

TELEHEALTH COST EFFECTIVE/EFFICIENT STUDIES/PILOTS/PROGRAMS

STUDY	SAVINGS/EFFICIENCIES ACHIEVED	ADDITIONAL INFORMATION
<p>Fiscal Impact of AB 415: Potential Cost Savings from Expansion of Telehealth <i>Matthew Newman & Trisha McMahon, Blue Sky Consulting</i> September 30, 2011</p> <p>A fiscal analysis of AB 415, The Telehealth Advancement Act of 2011 in California. The report analyzes the fiscal impact should the policies (expanding eligible locations, reimbursing for remote patient monitoring) contained in AB 415 be enacted to its fullest potential and focusing on the potential savings as they relate to disease management programs for patients with heart failure and diabetes.</p>	<ul style="list-style-type: none"> • The potential savings from heart failure monitoring programs could reach \$929 million a year in the Medicaid program. • California pays 31 percent of Medi-Cal costs, equating to savings to the state of \$281 million a year. • The potential savings for diabetes monitoring savings could reach \$417 million a year, which would mean up to \$127 million in savings for California. • Potential savings for the state’s share of these two conditions in Medi-Cal could be up to \$408 million a year; the federal government’s share could total up to \$938 million a year. 	<ul style="list-style-type: none"> • The study averaged savings identified in scientific studies to achieve an estimated savings rate. Utilizing data from a California Health Interview Survey, an estimated percentage of Medi-Cal patients that would have heart failure or diabetes was calculated. • The report then divided annual Medi-Cal expenditures by average enrollment, adjusted that figure to reflect higher average costs among heart failure patients, and subtracted that total from overall Medi-Cal expenditures.
<p>Better Outcomes, Lower Costs: Palliative Care Program Reduces Stress, Costs of Care for Children With Life-Threatening Conditions <i>Daphna Gans, Gerald F. Kominski, Dylan H. Roby, Allison L. Diamant, Xiao Chen, Wenjiao Lin and Nina Hohe</i></p> <p>UCLA Center for Health Policy Research, Health Policy Brief, August 2012</p> <p>This brief examined the Partners for Children (PFC) program—California’s public pediatric community-based palliative care benefit to children living with life-threatening conditions and their families.</p>	<ul style="list-style-type: none"> • Participation in the program resulted in a one-third reduction in the average number of days spent in the hospital, from 4.0 to 2.8. • Shifting care from a hospital setting to in-home community-based care resulted in cost savings of \$1,677 per child per month on average—an 11% decrease in spending on a traditionally high-cost population. • For the first 18 months of the program (January 2010 to September 2011), cost savings amounted to nearly \$1 million. • Policymakers are considering the advisability of extending the program beyond the 11 counties that now participate. 	<p>Cost savings were driven by reductions in the volume of inpatient care. However, these cost savings were partially offset by increases in expenditures on services outside the hospital, most notably a 34% increase (\$1,398) in outpatient costs and a 35% increase (\$495) in outpatient pharmaceutical costs. Despite the offset, the overall cost savings suggest that the PFC program appears to be reducing expensive inpatient care and replacing it with less expensive community-based and outpatient care.</p>

**The Benefits of Preventive Dental Care:
Estimating the Fiscal Impact of the
Virtual Dental Home Project**

*Blue Sky Consulting Group
January 14, 2013*

Analysis of a telehealth-enabled community-based, prevention focused, oral health delivery model called the Virtual Dental Home (VDH) model of care.

If targeted preventive interventions tied to risk of disease were employed, cost savings or low cost overall oral health care could be achieved. The study predicted ongoing and targeted preventive dental care could save Medi-Cal:

- \$0.20 per patient visit in a skilled nursing facility
- \$18 per disabled adult visit
- \$2 per Head Start patient visit.
- The model suggested that preventive services for school-aged children return a majority of Medi-Cal expenditures in future benefits even though they do not produce a short-term overall savings per patient, but instead would result in a net cost of \$36 per patient visit.

