

# eHealth Broadband Adoption Program

## Compendium: Initiative Overview



**About CHT:** The Center for Health & Technology is recognized for advancing innovation in technology-enabled clinical care, informatics research and health education.

**About CTN:** The mission of the California Telehealth Network is to promote advanced information technologies and services to improve access to high quality healthcare focusing on medically underserved and rural Californians.

For more information visit:

<http://www.ucdmc.ucdavis.edu/cht/>

<http://www.caltelehealth.org/>

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*“If we could design the future, we would have information at the right place at the right time, but this would be dependent on our ability to escalate the intersection points of all the technologies in the field - Health Information Exchange, Electronic Health Records and Telehealth that are currently siloed. When a care provider can couple accurate, timely information through an EHR with a telehealth specialty consult about care decisions, the vision of technology-enabled health care is actualized.”*

*Tom Nesbitt, MD, MPH, Associate Vice Chancellor, Strategic Technologies and Alliances; Director, Center for Health and Technology; UC Davis Health System*

## eHealth Broadband Adoption Program Initiative Overview

### Introduction

The University of California Davis, leading a partnership of funders,<sup>1</sup> training and education organizations<sup>2</sup> and local communities,<sup>3</sup> implemented a \$13.8 million

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<sup>1</sup> Funding partners include National Coalition for Health Integration, The California HealthCare Foundation, United HealthCare, the University of California, the California Emerging Technology Fund and the California Teleconnect Fund.

<sup>2</sup> Training partners include California Community Colleges, California State Library, UC Division of Agriculture & Natural Resources, UC Davis Extension, California Health Information Partnership & Services Organization, UC Davis Health Informatics, The California Rural Indian Health Board, Inc., California Telehealth Resource Center and the UC Davis Center for Health & Technology.

<sup>3</sup> Model Communities include Access El Dorado, Alameda County, California Rural Indian Health Board, Community Hospital of San Bernardino, College of the Siskiyou, Connecting to Care Modoc, Connecting to Care Sierra Nevada, Front Porch Center for Technology, LA Care, North Coast Clinics Network, Plumas District Hospital, Redwood MedNet, Southern Sierra Telehealth Network, Venice Family Clinics, UCSF/SFCCC.

program to increase adoption of broadband-enabled eHealth technology and sustain California’s Federal Communications Commission-funded broadband network. Recovery Act funding of \$9.1 million from the Department of Commerce, Broadband Technology Opportunities Program was matched with \$4.7 million of local funding to support California’s far-reaching eHealth Broadband Adoption Initiative (Initiative).

From its inception, the program aspired to deliver more than stable broadband connectivity. Built on strategic lessons gained as an early adopter of telehealth services, the University and its partners conceived an initiative that would marry stable, medical grade broadband connectivity with resources for eHealth equipment, provider and consumer education and support for local collaborative partnerships to ensure implementation of new eHealth applications and the organizational and practice changes required for success.

The initiative supported the following strategies:

- Low cost access to a statewide managed, medical grade broadband network through the California Telehealth Network;
- Online and community-based training programs focused on broadband dependent technologies for organizations, consumers, information technology and health care professionals; and,
- Model eHealth Community Project support for equipment and implementation.

This paper is part of a project compendium that includes a series of papers and four video presentations of Model Community projects.<sup>4</sup> Together, the reports compile accomplishments, challenges and lessons-learned from a review of data, grant reports, focus group discussion and interviews with state and local community partners. The Initiative did not include a formal evaluation or research. This paper looks at the Initiative from a statewide perspective and offers overarching themes. Companion papers include an inventory description of Model eHealth Communities, Model eHealth Community lessons and challenges and an essay on the Initiative’s contributions to improved health and health care.

### **Successes and Challenges: Statewide Strategies**

#### **Long Term Outcome**

Low cost, reliable broadband access, eHealth equipment distribution, technology-dependent training, consumer education and broad community partnerships will demonstrate improvements that support sustained adoption.

