

## #10 – Keeping People with Chronic Diseases Healthy in 2039

### ***A virtual health system keeps us healthy***

#### **Forecasts:**

- **In 2039 virtual technologies support self-care as the predominant mode of health care delivery.**
- **The Health Advocate Avatar works with its master to prevent or effectively manage disease and to achieve a healthy life.**
- **Extensive disease knowledge is applied to health interventions that are prospective, proactive, customized and continually adaptive with superb outcomes.**

Management of health in 2039 evolved from the principles of the “Health Home” that revolutionized care in the second decade of the 21<sup>st</sup> century. The principles of the health system include:

- Maintain individual and societal health through prevention and health education.
- Use knowledge technologies for life-long continuity of integrated and coordinated team care.
- Empower self care through coaching and assistive technologies geared to your understanding.
- Provide convenient, compassionate care customized to individuals’ needs and values.
- Design incentives to drive continuous improvements in quality, safety, and value.
- Provide equitable care for all Americans, families and communities.
- Deliver care in a continuum of convenient settings so health is supported everywhere.

In 2039 about 60% of Americans take the lead role in self-management of health activities with support from a citizen-centered health system that operates through healthy communities. Those who are unable or unready to fully care for themselves find providers applying aggressive coaching and incentives which achieve respectable outcomes about 55% of the time. Providers and knowledge networks continuously learn to improve the likelihood of healthy outcomes. In all cases, the health system shares responsibility with communities and families for creating a healthy America. Patients are never left alone with total responsibility for their health.

Advanced technology has been incorporated into all aspects of daily living. The consumer is the master of her own personal health and the Health Advocate Avatar is her faithful assistant. This digital knowledge entity works through a compelling interactive “personality” to provide continuous monitoring, coaching, advice and support to serve the unique needs of its master. It learns to help the master comply with therapies, reminds her to take medicines, and uses persuasion to encourage healthy behavior. The avatar has access to its master’s comprehensive personal health record, knowledge of her needs and preferences, and the accumulated wisdom of health databases, evidence-based knowledge and consolidated opinions of the world’s experts.

Biosensors worn on the body or embedded in the environment continuously track the master’s physiological and psychological health status and behaviors. This data provide a comprehensive ongoing picture of all aspects of health and allows detection of minute changes in disease risk. The avatar proactively investigates any abnormality and takes automatic action within parameters determined by the master and his care team. (Actions are also assessed by the avatar’s fail-safe monitor to ensure that no harm is done.) The avatar provides information to the health home and sets up virtual encounters or

interventions as required. The health team also directs the avatar in specific tasks to support its master, such as starting a new therapy. Face-to-face visits with health providers are seldom necessary for most consumers.

Integrated knowledge of health and disease at the biological, behavioral, environmental, and social levels has been applied to serve the individual's unique metabolism, disease threats and preferences. Health interventions are prospective, proactive, customized and continually adaptive. The ability of the master users to understand and support health is continuously appraised. Disease risks are forecast and preemptively addressed through comprehensive levers promoting behavior change and targeted therapeutics. Pre-disease is treated before clinical symptoms develop. Chronic diseases are eliminated if possible and treated to achieve a long, high-quality life when a cure is not available.

Through in-home diagnostic tests, virtual visits, delivery of therapeutics and digital health support (e.g. the Health Advocate Avatar), the home – with virtual reality – has become the center of health care. Easily accessible ambulatory health capacities in the workplace and shopping areas are the preferred location for about 20% of care. A small number of geographically distributed high-capacity hospitals provide for about 2% of care while assisted living venues provide for another 3%.

Although individuals are usually the center of assisted health management, a collaborative team of health professionals provides education, coaching and compassion as required to address health issues. Health delivery is financed and incentivized to do the right things to meet each individual's needs and to achieve the best health outcomes. For those unfortunate customers with complex health issues or who need tailored assistive solutions, the health home brings together the right expertise. For example, an elderly person might work with a collaborative team that includes a physical therapist, occupational therapist, orthotist and device manufacturer which produces a custom assistive appliance that supports living independently at home. These collaborations often take place in virtual space.

The health home offers a collaborative network of providers, customers, avatars and other smart agents that self-monitors for safety, quality and value. Its core intelligence supports leadership in identifying deficiencies and opportunities to improve performance at the individual, community and systems levels. This network organization has a set of core values, strategic goals with actionable targets and a learning culture that continuously improves the health of its members and society.

A network of public health leaders serves a similar role for the entire population. Every day they meet in what is jokingly called the "Avatar Conclave" to conduct ongoing privacy-protected monitoring of the massive data from all digital health activities. They identify health risks to address with the goal of "designing as much disease as possible out of society." Their solutions involve education, policy changes, new therapies and efforts to change behavior for individuals, families, communities and society. Their mission is a healthy society able to contribute to a sustainable global economy.

### **Further Reading:**

- Institute for Alternative Futures, Healthcare That Works for All: Healthcare Delivery in 2019. [www.altfutures.com/2019\\_Healthcare\\_That\\_Works\\_For\\_All](http://www.altfutures.com/2019_Healthcare_That_Works_For_All)
- Institute for Alternative Futures, *The 2029 Project: Achieving an Ethical Future for Biomedical R&D*, [www.altfutures.com/2029.asp](http://www.altfutures.com/2029.asp)
- Asimov, I., I Robot. [http://en.wikipedia.org/wiki/Three\\_Laws\\_of\\_Robotics](http://en.wikipedia.org/wiki/Three_Laws_of_Robotics).