response and the promotion of eHealth deployment, often as part of broader strategies, represents one of them (OECD 2010). Indeed, information and communication technologies are having a transformative power in our societies, including healthcare. More and

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more, eHealth plays a relevant role inside care organisations and supporting home care.

In particular, the recently launched Digital Agenda for Europe (DAE) by the European Commission (EC) (EC 2010) as one of the seven flagship initiatives of the Europe 2020 Strategy (EC 2010b) tackles wider deployment and more effective use of digital technologies which will thus enable Europe to address its key challenges and will provide Europeans with a better quality of life through, for example, better healthcare. In addition, eHealth is regarded a powerful ally for good and affordable healthcare.

Today, the range of eHealth applications is enormous. The technology has progressed significantly and it is expected to deliver care that is higher in quality, safer, and more responsive to patients' needs and, at the same time, more efficient (appropriate, available, and less wasteful) (IoM 2001). Examples of eHealth applications are electronic health records, e-prescription, medical journals and databases on the internet, e-appointments, telehealthcare (such as remote doctors consultations through videoconferencing or remote patient monitoring) or systems on the internet to give feedback to doctors so they can improve the care they provide.

Although eHealth can be defined as just a tool, eHealth is the tool that allows recording, storing and sharing clinical information across care settings thus care professionals have access to timely and complete

information at the point of care to make the appropriate clinical decisions.

Despite the promise they hold out, eHealth implementation has proven to be a difficult undertaking. More than a decade of efforts provide a picture of significant public investments, notable successes and some highly publicised costly delays and failures. This is accompanied by a failure to achieve widespread understanding of the benefits of electronic record keeping and information exchange (Lluch 2011). Furthermore, due to major methodological challenges often leading to weak evidence, there is a large gap between the postulated and empirically demonstrated benefits of eHealth technologies (Black, Car et al. 2011).

The benefits of eHealth in care systems have so far been associated with both, increased quality of life and sustainability of care systems. In particular, these have been identified in the following areas:

Quality of life

- **Access:** eHealth is able to extend the scope of healthcare beyond its conventional boundaries. Often eHealth applications that improve access also result in more efficient delivery of care. An additional feature is that improved access is associated with a reduction on attendances to Accidents and Emergencies Departments. Improvements on access are reaped from

eAppointments which allows booking appointments online and reduce administrative burden. eAppointments services are often offered in parallel with call centres in order to avoid access inequalities and the combination of both have provided highly positive results. Access is also enhanced when patients securely message their practitioners with non-urgent queries and requests which in turn lead to efficiencies as phone calls or a medical appointment are avoided (ACP 2008). Telehealthcare also represents a major application in terms of improving access. For instance, remote patient monitoring (RMT) also involves a 24-hour phone service which greatly improves access to health advice and support (Lluch 2012). Teleconsultations also greatly improve access with the associated benefits on quality of care. For instance, a study trialling eHealth to reach underserved women with breast cancer found a significant benefit in four of the outcomes measured and thus concluded that improved access through eHealth resulted in better quality of life (Gustafson, McTavish et al. 2005).

- Safety and quality of care: by offering timely complete information to care professionals, eHealth can provide major improvements in patient safety and quality of care. eHealth may enhance the quality of healthcare for example by allowing comparisons between different providers, involving consumers as an additional player for quality assurance, and directing patient streams to the best quality providers. By

knowing a patient current medications or allergies, appropriate treatments are prescribed avoiding adverse reactions. Also, its role in supporting care continuum, allows identifying a patients response to a particular treatment and taking action accordingly, hence improving quality of care and paving the way to personalised medicine. For instance, a study of the Andalusia EHR and ePrescription systems found that the resulting quality gains represented approximately 17% of all benefits (Vatter, Jones et al. 2009).

Sustainability of care systems

- Efficiency and cash savings: efficiencies from eHealth can be reaped from avoided waste, increased productivity optimal resource utilisation. Examples of waste can be found in the duplication of tests or performance of unnecessary tests which are avoided when care providers have full clinical information for a patient through eHealth applications. ePrescription often provides excellent examples of productivity increase as it allows to prescribe for longer periods of time up to a year or for repeat prescriptions for patients with long-term conditions with the associated time savings. In addition, ePrescription often implemented alongside decision support systems, promote the prescription of generic drugs leading to an optimal resource utilisation with the associated cash savings from it (Boonstra, Boddy et al. 2004). For instance, the

same study above cited in Andalusia concluded that 80% of the benefits were associated with efficiencies and cash gains. These were the result of a reduction of more than 15% in GP visits for patients who had their first prescription using ePrescription for an episode of care; sustained cumulative cash savings from generic prescribing of some €37 million; reduction of non-attendances in outpatient specialised care of 10%; application of determined protocols and standards throughout the region which promote optimal resource utilisation; more efficient employment of health professionals along all healthcare services; reduced support costs of a centralised database replacing many local databases; and efficient appointments (Vatter, Jones et al. 2009).

