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**PRELIMINARY REPORT BY
THE JOHN A. BURNS SCHOOL OF MEDICINE
ON THE CURRENT PRACTICES OF
HAWAI'I TELEMEDICINE SYSTEM FOR 2009**

HCR 138 H.D. 2, S.D. 1 (2008)

November 2008

Telehealth Task Force Preliminary Report
House Concurrent Resolution 138

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Executive Summary

There is a critical and growing shortage of available, affordable healthcare resources throughout the State of Hawaiʻi. Telehealth has the potential to leverage scarce healthcare resources across geographic and other barriers that limit access to healthcare services. Telehealth solutions can play a critical role for the imperative to improve access to care in Hawaiʻi, while at the same time improving clinical outcomes and lowering costs.

In recognition of the need to take full advantage of the potential of telehealth, the Hawaiʻi Telehealth Symposium, held on November 15, 2007 and funded by the Hawaiʻi Medical Services Association (HMSA) Foundation, provided a forum for major stakeholders in healthcare and healthcare information technology to identify critical needs, explore common interests and mutual benefits, and lay the foundation for a working community collaborative. There was a consensus from the participants of the symposium that Hawaiʻi needs better structured coordination of telehealth activities to provide the required scalability and sustainability of telehealth services.

During its 2008 session, the Hawaiʻi State Legislature passed a concurrent resolution (HCR 138 HD2 SD1) requesting that the University of Hawaiʻi John A. Burns School of Medicine's Telehealth Research Institute (TRI) form a task force to explore the feasibility of further implementation of telemedicine systems to benefit Hawai`i's citizens.

This report presents preliminary findings of the Telehealth Task Force and includes:

- A history of telehealth in the State of Hawaiʻi that led to the formation of the Telehealth Task Force;
- Findings from the November 2007 Telehealth Symposium; and
- Summaries of past and current telehealth projects in the state.

Participants in the 2007 Telehealth Symposium identified five critical issues needed for the success of telehealth in Hawaiʻi:

1) developing sustainable business models;
2) improving reimbursement and funding, including malpractice;
3) increasing coordination and collaboration;
4) providing added value and incentives, and
5) developing political will and institutional leadership.

An initial analysis of the telehealth project summaries supports the Symposium findings regarding the issues affecting the success and sustainment of telehealth activities in the state with the addition of:

1) lack of staffing and work force;
2) technology issues; and
3) need for training and learning.

While telehealth in Hawai'i has made some positive strides, it is clear that there are still significant barriers and issues that need to be addressed before telehealth is integrated seamlessly into the healthcare delivery system. As the Telehealth Task Force continues its work on a strategic plan and a more detailed set of recommendations during the coming year, initial actions that the legislature may take immediately to support telehealth in Hawai'i are:

1) The establishment of a Clinical Informatics Task Force to explore issues pertaining to electronic health records (EHRs), electronic medical records (EMRs), personal health records (PHRs), and health information exchanges (HIEs). Further, an HIT Coordinating Council be established composed of the leadership of the Telehealth, Clinical Informatics, and Broadband Task Forces to coordinate efforts. This will help to ensure maximization of resources, technical and organizational interoperability, and strengthen partnerships and collaboration.

2) A review the current statutes by the Legislature, with the assistance of the Telehealth Task Force as needed, and the introduction of legislation to clarify, eliminate discrepancies, and consolidate current statutes. Further, we also recommend that legislation is introduced to revise the definition of medicine to include telehealth activities.

3) The introduction of legislation to support the sustainability of telehealth business models, such as, incentives for telehealth activities, support for non-state funding, and private/public partnerships.

Background and Statement of Need

There is a critical and growing shortage of available, affordable healthcare resources throughout the State of Hawaiʻi. Telehealth has the potential to leverage scare healthcare resources across geographic and other barriers that limit access to healthcare services. Telehealth solutions can play a critical role for the mandated imperative to improve access to care in Hawaiʻi, while at the same time improving clinical outcomes and lowering costs.