The study team consisted of the Blue Sky Consulting Group, advised by a national panel of expert advisors. The study team identified and reviewed almost 150 articles in the scientific literature related to cost savings that could be realized by the community-based prevention focused methodology employed in the VDH model of care. They then developed a simulation model that utilized published research to establish the clinical effectiveness of various dental care interventions, and then applied California-specific costs for the California dental Medicaid program to arrive at an overall estimated fiscal impact specific to California.

**Care Coordination/Home Telehealth:
The Systematic Implementation of
Health Informatics, Home Telehealth,
and Disease Management to Support
the Care of Veteran Patients with
Chronic Conditions**

Adam Darkins, M.D., Patricia Ryan, R.N., M.S., Rita Kobb, M.N., A.P.R.N., Linda Foster, M.S.N., R.N., Ellen Edmonson, R.N., M.P.H., Bonnie Wakefield, Ph.D., R.N., and Anne E. Lancaster, B.Sc.

TELEMEDICINE and e-HEALTH
DECEMBER 2008

The Veterans Health Administration (VHA) implemented a national home telehealth program, Care Coordination/Home Telehealth (CCHT). CCHT is now a routine NIC service that supports the care for veterans with chronic conditions in their homes as they age.

From a cohort of 17,025 CCHT patients:

- 25% reduction in numbers of bed days of care
- 19% reduction in numbers of hospital admissions
- Mean satisfaction score rating of 86% after enrollment into the program
- The cost of CCHT is \$1,600 per patient per annum, substantially less than other NIC programs and nursing home care. VHA's home-based primary care services are \$13,121/annum and market nursing home care rates average \$77,745/patient/annum.

Sixty-four percent (64%) of the patients were monitored for one condition and 36% for multiple conditions. Routine outcomes analysis for performance measurement of healthcare resource utilization by CCHT patients involved comparing hospital admission data for patients during the year prior to enrollment into CCHT with the data from 6 months post-enrollment.

Critical Care, Critical Choices: The Case for Tele-ICUs in Intensive Care

New England Healthcare Institute & Massachusetts Technology Collaborative
December 2010

The study collected data on two basic clinical metrics — patient mortality and ICU lengths of stay — from three sites: an academic medical center (the University of Massachusetts Memorial Medical Center or “UMMMC”) and two community hospitals.

- Patient ICU stays were reduced by 30 percent or an average of two days in the academic medical center.
- Community hospital stays were also reduced.
- Hospitals recovered the up-front investment costs for tele- ICUs in less than one year.
- Health insurers saved \$2,600 per patient treated in the academic medical center.
- Community hospitals ability to care for a substantial portion of patients who would have been transferred to teaching hospitals saves the payers approximately \$10,000 per patient.
- Both community hospitals were able to care for an average of 50 percent more patients with tele-ICU monitoring.
- PricewaterhouseCoopers (PwC) assessed the analyses and data provided by the hospitals’ staff showing costs and benefits associated with tele-ICU implementation.
- These costs included capital and onetime operating costs associated with implementation as well as incremental annual operating costs incurred by the hospitals.
- Cumulative costs were compared to the cumulative benefits that accrued during an annualized one-year period.
- An estimate was then made of the financial impact of tele-ICU implementation on payers in both the academic medical center and community hospital settings.
- UMMC provided data that allowed PwC to compare average revenue and variable costs per case before and after tele-ICU implementation.

Improved access to subspecialist diabetes care by telemedicine: cost savings and care measures in the first two years of the FITE diabetes project

Toree H Malasanos, Julie B Burlingame, Lise Youngblade, Bhavin D Patel and Andrew B Muirw

Journal of Telemedicine and Telecare
2005; 11 (Suppl. 1): S1:74–76

The Florida Initiative in Telehealth and Education (FITE) focused on improving care of diabetes for children in an underserved area in terms of paediatric endocrine services. The project included a semi-monthly remote telemedicine clinic and development of a Web-based education site.

