Personal health networks

prof.dr. René Bakker, HAN University of Applied Sciences, The Netherlands, rene.bakker@han.nl

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Invitation

This paper is only an initial draft. This paper would benefit very much from your remarks, ideas, improvements and extensions, see http://wp.me/p2ov3p-3!

Abstract

Demographic developments in The Netherlands show that in a period of ten years we will have more seniors and less young adults. This will lead to increasing demands to health care. In this paper we describe personal health networks in which people control information and communication about their own health and its effects on health care.

Introduction

As in all western countries the costs of health care in The Netherlands are high. The costs will further increase due to demographic trends (more older and longer living people) as medical costs of older people are above average.

Changes in Dutch health care will be required to meet this demographic developments. One direction of change is currently explored in Health 2.0, see e.g. (Vincent Engelen TEDxMaastricht [2011]). In Health 2.0, social media is used both in the relation between professional staff and patients as well as in community development between patients. Central to Health 2.0 is a shift from medical staff as center of hope and medical wisdom to a medical service provider. People will make up their own mind and will be more self-supporting. This paradigm shift requires novel approaches to decision making, privacy protection (medical, social and personal data), business models in health care etc.

This shift leads to networks surrounding an older person with professionals in health care, family, neighbors and friends. The senior controls information and communication in the network. This is a personal health network. This personal network can be connected to other networks. Professionals can be connected to many personal health networks. In this way, health networks are formed consisting of personal health networks. In this paper we focus on personal health networks.

The Dutch project ZWIP (www.zwip.nl) is directed at building the infrastructure for personal health networks in the region Gelderland.

Personal health networks will reduce costs of health care. Contributing factors are:

- better informed patients (reducing time in professional explanation),
- quicker recovery of patients by community support
- less medical actions
- less professional support

The long-term effects of Health 2.0 and its costs, still have to be studied.

In this paper, we will describe key aspects of personal health networks in more detail and identify major challenges. We focus on technology, business models, decision making, and privacy.

Technology

Required technology for personal health networks consists of internet technology and possibly a personal device for authentication.

In The Netherlands, the availability of broad band internet at home is abundant. Many older people use broadband internet although not everyone uses a PC, notebook, tablet or smart phone. In the development of health networks, it is important that a large group of people can participate. From a technological point of view, this is the case. Currently devices like a smart phone (receiving a TAN-code), smart card, fingerprint, iris- or voice recognition are used for authentication in higher level security applications.

People use different social networks for different activities. A personal health network is just one more network with specific services. It should easily be connected to other services.

Finally, the technological development (devices, software, sensors) are developing at high speed. For personal health networks, it can be expected that technology will change rapidly. As a result the ICT services should be flexible.

Flexible business models

Business models for personal health networks still have to be developed. New services will be delivered in health networks, such as online advice (individual and in groups). Health networks require investments for development and implementation and there are operational costs for management and support. The financial revenues consists of less medical costs.

In developing health networks, we expect that users will demand additional services or use services in unexpected ways. The business models and the services in health networks should cope with modifications. As a result, flexibility is a main requirement.

Decision Making

Combining information from different sources, assessing its reliability and relevance, dealing with conflicting information, and deciding in time is rather complex for a senior in a health network. In practice, partner, children, professionals and other trusted members in a community may play a vital role in personal decision making.

Although technical developments for finding and combining evidence are breath-taking (see for example IBM's Watson playing Jeopardy!), it is not clear if rational decision support will be relevant in personal decision making. It is still a research issue how to support an elder person and his/her advisors in personal decision making. Functionality that clearly shows alternatives, the persons or information in the network that support an alternative, and its consequences would always be part of the services that support decision making.

Privacy

In personal health networks communication and information is used and can be stored in decision making. Personal and medical information should be used and stored in accordance to Dutch and European legislation. This requires development of policies for access, use and storage of this information, and an active monitoring on proper use of these policies, and probably user support and training.

Professionals are used to a code of conduct for using and storing medical information. Older patients, their family and friends usually not.

Conclusion

Personal health networks could be an important step towards future health care. They provide in information and communication sharing between patients, their friends and family and professionals. Challenges to personal health networks consists of services for personal and shared decision and developing and implementing policies for privacy and medical information. Personal health networks will only be useful when appropriate business cases are developed.

References

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Links

http://tedx.vpro.nl/maastricht-2011/event/Lucien-Engelen.html
http://zwip.nl
http://wp.me/p2ov3p-3

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