The initial concept was that of "telemedicine" where healthcare services such as provider consultations or continuing education would be provided via video-conferencing or store-and-forward for rural and underserved communities. From these earlier efforts to reproduce a patient encounter, the scope of telemedicine has blossomed into a broad range of services and technologies. We now have telehealth applications in many medical areas, including radiology, pathology, ophthalmology, dermatology, otolaryngology, nursing, hospice, emergency care, surgery, psychology, psychiatry, rehabilitation, and distant monitoring both from home and from remote intensive care units (ICUs).

The experience of Hawaiʻi with telehealth has been similar to that in many other communities, in that, although there have been a number of successful application implementations, success has not been universal. In the late 1990s, Hawaiʻi had a number of funded initiatives to promote telehealth. The largest was the Akamai Project at Tripler Army Medical Center that provided connectivity and clinical consultations to Micronesia and the Pacific Rim. The experience and technology from the Akamai Project have been used in developing the military's telemedicine capabilities that are currently operational in the conflicts in the Middle East. During the same time period, the Weinberg Foundation funded 29 hospitals, community health centers, and key healthcare support organizations in Hawaiʻi with grants of $200,000 each to purchase telehealth equipment and provide start-up funding. In 1999the Hawaiʻi State Telehealth Access Network (STAN) was initiated by the Hawaiʻi Health Systems Corporation (HHSC), the University of Hawaiʻi Telecommunications and Information Policy Group (TIPG), and the High Technology Development Corporation. The Department of Defense, through the John A. Burns School of Medicine, University of Hawaiʻi at Mānoa, funded infrastructure development for community health centers and other institutions providing video-teleconferencing equipment and broadband connections. These early efforts were not fully optimized because of the need to establish business relationships and engage physician champions experienced enough to navigate around telemedicine delivery and reimbursement. Even though the feasibility of distant consultations was established, none of these earlier efforts produced viable, long-term consultative services, in part due to, the additional challenges of high upfront infrastructure costs, lack of onsite telemedicine coordination resources, and other human factors issues that reduced frequency of usage over time.

Other federally supported telehealth grants infused Hawaiʻi's healthcare market in an effort to meet provider shortage needs across the continuum of care. The Department of Health and Human Services, Office for the Advancement of Telehealth (OAT) with strong congressional support funded multiple telehealth initiatives. In 2005, one such initiative through the Hawaiʻi Primary Care Association piloted a store-and-forward teledermatology project. While funding for the initiative ceased in 2007; the need for dermatological consultations did not, and the

participating rural CHCs and urban dermatologist continue to do telemedicine consultations with telemedicine reimbursement from a major carrier.

Yet, despite the sophisticated and extensive infrastructure provided by STAN and other networks Hawaiʻi has fallen behind a number of states in the use of telehealth to deliver clinical services.

Consistent with the experiences on a national level, most of the earlier projects were scaled back or discontinued once external funding was withdrawn. There was limited precedence, and therefore, acceptance on the part of providers and patients. This was partly due to the significant cost to provide simultaneous encounters at two facilities, i.e., hub and spoke, the high telecommunication line fees for broadband transmissions, and the lack of a physician champion to spearhead the effort at their facility. Hawaiʻi Medical Service Association (HMSA) and Medicare developed payment systems to cover telemedicine; however, the eligible fee does not cover the significant cost involved. As with all new technologies, there was concern for over use and little evidence that the technology improved care or reduced cost.

There has been little disagreement; however, that telehealth can improve access for services not otherwise available in a community. Further, the body of evidence is growing that telehealth programs are clinically efficacious and cost efficient. Used appropriately, telehealth applications can increase access to care, reduce cost, and improve quality of care. Many of the cost savings are only realized, however, by sharing costs across a large or significant population. Small projects and programs have demonstrated proof of concept for aspects of telehealth, but the viability of the telehealth lies in the appropriate use of the newer technology and the scalability to serve a significant population.

