

Fewer healthcare professionals needed to meet society's health needs

Forecasts:

- **Healthcare manpower requirements in 2039 are much lower than anticipated and are fully met through the synergies of smart self care with a wide range of health professionals.**
- **Assistive knowledge technologies, biomonitoring, robotics and smart therapies free up health professionals to be attentive to patient needs even with reduced staffing level standards.**

Several 21st century trends shaped the manpower mix and professional roles we see in 2039 and assure sufficient staff for a larger, older population.

1. Consumer empowerment with personal responsibility for health
2. Advances in knowledge technologies, robotics, biomonitoring and health interventions which reduce the need for human interfaces
3. Shift to collaborative team care in well managed health systems
4. Utilizing the right person or technology for each task driven by effectiveness and efficiency
5. Changes in licensure and credentialing supportive of efficient use of personnel
6. Globalization of health care delivery driven by knowledge technologies and competition
7. Expansion of the definition of health with a multitude of new professional players
8. Advances in education and training

In 2039 the individual patient is at the center of managing his or her personal health. Society focuses on helping individuals, families and communities improve health. Education at all levels support knowledge in health matters, so most people feel very comfortable using a huge range of knowledge technologies and assistive devices to manage health. Smart digital health agents provide constant surveillance and subtle interventions in the form of video coaching and automatically administered interventions to keep the individual healthy. Gone are the days of the quarterly visit to the doctor because medicine is practiced continuously in real-time. The personal health avatar (artificial intelligence with a human-like interface) provides a real-time virtual reality relationship for health management and coaching. Summaries of monitoring and interventions are also sent to accountable health providers, such as the "health home" comprehensive primary care team, so professionals can communicate and periodically see the patient.

Collaborative teams of health professionals share responsibility for patient care. These teams identify the most effective and efficient member, who intervenes at the right time for evaluation, treatment or coaching. A range of non-physician providers such as doctors of nursing practice, dietitians, nurse educators, and psychologists provide the majority of hands-on care with physician specialists intervening only when needed in the care continuum. The trained team leader (who is usually a non-physician) is accountable for high quality, effective outcomes, and is skilled in orchestrating interventions of team members.

Robotics and other assistive technologies help move and bathe hospitalized patients, even supporting activities of daily living for frail elderly at home. Technologies such as imaging devices come to patients' hospital rooms so they do not have to be transported to the radiology department. Devices help ensure patients take the right medications on time. Remote sensors are ubiquitous in rooms and clothing,

where they track vital signs and activities, automatically recording the data in the electronic health record. Staff entries are reduced to occasional, but important observations. Telepresence and virtual environment encounters permit staff and family members to interact with patients without having to physically travel to the hospital room or home. Robotic assistance for minimally invasive surgical procedures dramatically improves technical results and reduces convalescence while cutting the need for supporting staff. Digital avatar health coaches provide anytime patient support anywhere. They manage chronic diseases and provide health advice so encounters with human medical professionals are significantly reduced. All these user-friendly technologies have improved health outcomes while eliminating staff “busy work.”

Interconnected knowledge technologies with vast databases also support high-level decision making through smart agents that constantly provide input to providers. These smart agents keep professionals up to date on the latest knowledge in their specialties, offer prompts for needed interventions and provide decision support for complex medical problems such as analysis of an individual’s genetic profile or personalized strategies for healthy living and management of difficult diseases.

Sophisticated staffing needs assessment shapes educational capacities. Models and simulations show job opportunities and match supply with demand for healthcare professions while accounting for geographic preferences. These efforts successfully manage the availability and skills mix of professionals in the marketplace. Primary and preventive care specialists comprise half of the 2039 health workforce, and there is neither a significant shortage nor surplus of any health specialty in America. Educational programs use a wide range of virtual “real life” simulations to teach both technical skills and interpersonal skills. Realistic simulations also are used to certify competence on an ongoing basis, with targeted training provided for any shortfalls.

The mix of professional providers has expanded with a wide range of health expertise, including complementary and alternative medical practitioners. Licensing and credentialing laws are uniform throughout the US and are based on documented competency to provide certain skills. Care is financed by a global fee for a year of primary care or complete episode of specialty services, so there is an incentive to use the most effective low-cost professional for each component of the care continuum. Providers work in collaborative teams, usually as salaried members of a single health system. Their pay is equitably balanced to account for level of skill and effort, with significant bonuses available for all team members based on objective outcomes and patient satisfaction. Global professional education with common standards makes international virtual care more popular, creating job opportunities for those interested in working in different cultures.

In 2039, people are attracted to a wide variety of health professions because of strong collaboration and trust, patient satisfaction, societal appreciation, and an appropriate level of salary and benefits.

Further Reading:

- IOM, *Retooling for an Aging America, Building the Health Care Workforce*, <http://www.iom.edu/CMS/3809/40113/53452.aspx?printfriendly=true>
- Edwin, Droid could enter the healthcare workforce in future, 3/31/07, <http://www.coolest-gadgets.com/20070331/droid-could-enter-healthcare-workforce-in-future/>
- Masys, Effects of Current and Future Information Technologies on the Health Care Workforce, *Health Affairs* 2002;21:33-41.
- Association of American Medical Colleges, 2020 Vision: Focusing on the Future - 2006 Physician Workforce Research Conference, <http://www.aamc.org/workforce/pwrc06/start.htm>