

ATP-Funded Projects in Telehealth

Telehealth uses telecommunications and information technologies to provide health care services at a distance, including public health, consumer health information, and health professional education. Telehealth is both a technology and technique for increasing access to health care. Tens of thousands of Americans currently use telehealth remotely from medically-underserved areas such as Native American reservations, VA hospitals, prisons and rural communities. Many more are being diagnosed, treated and monitored on ships at sea, battlefields and in urban centers.

ATP's Investment in Telehealth

This fact sheet provides information about awards funded by the Advanced Technology Program (ATP) to develop healthcare information technologies or telehealth. Telehealth allows for a seamless, evidence-based continuum of care to be delivered to the patient when and where it is desired. In addition, it allows the healthcare community to work in a collaborative manner to deliver treatment.

ATP specifically targeted healthcare information technologies in a series of three focused programs held between 1994 and 1997, in which 221 proposals were received and 32 awards were made to 79 participants. Research and Development funding totaled \$295 million, representing a commitment of \$146 million from the government and \$149 million from the private sector. Since 1998, when the focused program concluded, ATP has funded an additional 9 projects in telehealth representing a commitment of \$24 million from the government and \$15 million from the private sector.

ATP projects may be grouped by the Institute of Medicine's recommended categories:¹

1. Delivery of care based on continuous healing relationships (patient monitoring and caregiver training)

*Health Object Library ON-line Project (HOLON). Koop Foundation, Inc. Rockville, MD.
(Award period: 1995 to 1999)*

Families of low birth weight infants, using personal computers, can communicate with the staff of the neonatal intensive care unit. They can retrieve medical information and observe the neonatal care, check on the baby's progress, and learn how to care for the baby at home. This web based technology provides information directly from the physician. It is currently in use at Children's Hospital Boston, MA.

¹ "Crossing the Quality Chasm:" The National Academy of Science. March 2001.

A New Concept for Minimally Invasive Surgical Training Using Robotics and Tele-Collaboration. Intuitive Surgical. Goleta, CA. (Award period: 2001 to 2004)

A unique robot control system allows a mentoring surgeon and a student to simultaneously control a surgical robot performing minimally invasive surgical procedures. A key innovation is a force-feedback system in the controls that gives each surgeon tactile feedback of the motions of the other -- exactly as if the experienced surgeon were holding the hand of the student and guiding it. Commercialization is expected in the near future.

2. Customized care according to patient needs and values

Pharmacogenomic Prediction Drug Therapy. Prediction Sciences, LLC. La Jolla, CA (Award period: 2002 to 2005)

Using decision-support tools, physicians are able to predict drug reactions, drug efficacy, and tailor dosage ranges based on a patient's individual characteristics. The information obtained about a patient's biological pathways will reduce the time needed to adjust medications and significantly improve the quality of life for patients suffering from diseases that currently require more than a year of trial and error to find the optimum medication dosage.

Prediction Sciences is currently in the process of out-licensing the first technology developed under the ATP award, a treatment for bipolar disorder, under the product name GeneRx. A second technology developed under the same product name and offering a treatment for breast cancer, as well as a third technology RapidResponse c-Fn, are currently in Phase III clinical testing.

Computer Aided Medical Planning: A New Paradigm in Vascular Intervention. ANSYS, Inc. Sunnyvale, CA. (Award period: 1997 to 2000)

Medical planning software enables physicians to evaluate vascular patients, identify potential hazards a patient might face, and predict the feasibility and compare outcomes of various treatments--all before beginning treatment. The software is commercially available.

Kine-assist for Physical Therapists. Chicago PT, LLC. Evanston, IL (Award period: 2003 to 2005)

Physical therapists can provide better patient care and increase patient and therapist safety by using Kine-assist technology. Kine-assist is a robotic tool that assists therapists in providing safe and challenging exercises to patients in a number of environments with reduced concern about falls. Information about how the patient responds to given therapies are automatically recorded and used to understand what therapies work best for various conditions. Two beta test sites are planned for late 2007.

3. Patient control of care information.

An Expert Knowledge Server With a General Vocabulary Server Interface. Atmedica., Salt Lake City, UT (Award period: 1995 to 1998)

A major challenge for existing decision support systems is the ability to acquire and integrate medical knowledge containing patient information from a variety of databases. Atmedica has developed a software program that enables the care provider to author as well as deliver

patient health assessments through a web-based user friendly interface. The software is commercially available.

A spin off from this work can be found operating behind the patient medical encyclopedia available at the National Library of Medicine, and a variety of health risk assessments are available at over 20 health plan web sites.

Healthcare Lifetime Data Repository Infrastructure. 3M Company, Health Information Systems. St. Paul, MN (Award period: 1995 to 1998)

A data dictionary enables the retrieval and storage of complex medical information from a variety of databases enabling a code translator to provide easy translation from one medical coding system to another. This facilitates the implementation of electronic medical records in individual healthcare enterprises. 3M succeeded in doing this with the development of the "Lifetime Data Repository."

The Lifetime Data Repository is currently in use by a number of private health systems and forms the basis of the Department of Defense Military Health System electronic medical record.

4. Evidence based decision-making

Methodologies for Automating Clinical Practice Guidelines. Cerner Corporation. Kansas City, MO (Award period: 1995 to 1997)

Data collected from patient records created during a clinical exam is stored, retrievable, and available to develop managed care practices specific to a patient. Stored data can be analyzed to create software for real-time decision-support systems, identifying information relevant to preferred treatments, guidelines, and surgical procedures. The core ideas from this project remain in their main product lines enabling the development of new technologies.

A Distributed Information Architecture for Clinical Practice and Medical Research. Medaxis Corporation. Los Angeles, CA (Award period: 2003 to 2006)

Information architecture technologies enable physicians and researchers to retrieve pieces of patient information from varied electronic medical records, regardless of database, data type, or definition. Medical data is then linked and compiled in a format that supports diagnosis and treatment decisions. Technologies from this project are added to the existing product line upon completion of testing thus contributing to additional uses.

Standards-Based Interoperable Guideline Systems. GE Healthcare. Rockville, MD (Award period: 2001 to 2006)

Shareable Active Guidelines Environment (SAGE) technology provides medical experts the opportunity to author and encode guidelines in a standard, computable, electronic format. Healthcare organizations can then deploy the medical guidelines to any standards-conforming information system. This approach enables healthcare organizations to select guidelines that conform to their standards and needs and import them into their own clinical information systems. The software has recently completed beta- testing and is expected to be available for commercial use in the near future.

Highlights from ATP's Economic Studies

Economic Assessment Office



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