Chapter 5
Technology for Integrated eCare

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ABSTRACT

Today, healthcare and social care services are often delivered independently. This can lead to inefficiencies, duplication of resources, and potentially to reduced levels of care quality. Older people are particularly affected by this situation, since they often need both types of services, such as support with daily living activities and chronic disease management. At the same time, the potential of Information and Communication Technology (ICT) to support integrated service delivery remains largely unexploited. Against this background, many are the technologies that might offer a suitable canvas for integrated care, particularly to more vulnerable social groups. The main goal of this chapter is to provide insight into the most promising technologies for facilitation of integrated care, such as Ambient Intelligence, Internet of Things, Robotics, Service Platforms, etc., and to discuss the potential of combined technologies to yield efficient and well-accepted solutions.

INTRODUCTION

The entire population of the world was, at one time, self-sufficient. They made their own clothing, tools, weapons, boats, huts, and food. When work became more complex, there was a growing need for people to build up experience in a specific field, like farming, manufacturing, weaving clothes and nursing. By doing a certain task on a daily basis, people developed professional skills and due to centralising and scaling-up, it became worthwhile to invest in tools and equipment. During the centuries, the world grew more sophisticated and professions were divided in more in-depth and narrow specialties. Consequently, for each job people are dependent on a different specialist. When building a house for example, you need an architect, a bricklayer, a carpenter, a plumber, an electrician, a plasterer, a painter, and many more. Also for different health and social care services, you are dependent on a wide range of organisations and experts, resulting in fragmented care delivery.

When growing older, a transition is made from personal autonomy towards being in need of care. Theoretically, individuals enter care at the lowest level capable of addressing their prob-

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lem, and advance to higher levels only as their problems become more complex and demanding. The continuum of care refers not only to how the range of services available within the health care sector (and to some extent, outside it) available address all health and wellbeing needs, but it is also important to what degree the offered care is coherent and linked, in turn depending on the quality of information flow, interpersonal skills and its coordination. In this care continuum, barriers between medical care, social care, informal care and self-care will vanish, and support will be much more dependent on patients and their own networks. Especially for patients suffering from chronic diseases a shift takes place from cure to care. Patients have to live with their conditions, and are willing to participate in society as much as possible. The present chapter is organized in such a way as to indicate the way to independency through ICT interventions. The following section is dedicated to technological developments in all relevant fields followed by a section dedicated to already applied technologies. A comparison of the two as well as a methodological roadmap towards the optimum solutions is discussed in the last section entitled lessons learned and conclusions. Finally a references section is included to facilitate further reading on selected topics.

TECHNOLOGICAL DEVELOPMENTS

Many technologies, ranging from house automation, telemonitoring equipment, service platforms to robots and smart textiles offer great opportunities to prolong health, active and dignified living. To enable self-management, social and informal carers, who need to be in contact with professional carers and be well informed about the health condition of their loved-ones, have a need for tools to receive this support. Online medical records are an ideal medium to share and exchange health-related information between all involved parties. Besides, social media, online communities and various services can assist informal carers and lower the burden upon them. Other technologies like surveillance equipment, online follow-up and video-call functionality increase the level of perceived safety for both the patient and the informal carer.

Technology can play an important, functional and supportive role in today’s care delivery. Nevertheless, well-thought usage and implementation is crucial especially with respect to safety and quality of life. Additionally, requirements and conditions need to be formulated based on opportunities and risks for technology implementation. Benefits for clients or patients are evident. It becomes more and more normal to monitor how care-dependent clients behave in their houses. Moreover, technology-driven solutions are nowadays often recommended to replace less human-friendly manners of restricting people like bed rails or confinement.

Many solutions applied in the care process are ICT-based. Thanks to the continuously growing potential of ICT, many new products are developed and implemented. Frequently, proven technologies are combined and applied for care delivery purposes. This in mind, this chapter presents various relevant technical details, but in order to showcase the applicability of technologies in the care sector.

Crucial, innovative medical-technological developments are expected in the fields of diagnosis, treatment and house automation. These changes will largely impact quality of life, quality of care and efficiency of care delivery. The care sector needs to make large steps towards ICT in the coming years. It is of great importance for care organisations to understand the consequences of technological innovation for their own service delivery. For gaining this knowledge and expertise, we see – in recent years – the trend of care organisations turning to technology providers with a proven record not only of technical competence but also of applying innovation.
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