Despite the challenges and stops and starts since the inception of telemedicine, solid IT infrastructure has been developed and there are groups of organizations and people committed to supporting the advancement of telehealth in Hawaiʻi. In addition, the Internet and new technology opens inexpensive options making many previously costly systems more financially feasible. There is a rapid merging of technologies and systems. Electronic medical or health records (EMRs and EHRs) systems continue to be implemented from small physician practices to large hospital systems. Disease management software are integrated into home monitoring systems and consultative services Wireless technology including cell phones further frees patients and providers from a fixed facility. Video conferencing, digital photography, and automated data upload via the internet add another level of accessibility to health care. Interoperability of all these health information systems is becoming paramount to operational efficiency and long term sustainabililty. The need to address the complexity of health information management and security is a result of these diverse and activities. Policies and standards need to provide proper protection of patient health information.

Telehealth Symposium

In recognition of the need to take full advantage of the potential of telehealth, the Hawaiʻi Telehealth Symposium, held on November 15, 2007 and funded by the HMSA Foundation, provided a forum for major stakeholders in healthcare and healthcare information technology to

identify critical needs, explore common interests and mutual benefits, and lay the foundation for a working community collaborative. The Symposium brought together a broad representation of stakeholders in the community, including the State Department of Health, John A. Burns School of Medicine, Tripler Army Medical Center, Hawai'i's leading hospitals and community health centers, Hawai'i Health Systems Corporation, insurance companies, medical associations, University of Hawai'i Telecommunications & Information Policy Group, Shriners Hospital for Children, and many more health and community organizations, There was a clear mandate from the participants of the symposium that Hawai'i needs better structured coordination of telehealth activities to provide the required scalability and sustainability of telehealth services. The participants of the symposium reached a consensus identifying the five priorities that need to be addressed with respect to telehealth in Hawai'i are:
1) developing sustainable business models;
2) improving reimbursement and funding, including malpractice;
3) increasing coordination and collaboration;
4) providing added value and incentives; and
5) developing political will and institutional leadership.
See Appendix A for a short overview and see the symposium website for the complete summary.

The symposium steering committee also developed a website (www.hawaiitelehealth.net) to introduce the participants to the symposium and share information regarding telehealth in Hawai'i. The list of participants and the symposium summary are posted on the website. The website allows participants to stay connected with the organizing committee. The website is maintained by the University of Hawai'i Telecommunications and Information Policy Group (TIPG).

The symposium steering committee has held regular meetings since the Symposium to plan follow-up activities. Further funding from the HMSA Foundation allowed the priorities identified and concepts developed during the symposium to be further developed into a strategic plan for Hawai'i to guide the adoption and implementation of telehealth activities to address the healthcare needs of the State. The current steering committee continues to provide oversight and input into the activities related to the strategic plan. The planning process will involve the extended network of symposium participants and other major stakeholders, both to solicit their input and keep them involved in the planning process. In addition, there is need for the formation of a collaborative organization that, with respect to telehealth activities, can provide synergy among stakeholders, assist in seeking funding, address issues related to policy, legislation and reimbursement, and provide some assurance of sustainability of programs.

Telehealth Task Force

To continue its work, the symposium steering committee advocated for the passage of a legislative resolution. During its 2008 session, the Hawai'i State Legislature passed a resolution (HCR 138 HD2 SD1) requesting that the University of Hawai'i John A. Burns School of Medicine's Telehealth Research Institute (TRI) form a task force to explore the feasibility of further implementation of telemedicine systems to benefit Hawaii's citizens. The complete resolution is available at: http://capitol.hawaii.gov/session2008/bills/HCR138_SD1_.htm

Specifically, the resolution requested the Task Force to examine the following issues:
    (1) Current use of telemedicine and equipment;
    (2) Costs for expansion;
    (3) Timeframe for full implementation of an expansion project;
    (4) Potential difficulties or problems that may arise during or after implementation; and
    (5) Broader issues addressed at the November 15, 2007, Hawai‘i Telehealth Collaborative
         Symposium, including:
        (A) Business models;
        (B) Reimbursement and funding;
        (C) Coordination and collaboration;
        (D) Added value and incentives; and
        (E) Political will and institutional leadership;

The Task Force has been requested to submit a preliminary report of its findings and recommendations to the Legislature by December 2008, and a final report of its findings and recommendations, including any necessary proposed legislation, by December 2009.

See Appendix B for the list of Task Force and Work Group members. To date, the task force members have met twice, on August 20, 2008 and September 16, 2008. They have reviewed and commented on initial drafts of the task force vision and mission, subject to further review, discussion, and consensus seeking after the preliminary report and after additional research and stakeholder consultation in 2009.