Much has been accomplished over the course of the grant period. Partners and grantees interviewed for this report commented that the connectivity, equipment and training provided through the project

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<sup>4</sup> eHealth Broadband Adoption Program Initiative Overview, Model eHealth Communities: Lessons Learned, Model eHealth Communities Inventory, eHealth Broadband Adoption Initiative and Improved Care. Videos of Alameda Juvenile Justice, Front Porch, Connecting to Care and ACCEL are available at : [www.ucdmc.ucdavis.edu/cht/initiatives/eHealthTraining.html](http://www.ucdmc.ucdavis.edu/cht/initiatives/eHealthTraining.html)

resulted in immediate benefits and have set the stage for continuing expansion as provider take-up grows and new eHealth applications are implemented. Partners and grantees of the Initiative provided candid reflections on their achievements and challenges that are shared here.

**Low cost access to medical grade broadband connectivity:** A key success of Initiative funding was the launch and early operational support for the California Telehealth Network (CTN), whose mission is to expand the use of advanced information technologies in healthcare to improve access for underserved communities across the state. Initially designed and operational as part of the University of California, the CTN was transitioned, as planned, to an independent and more nimble nonprofit entity essential to its sustainability. The network offers a variety of technology-enabled services to providers in urban centers as well as rural communities – an important feature given the size and diversity of the state of California.

Leveraging Initiative support, private funders and Federal Communication Commission (FCC) resources, each Model Community included at least three CTN members as a way of expanding low cost access to a medical grade broadband network and simultaneously supporting sustainability of the CTN through expansion from 100 to 863 sites. While long term sustainability of the CTN remains challenging, the organization achieved high visibility in a short span of time and is delivering high speed, stable connectivity, resolving the dropped connections and slow connectivity that hindered progress prior to the grant. It is notable that, in spite of service maps to the contrary, access to broadband for some very remote, frontier areas of California remains unavailable. The CTN continues to advocate for coverage in these areas and search for alternatives.

**Distribution of telehealth equipment:** Distribution of over \$4 million of telehealth equipment was provided to Model Community partners. Sites had autonomy to identify and request a broad range of eHealth equipment. In many cases, sites had strong internal technical expertise or requested technical assistance and proceeded to implementation of services once equipment was received. In other cases, the independent assessment and request of equipment led to challenges. Sites ordered equipment too large for the designated location or did not match the identified telehealth needs and equipment was delivered to remote locations where CTN service was not available. Sites also received equipment and then discovered that expensive firewall software would be required to use the equipment. The California Telehealth Resource Center, housed within the California Telehealth Network, added technical assistance resources using levered funding from United HealthCare to work individually with sites on these and related challenges and remains a resource for communities.

**Online training and education:** Recognizing the necessity for new knowledge and skills as part of successful eHealth adoption, the Initiative included multiple avenues for training and education targeting current health professionals, community organization staff, libraries, consumers and future health and technology professionals enrolled in community colleges. First, to support the transition to technology-enabled health and health care, academic and community-based educators, instructional design experts and tribal representatives developed more than 30 hours

of online training covering seven different topic areas such as Telehealth and Change Management.<sup>5</sup> Grantees familiar with the courses gave them high marks, “Online classes thru UCD were amazing and put me on the right track”, yet the numbers of unique users were lower than expected (939 viewed at least one course). The courses will remain available following the end of the grant period until outdated or no longer relevant.

Second, to educate future health industry workers, new curricula were developed for community college health professional and information technology courses(see list in appendix). Curricula modules, generally 60 minutes, are delivered as part of existing coursework in community college courses through medical assistant, nursing or computer science courses. The curricula were well received and successfully implemented in information technology courses but less so for health care professional education courses. Technology instructors and students embraced the modules as a way to prepare for growing technology job opportunities in health care. However, because it was not easy to find the right curricula partner, some curricula were released too close to the start of classes to be incorporated easily into teaching plans. The rigid requirements for health curricula content also made it difficult for instructors to incorporate information beyond what is mandated. In spite of challenges, almost 30,000 individuals have received close to 800 hours of training in 19 different colleges and this number will likely increase in the future<sup>6</sup>. Courses were also developed for professionals currently in the work force, such as nurses and librarians, to facilitate adoption. For health care professions, a free online continuing education self-study course is now available through the Board of Registered Nurses. This course was completed by 1,029 nurses to date and continues to grow. Finally, the online, self paced, *eHealth Training for Public Libraries* has been delivered to 356 staff in 144 libraries in 34 counties.