Before the program began:

- Mean interval between visits was 149 days
- Year 1 of the program it was 98 days
- In year 2 it was 89 days.
- Hospitalizations decreased from average of 13 hospitalizations/year (47 days) to 3.5 hospitalizations/year (5.5 days)
- Emergency department visits decreased from 8 to 2.5 per year.
- With line charges and equipment costs of US\$18,826 were included the program saved US\$27,860 per year.
- The reduction in hospital days saved amounted to US\$44,419 per year
- The reduction in emergency department visits amounted to US\$2267 per year.
- The Medicaid transportation cost for one family to Gainesville for the diabetes clinic was US\$262. There

Pre-FITE (1999–2001), all paid Medicaid claims for the sample population were reviewed for costs incurred, including transportation, hospital emergency room visits and inpatient hospitalizations. Post-FITE, families were asked if there were any illnesses requiring telephone, emergency room or hospital contact. Records were kept documenting recommended home management of acute illness.

	would be additional savings of US\$64,978 if Medicaid family transportation to the hub was necessary in the absence of the telemedicine clinic.	
<p>Impact of Telehealth on Healthcare Utilization by Congestive Heart Failure Patients <i>Craig A. Lehmann, Nancy Mintz and Jean Marie Giacini</i></p> <p>Disease Management & Health Outcomes, 2006; 14(3): 163-169.</p> <p>Introduced in a CMS demonstration project, the study measured the impact of managing congestive heart failure (CHF) patients via telehealth technology on overall utilization, physician office visits, emergency department (ED) visits and hospital readmissions.</p>	<p>Patients managing their CHF via telehealth technology decreased utilization of:</p> <ul style="list-style-type: none"> • Healthcare resources by 41% • Physician office visits by 43% • ED visits by 33% • Hospitalizations by 29% 	<p>Patients were 65 years of age or older, had both Medicare parts A & B, had at least 3 doctor visits or 1 hospitalization in the previous 12 months, resided in Manhattan or the Bronx and had at least one of the following: heart disease, diabetes, liver disease, lung disease, vascular disease, cerebrovascular disease, psychotic major depression or anxiety, cancer, Alzheimer disease or dementia.</p>
<p>Cost-Utility Analysis of Telemedicine and Ophthalmoscopy for Retinopathy of Prematurity Management <i>Kevin M. Jackson, OD, MPH; Karen E. Scott, MD, MBA; Joshua Graff Zivin, PhD; David A. Bateman, MD; John T. Flynn, MD; Jeremy D. Keenan, MD, MPH; Michael F. Chiang, MD</i></p> <p>Arch Ophthalmol. 2008;126(4):493-499</p> <p>To evaluate the cost-effectiveness of telemedicine and standard ophthalmoscopy for retinopathy of prematurity (ROP) management.</p>	<p>For infants with birth weight less than 1500 g:</p> <ul style="list-style-type: none"> • The costs per quality-adjusted life year gained were \$3193 with telemedicine and \$5617 with standard ophthalmoscopy. • Sensitivity analysis resulted in ranges of costs per quality adjusted life year from \$1235 to \$18,898 for telemedicine and from \$2171 to \$27,215 for standard ophthalmoscopy. • Telemedicine is more cost-effective than standard ophthalmoscopy for ROP management. • Both strategies are highly cost-effective compared with other health care interventions. 	<ul style="list-style-type: none"> • Models were developed to represent ROP examination and treatment using telemedicine and standard ophthalmoscopy. • Cost-utility analysis was performed using decision analysis, evidence-based outcome data from published literature, and present value modeling. • Costs of disease management were determined based on 2006 Medicare reimbursements. • Costs per quality-adjusted life year gained by telemedicine and ophthalmoscopy for ROP management were compared.
Integrated Telehealth And Care	Comparing the group that received the telehealth	CMS provided access to finalized Medicare Parts A and B

Management Program For Medicare Beneficiaries With Chronic Disease Linked To Savings

Laurence C. Baker, Scott J. Johnson, Dendy Macaulay, and Howard Birnbaum

HEALTH AFFAIRS 30, NO. 9 (2011): 1689–1697

Study of the impact of a care coordination approach for patients with chronic diseases using both care management techniques and a telehealth tool that facilitates data exchange between patients in their homes and care providers in clinical settings. The analysis examines whether the introduction of this program led to changes in spending for targeted, chronically ill Medicare patients in the traditional fee-for-service portion of the program who were invited to participate.