Draft vision:
By the year 2015, a robust sustainable telehealth system will connect all the people of Hawai‘i to health care services.

Draft mission:
Recommend to the Hawai‘i State Legislature a state telehealth strategic plan to develop financially sustainable and technologically adaptive telehealth services.

Draft scope of telehealth:
It was decided that for the purposes of the Task Force, the scope of telehealth would include: infrastructure (technical and organizational), video-teleconferencing, store-and-forward (e.g., radiology, dermatology, need not be in real time), personal health applications, and distance learning. The scope excludes: electronic health/medical records (EHRs and EMRs) and personal health records (PHRs). While acknowledging the critical importance of these health information technologies to telehealth applications, the Task Force decided to exclude them from the scope of this endeavor due to the very large number of issues surrounding the adoption and implementation of EHRs, EMRs, and PHRs. The Task Force felt that, given the limited resources available to them, they could not adequately address those issues.

The Task Force agreed that the preliminary report should address the following:
- Current and past Hawai‘i telehealth projects: Project summaries will be included that show the lessons learned, critical success factors, and critical barriers for projects both past and present.

- Needs assessments: Although the Task Force again decided that due to time and financial constraints, they could not conduct needs assessments for the State, assessments already done by others on community infrastructure, needs, and disparities in care should be reported and summarized.
- Telehealth legislation: State legislation related to telehealth introduced in the last two years will be documented.

Health Information Technologies and Supporting Infrastructure

The Telehealth Task Force recognizes the importance of broader health information technology (HIT) initiatives occurring simultaneously and supports those initiatives that enable the delivery quality care through health IT. Although, technical and organizational infrastructure have been identified as key elements in a telehealth system, the Task Force will focus primarily on the organizational issues relating to sustainability, improved coordination, and enabling telehealth policies and processes. Although telehealth applications integrate health practices, services, and business with technology, it is impossible to delineate health IT efforts such as electronic medical records, data warehouses, disease registries, electronic prescribing from telehealth. HIT provides information sharing between providers and patients regardless of location. HIT may be coupled with video-conferencing, e-mail, photographs, or other communication modalities. With a focus on the future, the Telehealth Task Force will address the policy and clinical issues that arise from adoption of technologies that will progressively become richer in shared clinical information and much more interpretative and look for ways of advancing telehealth in a complimentary and seamless way with other HIT initiatives.

The Task Force acknowledges that without the infrastructure for sharing medical information, patient records, and billing information between providers, telehealth services will not be widely adopted nor sustained. Developing scalable and interoperable electronic health records, personal health records, and health information exchange systems is a major challenge and necessary for realizing the full potential of telehealth in improving quality of health care.

The telecommunication network infrastructure is an essential foundation that supports other HIT applications.   Although HIT encompasses a broad range of varying technologies and services, it may be compartmentalized in the following applications and systems: financial and management information systems (e.g., general ledger, billing, remuneration); clinical information systems (e.g., chart management, case management, prescriptions, and laboratories); clinical telemedicine systems and technologies (e.g., primary care, teleradiology, telecardiology); health and medical education (e.g., continuing medical education, grand rounds); and patient and community information (e.g., public health information).

In Hawaiʻi there are several HIT initiatives relating to telecommunication infrastructure, electronic health and personal health records and health information exchange systems.

An important telecommunications related telehealth initiative that requires extensive collaboration is the State Telehealth Access Network. STAN represents a partnership which includes local health care providers, including but not limited to, the Hawaiʻi Healthcare Systems Corporation, Department of Health, State Office of Rural Health and the State Information and

Communication Services Division and the University of Hawai'i. Since its inception, STAN has matured and provides technical infrastructure that supports telehealth delivery to healthcare facilities throughout the State of Hawai'i. While STAN's network includes major healthcare facilities on all islands, its outreach is definitive and many more providers (including most CHCs) reside outside the network; more work can be done.