A statewide Telehealth Summit was held in spring 2013 in partnership with the California Telehealth Resource Center. More than 125 participants attended the three days to learn about policy issues, financial sustainability and share best practices. Attendees and Model Community partners were enthusiastic about the summit and noted there is an ongoing need for such a convening so that local program staff can share challenges and learn new ideas. Many commented the summit galvanized renewed momentum for expanding and sustaining projects.

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<sup>5</sup> California Telehealth Network Orientation (4 Lessons); Telehealth (24 Lessons); Consumer Health Informatics (6 Lessons); Clinical Health Informatics (6 Lessons); Electronic Health Records/Health Information Exchange (EHR/HIE) Adoption (12 Lessons); Broadband Adoption (4 Lessons); Change Management (8 Lessons).

<sup>6</sup> Courses: 1) Overview of Technology Enabled Health; 2) Telehealth Clinical Considerations, Inpatient; 3) Telehealth Clinical Considerations, Outpatient; 4) Telemonitoring- Chronic Disease; 5) Consumer Focused Applications and Devices; 6) Technical; 7) Technical Project Management 8) Change Management; 9) Clinical 1; 10) Clinical 2; 11) Importance of Broadband for Healthcare Delivery; 12) Defining Clinical Health Informatics; 13)Healthcare Data Exchange, Clinical; 14)Healthcare Data Exchange; 15) Technical; 16) Future Issues for the MA & RN; 17) The Future of Nursing; 18) HIE Overview as Related to HER for MA & RN; 19) HIE - Supporting Quality Improvement 20) Document and Plan Patient Care; 21) Equipment; 22) Technical Trouble shooting.

**Consumer education and engagement:** Strategies to advance consumer education and engagement required creative problem solving and adjustments over the grant period. A survey conducted early in the grant identified language requirements, computer literacy, consumer health needs and options for reaching consumers with online content. The survey information informed development of the *Explore Health* website (<http://explorehealth.ucdavis.edu>) and content delivered via tablet based kiosks installed in 50 locations such as community resource centers, senior centers, health clinics, hospitals and libraries. The consumer-friendly, free standing tablets allow access to reliable health information and research in community settings through engaging and relevant content and easy to follow instructions for consumers. The original *Explore Health* portal was closed down due to challenges associated with remote management, however, the kiosks remain fully functioning through the *Explore Health* website.

A second community engagement strategy, librarian training to support consumer access to on-line health information, is rolling out over the final months of the grant. A curriculum entitled, *Help Yourself to Reliable Health Information: eHealth Training for Public Libraries* has been delivered to 347 staff. The train-the-trainer approach provides health research training for librarians so they can support consumer access to online health information and provide resources to consumers on where to find accurate, reliable and culturally relevant online health information.

**Model Communities:** Fifteen model community projects were funded in locations throughout California (see map in appendix) and included 70 organizations and 100 sites in 26 counties. Projects include three groups: urban eHealth projects with a goal to improve access to specialty care; rural eHealth projects working to attain reliable broadband and increase access to care for residents of remote areas; and, special population projects to address unique needs among underserved populations.

Model Communities report significant improvements and expansion of eHealth applications over the grant. One project stalled after leadership challenges occurred, yet its individual community partners continue to pursue eHealth expansion.