- Keeping patients healthier in the community (living longer and decreasing healthcare consumption): improvements in quality of care associated with eHealth would translate into keeping patients healthier in the community by decreasing hospitalisations and bed-days. One of the most prominent examples is that provided by RMT. RMT are often used to monitor patients suffering from chronic conditions. Taking frequent measurements of certain parameters associated to their condition allows tracking evolution and ensuring their condition is appropriately managed. This prevents developing exacerbations or worsening of the condition which otherwise would result in (re)hospitalisations and a decrease in quality of life (Lluch 2012). RMT also allows

users to keep on with their daily activities and for those in the labour market, work absenteeism is decreased. For example, the most relevant findings related to the impact of telehealthcare are those from the Whole System Demonstrators in England (UK) (Ellis 2011). Their early indications showed that if used correctly telehealthcare can deliver a 15% reduction in A&E visits, a 20% reduction in emergency admissions, a 14% reduction in elective admissions, a 14% reduction in bed days and an 8% reduction in tariff costs. More strikingly they also demonstrate a 45% reduction in mortality rates (DoH 2011).

Thus, as seen, the benefits of eHealth in quality of life and in supporting sustainability of health systems are wide and of different nature. The economic benefits are not only limited to efficiencies and a decrease in healthcare utilisation which contribute to the sustainability of health systems. The economic benefits are also related to an improvement in the quality of life of citizens which ultimately result in increased labour productivity.

In addition, the eHealth industry represents a relevant sector in terms of innovation and job creation. In particular, job creation is not only limited to jobs directly generated by eHealth providers but also with new roles in the care sector that arise as a result of these innovations.

Other benefits from eHealth are those related to the unprecedented generation of big data which would allow for faster identification of adverse events (of particular relevance for new drugs released) and enhance the development of evidence based medicine as well as measure the effectiveness of specific interventions. Hence, it supports research and development in life sciences.

As seen in the examples provided, often the benefits of eHealth are more salient in patients suffering from chronic conditions. This very fact is of paramount relevance as these conditions are often associated to the elderly and demographic ageing is one of the most serious challenges Europe is facing. According to recent projections, the number of Europeans aged 65 and over will almost double over the next 50 years, from 85 million in 2010 to 155 million in 2060 (Eurostat 2011). Demographic ageing in Europe cannot be solved by cutting health budgets or raising the retirement age. The reinvention of health and social care is likely to be more effective. Such a new model needs to move away from a hospital centred model towards structures giving priority to service delivery in more suitable and efficient places (sub-acute hospitals, telehealth, etc.); from a model centred on acute medical care towards a model adapted to the needs of chronic patients; from a reactive model focused on curing towards a proactive model designed to care for and prevent; from a model based on providing care for a passive patient towards to a model

centred on a patient with an active role in managing his/her condition; and from a fragmented model, with inefficiencies and a lack of coordination between different levels of healthcare and social services towards a model enabling continuity of care through the integration of healthcare services and social welfare resources. eHealth plays a conducive role in achieving this reinvention. Furthermore, the role of eHealth in supporting active and healthy ageing is considered important both to improve the quality of life of elderly citizens and help them contribute to society as they grow older; and to reduce unsustainable pressure on health systems.

As a response, the European Commission has launched, among other initiatives, the European Innovation Partnerships within the Innovation Union, one of the flagship initiatives of the Europe 2020 strategy, with the objective of accelerating innovation to address a well-defined target within a grand societal challenge.

Of these partnerships, the European Innovation Partnership on Active and Healthy Ageing (EC 2011) has been selected as a pilot to tackle the challenge of an ageing population. It sets a target of increasing the healthy lifespan of EU citizens by 2 years by 2020, and aims to pursue a triple win for Europe by improving health and quality of life of older people, improving the sustainability and efficiency of care systems and creating growth and market opportunities for businesses. Smart

innovation with information and communication technologies can help us achieve this triple win, hence the prominent role of eHealth within the Partnership. Whether the eHealth vision is achieved or not is probably out of question, the matter is the timing which will define when these benefits will be reaped.

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