intervention (TI) with a control group (CG) that received no intervention, the study found:

- First Year of Intervention – TI –mean spending \$3,608
- First Year of Intervention – CG – mean spending \$4,107
- Second Year of Intervention – TI –mean spending \$3,568
- Second Year of Intervention – CG –mean spending \$4,051
- Quarterly mean intervention group spending decreased approximately 7.7–13.3 percent over two years, compared with a matched control group.
- Spending reductions ranged from \$312-\$542 per intervention patient per quarter.
- Patients with congestive heart failure and chronic obstructive pulmonary disease had greater spending declines than patients with diabetes mellitus.

claims data for all patients in the intervention cohorts. The study used the data to construct quarterly measures of spending for each beneficiary. The study was conducted on an intent-to-treat basis which means the analysis was on all those who were offered the program, regardless of whether they accepted the offer or used the intervention. When examining participants who did elective to receive the intervention and those who did not, the recipients of the intervention had larger net spending reductions. However, the authors acknowledged other factors may have impacted the results such as greater interest in their health.

A Hospital Driven Telepsychiatry Initiative to Improve Patient Care and Reduce Costs

Sheila F. Davies, MPA, Albermarie Hospital Foundation

North Carolina Medical Journal, 2012 May-Jun;73(3):228-30.

In late 2010, telepsychiatry was introduced in several hospital emergency departments to make psychiatric assessments readily available for all patients presenting to the

Early outcomes indicate:

- Reduction of the length of stay for patients in emergency departments down to 22 hours (the goal was to get the stay reduced to 48 hours).
- Reduction of involuntary commitments. One hospital in the program estimated a potential savings of \$469,800 with the elimination of unnecessary commitments to a state facility

Estimated savings were calculated by basing it on a per diem inpatient psychiatric rate of \$1,080 and a 5-day inpatient treatment stay. This is based on the per diem Medicaid rate of inpatient psychiatric services of \$665.71, an average 5 day inpatient treatment stay, and a 45% self-pay population.

emergency department with behavioral health related issues.

Final Report to California HealthCare Foundation

Subject: Phase 1 of the Measuring Return on Investment of Remote Patient Monitoring Project

Center for Technology and Aging and Center for Connected Health

A project was funded to study the return on investment (ROI) of remote patient monitoring (RPM) programs. Phase 1 of the project was to develop a ROI tool for health care organizations to evaluate the financial benefits of RPM programs. The ROI of RPM tool was developed in conjunction with five diverse health care organizations and input from other stakeholders. The resulting model was applied by each of the five health care organizations to test and validate the ROI of RPM tool.

- The benefits of using RPM to more closely monitor patients with serious chronic health conditions were shown to outweigh the costs of RPM in all five health care organizations. In two organizations, the ROI was greater than 0 but less than 1, which means they may yield a positive net return, but the amount is smaller than the cost of the program. In the other three organizations, the ROI was greater than 1 and therefore a positive ROI.
- Return on RPM investment can be attributed to reduced hospitalization rates in four of the five organizations. Returns on RPM investment for the fifth organization, the only home health agency in the study group, can be attributed to both a reduction in hospitalization rates and a reduction in the number of home care visits that were required per patient.

The basic framework of ROI, as utilized in this project, is based on the general principles of cost inputs and outcomes. The initial ROI model developed through this initiative included cost inputs and return based on change in healthcare utilization. Return was restricted to change in utilization, as this change had immediate implications on the health care system, and because this represented a fair assessment of the quality of care provided to the patient. The ROI was developed as a forward-looking model, using current program data on costs and return, as well as projected assumptions and targets for patient enrollment and program costs to scale the RPM program over five years.

Medical Checkups By Phone Rings Up Savings

Published by the Sacramento Bee, Jan. 30, 2011

Dignity Health's Congestive Heart Active Management Program (CHAMP) has been in existence since 1997 and served more than 8,000 congestive heart failure patients.

- Cut readmission rates among patients with chronic health problems by 85 percent
- Between 2004 and 2009, the program saved nearly \$19.5 million due to reduced readmissions related to heart failure

CHAMP utilizes phone calls from a nurse to patients to monitor their health status.



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