- Through membership in the CTN, all 15 communities have acquired low cost broadband connectivity leading to expanded uses of eHealth<sup>7</sup>.
- \$4 million of telehealth equipment was distributed to 131 locations.
- More than 25 clinical applications resulted in 40,000 telehealth visits during the grant period (see data example in appendix).
- Local health care partnerships are stronger and were commonly mentioned as core competency that will be sustained as well as an important foundation upon which to build future projects and meet challenges such as health information exchange.
- Communities leveraged Initiative funding to acquire in-kind resources and new funding.

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<sup>7</sup> The lack of CTN service is limited to a few remote locations within some Model Communities and did not diminish the overall success of broadband connectivity.

- Consumer awareness and engagement in eHealth is nascent yet growing rapidly especially in rural communities where broadband access is new.

Key accomplishments reported by Model Community partners include:

- Improved access and timely specialty care for consumers
- Improved quality of care through physician to physician consultation
- Provider satisfaction improvements through better care coordination and access
- Improved consumer experience and engagement in health and health care
- Improved access to interpreters and multi-lingual health education
- Increased efficiency and availability of health care training through access to video-conferencing and distance learning opportunities for new and current work force
- Sustained partnerships to continue eHealth expansion and solve other challenges
- Improved consumer health literacy and use of eHealth through training of local librarians and other community resource leaders.

### **Themes from the Initiative**

Successful, sustained adoption of eHealth relies on complex organization and community changes. The Initiative implemented multiple strategies in support of the adoption such as connectivity, equipment, training and local project support. This integrated approach succeeded in accelerating the pace of adoption, leveraging resources and sustaining new access to health care. A number of themes and lessons culled from reports and interviews follow.

**Statewide Leverage and Expertise:** The Initiative, crafted as a far-reaching strategy for change, proved attractive for additional funding and brought together diverse and highly expert partners to deliver resources for the field. The array of partners and the reach of a university lead grantee proved beneficial to capitalize on capacity and expertise gained through California’s early adoption of telehealth. Detailed understanding of challenges and opportunities resulted in braided strategies to simultaneously address connectivity, equipment procurement, training, consumer engagement, local partnership and start-up staffing. One goal of the Initiative partnerships was to develop new and novel players as partners for future expansion and support such as libraries and community colleges. While implementation did occur, there were numerous hurdles along the way that tempered the ultimate impact of these strategies. Delayed launch caused lower take-up than expected and it remains to be seen if these partnerships will endure and grow as planned. Significant resources were leveraged at local and statewide levels including Proposition 1D funding<sup>8</sup>, private foundations, public health and criminal justice funds and contributions by individual health organizations. Matched funding at the state level

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<sup>8</sup> Proposition 1D (2006) provides the University of California with \$690 million over a two year period to fund construction and renovation of its facilities and to continue building out its new campus in Merced. The bond measure also provides \$200 million for medical education with an emphasis in telemedicine.

leveraged added capacity to offer technical assistance, equipment and additional small grants. The continued availability of technical assistance and state-level coordination of resources is critical.

*“Private funders in California have had a long-term commitment to the adoption of eHealth. Matching funding for the initiative was a welcome opportunity to leverage our investments” California funder*

**Start With Sustainability:** From its inception, the Initiative embedded a number of strategies for sustainability in the design.

- Online telehealth content training remains available.
- Community college curricula sustain work force skill improvements.
- Library train-the-trainer model supports local replication and sustainability of consumer eHealth adoption.
- Additional funding from public and private sources will sustain technical assistance through the California Telehealth Resource Center.
- The California Telehealth Network is launched as an independent nonprofit to offer low cost broadband to communities and leverage existing FCC funding; its sustainability is improved by serving expanded locations due to the Initiative.
- Seed funding to Model eHealth Communities coupled with equipment to many locations sets the stage for a growth trajectory as sites add telehealth applications in the future.
- Local partnerships and stronger local-state relationships have produced leveraged funding and discussion of future projects to address needs.

