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Personal Health Systems – Opportunities and Barriers for Adoption

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INCREASING prevalence of lifestyle-related health risks and chronic diseases, coupled with limited resources in the healthcare system, calls for citizen-centric health promotion and disease prevention measures as well as new care models for management of chronic diseases. As a future scenario emphasis of the health care should gradually shift from treating and managing of diseases to their prevention and early interventions. The risk of chronic diseases begins to rise and physical capacity begins to decline after the age of 30. Therefore, working-age citizens are an important target group for health promotion and early interventions.

Sustained healthy behaviors, such as balanced nutrition, sufficient physical activity, non-smoking, and moderate alcohol consumption, are essential both in chronic disease management and in maintaining health and preventing diseases. Long-term compliance to healthy behaviors is usually low as it requires long-term effort and persistence, and often means forgoing immediate pleasurable experiences for benefits that realize only after months or years of living healthily. However, long-term individual or group-based health promotion programs, as they are delivered today i.e. face-to-face meetings and health coaching, are not feasible due to their high cost, and therefore citizens inevitably must take more responsibility for their own health and wellbeing.

Promoting behavioral change requires understanding and models beyond medical standards. Especially, behavioral sciences and psychological therapies, such as cognitive-behavioral therapies, provide methods for supporting self-management of health. Self-management therapies equip individuals with strategies and skills for managing their behavior and give them the responsibility for applying the methods in real-life situations, including health related behaviors. Self-monitoring is a core method in self-management. This gives an opportunity for technology support for behavioral change.

Personal Health Systems (PHS) may be used for supporting psychological therapies, self-management of chronic diseases, and behavioral change. Especially Web-based programs have been successfully utilized for facilitating self-monitoring, distribution of information, and communications between clients and healthcare professionals. More recently, the focus has started to turn towards mobile devices and health monitoring tools. By combining different technologies

into a comprehensive toolbox of methods for health management, providing the citizen freedom to choose which of them to use, and offering him a specifically designed technology supported intervention program, has proved as a successful strategy. In this presentation, some of these results are reviewed.

Evidence from several large scale projects suggests that PHS indeed has a great potential in improving reach of care, lowering the threshold to care and coaching, and improving efficiency of use of professional's working time. In addition, PHS aided programs have resulted in favorable health behavior outcomes with reasonable cost. Despite these encouraging results, large scale deployment of PHS is still in its infancy.

Some main barriers for large scale deployment of PHS for chronic disease management, health risk reduction, disease prevention and health promotion may be identified. First, despite several studies with favorable outcomes, the evidence for the cost-efficiency and improved health outcomes is still under dispute and therefore should still be strengthened through large scale deployment studies with sufficient power and adequate design. Second, current service delivery models and processes are not designed to optimally utilize PHS. Iteration and co-engineering of services and technologies should be fostered while it is often the service engineering which is the bottleneck in the PHS based solutions. Third, related business and reimbursement models are highly immature and also varying from a country to another. A global market place for PHS should be built to allow return of investment for the technology development.

Finally, there exist also several technology related barriers which should be tackled. These include especially design issues and data interpretation and decision making challenges. The former relates to the notion that PHS are being used by the citizen by their own will within their everyday life, and therefore highly attracting, personally relevant design requirements should be prioritized over medical performance in many scenarios. Lessons from persuasive design and behavioral economics should be learned and applied in PHS design. The latter notion of data interpretation challenge refers to lacking understanding of how the data collected with PHS should be interpreted and utilized in the health related decision making. Addressing this challenge will require not only development of intelligent algorithms for automatic data processing and analysis, but properly designed studies which will generate data to allow mapping the PHS data to real changes in health and wellness in a representative population.

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