*“The grant and its resources brought specific attention and critical mass to accelerate the speed of change.” Physician Champion, UC Davis*

**Innovation and experience offers a foundation for expansion and leverage:** The breadth of strategies at the Initiative level and in Model Communities is a lasting reservoir of innovative ideas for future growth and expansion. The experience of working out implementation challenges under project funding will allow others to avoid pitfalls and move more rapidly. Some of the most promising, and nascent, innovations involve consumer engagement such as peer support groups across rural geographies and non-English speaking seniors learning to use remote patient monitoring and online resources for healthy aging. While many acknowledge the promise of eHealth consumer engagement to achieve long term health improvement, financing from the healthcare system is generally not available and sustainability relies on new grant resources.

*“With the installation of 9 health education kiosks in our county family resource centers and libraries the public now has a tool to access health information” Rural Model Community*

**Partnerships help address challenges:** New and deeper partnerships as a result of Model Community implementation are an asset for solving other local health challenges. Bringing disparate partners together to work on the grant hard-wired strategic planning and solidified collaborative relationships in many local communities. As one leader noted, health information exchange, a critical step that is still

ahead for most communities, relies on collaborative relationships that will benefit from the Initiative. State-level partners are also more knowledgeable about local partners and who to turn to for future projects. For example, based in part on the experience and relationships built through the grant, the CTN is offering a new service, eCeptionist specialist appointment scheduling, a need identified by local communities.

*“The grant was the opportunity to assess at the strategic level and create a positive loop among partners” Model Community*

**The promise and potential of health reform remain ahead:** While unrealized today, leaders within the Initiative believe that the impact of the grant will grow over time as health reform implementation – such as timely access requirements, accountable care organizations and payment reform – drive the system to address barriers to telehealth implementation. With today’s reimbursement limitations, especially for safety net providers, every discussion of telehealth services quickly underscores the need for ongoing policy change and payment reform. The recognition that telehealth is the future of health care is tempered by immediate challenges such as managed care contracting, licensure across state boundaries and credentialing requirements. Low reimbursement rates from Medi-Cal limit physician participation, especially specialists, and the inability to bill for consumer health engagement limits expansion and innovation of community eHealth initiatives.

## **Conclusion**

The eHealth Broadband Adoption Initiative successfully launched the California Telehealth Network and provided stable broadband connections and telehealth equipment to health care providers throughout California. Curricula and training ranging from librarians to nurses will continue to support the spread of telehealth in the future. Perhaps the most lasting contribution of the Initiative to the future expansion of telehealth are the lessons learned and collaborative partnerships gained by Model Communities.

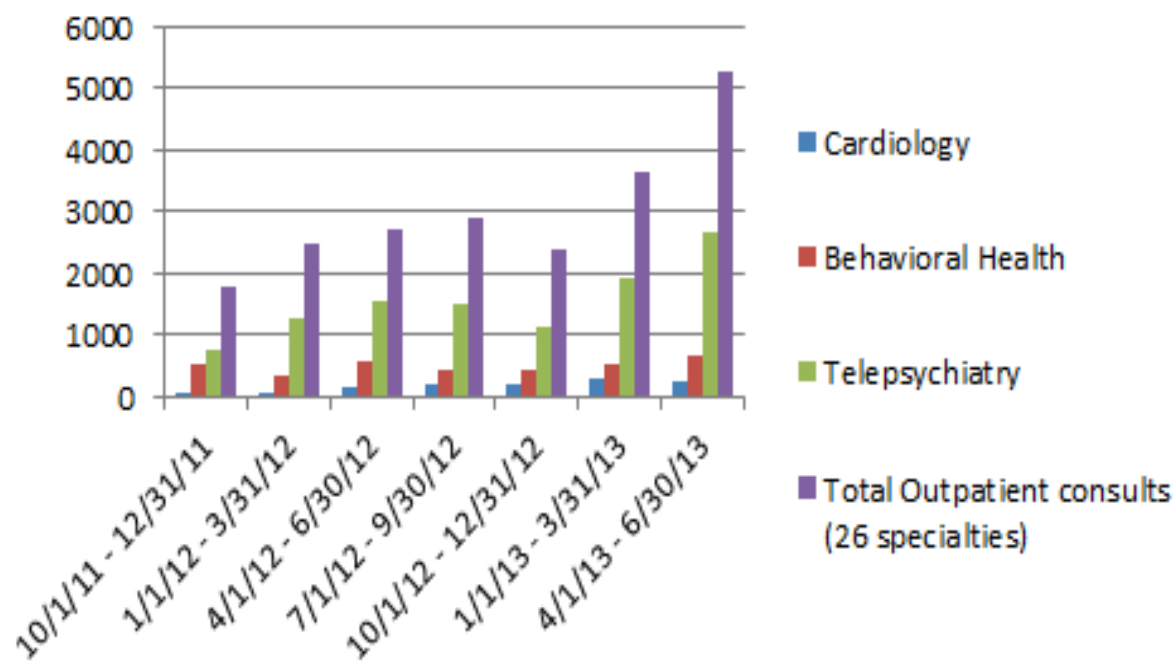


# Appendix

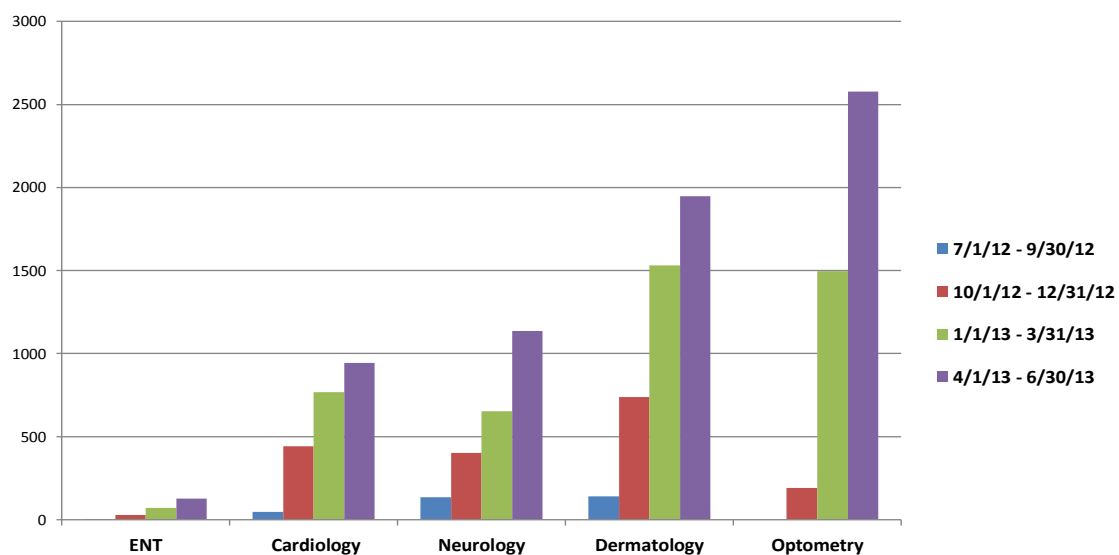
## Model eHealth Communities



## Telemedicine Consults



## LA Care eConsults



## Academic Curricula Implementation

California Community Colleges	Number of Courses with eHealth Curricula
1. <i>Allan Hancock</i>	8
2. <i>Antelope Valley</i>	13
3. <i>Butte</i>	7
4. <i>Cabrillo</i>	16
5. <i>City College of San Francisco</i>	2
6. <i>College of the Siskiyous</i>	5
7. <i>Glendale Community College</i>	2
8. <i>Long Beach City College</i>	5
9. <i>Los Medanos College</i>	3
10. <i>Merced College</i>	9
11. <i>Merritt College</i>	3
12. <i>Mira Costa College</i>	3
13. <i>Monterey Peninsula College</i>	19
14. <i>Orange Coast College</i>	4
15. <i>Palo Verde College</i>	20
16. <i>Pasadena City College</i>	11
17. <i>San Jose City College</i>	2
18. <i>Santa Monica College</i>	3
19. <i>Solano Community College</i>	18