The STAN partners recently received a 4.8 million dollar award from the Federal Communications Commission (FCC) Rural Health Care Broadband Pilot Program to further improve the system (http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519409808), including high definition video-conferencing and increased connectivity among the partners. Through this project STAN will expand from around 40 to over 90 sites including many from the State Department of Health. The network design incorporates use of the State's fiber Institutional Network (INET) and leased connections to increase the overall capacity of the network. Further the network organizational structure consists of an Advisory Committee, Technical Working Group, and a Telehealth Applications Working Group. Several members of these committees also serve on the State Telehealth Task Force or the State Broadband Task Force.

 Electronic Health Records (EHRs) and/or Personal Health Records (PHRs) represent another important supporting infrastructure for telehealth services and health care in general. Nationwide, it has been reported that "fewer than 12% of hospitals" (Ferris, 2008) have implemented EHRs, although there are many claims for the potential of EHRs to improve quality of care, productivity, and cost effectiveness. Some of the major barriers to implementation include cost, misaligned financial incentives, lack of technical support structures, and the inherent resistance associated with the introduction of cultural change to an organization and to society. Despite these barriers, however, the major health care providers and hospital systems in Hawai'i have implemented or are in the process of implementing EHRs with significant financial investments of upwards to $50 million.

There are several initiatives in Hawai'i that are designed to assist health care providers overcome some of these barriers. The HMSA Initiative for Innovation and Quality program includes $30 million for hospital initiatives to improve quality of care and $20 million for physician initiatives to support the adoption of EHRs. This program supports innovation to improve patient care and outcomes, including the use and implementation of EHRs in physician offices. The University of Hawai'i has several projects investigating the adoption of the Veteran's Administration or Indian Health Services EHR for more widespread use in community hospitals and clinics that otherwise could not afford commercial systems.

There are several health information exchange Initiatives in Hawai'i. One is the Holomua project lead by the Hawai'i Primary Care Association in collaboration with the Queens Medical Center, Hawai'i Pacific Health, Kalihi Palama Health Center, and Kokua Kalihi Valley Health Center developed a Master Visit Registry with funding from the Agency for Healthcare Research and Quality (AHRQ). In additionI, the Hawai'i Health Information Exchange (HHIE), Inc. is a nonprofit corporation formed by key stakeholders in the Hawai'i healthcare community, including representatives from various hospitals, health insurers, physician organizations, and

other healthcare providers. HHIE is dedicated to the formation and operation of a health information exchange system in the State of Hawai'i that would allow a secure and rapid exchange of medical information.

The next generation of HIT issues includes the interoperability of systems, standards, access to data for clinical research, reporting and surveillance, use of HIT and data for transformation of care, for disease management, and developing new models of patient and community involvement.

HIT is very broad in range and complexity and thus often overlooked and over simplified. Implementation of HIT networks and systems require attention to user needs, applications, and policies and must be incorporated into the overall business model of an organization. For successful telehealth, there is an added layer of complexity including interoperability between systems, processes and even organizational culture and nomenclature. Although the importance of HIT is acknowledged, these challenging issues are demanding beyond the scope and focus of the Telehealth Task Force. It is recommended that the State establish a Clinical Informatics Task Force and that the three task force groups (Telehealth, HIT and Broadband) coordinate efforts. This will help to ensure maximization of resources, technical and organizational interoperability and strengthen partnerships and collaboration.

Telehealth Projects in Hawaii

There are a number of successful ongoing telehealth programs in the State. For example, every week Continuing Medical Education programs are delivered throughout the state and also to US Affiliated Pacific Islands. In addition, the telehealth network is frequently used for committee meetings and conferences reducing the need for inter-island travel. Teleradiology is used routinely. The rapid transition of imaging to digital technology and the increased bandwidth and transmission speeds allow Hawai'i radiologists to work from anywhere and at anytime, provided they have access to the high quality monitors required to read images. Dr. Nancy Johnson, Chair, Department of Nursing, Maui Community College, successfully demonstrated that home nursing visits can be done via simple home video-conference. Dr. Dan Davis, Queens Medical Center, provides telemedicine visits to fragile adult patients in his private practice through a relatively inexpensive home video-conferencing device that he helped develop. Kapiolani Medical Center provides telehealth fetal ultrasound services to a number of neighbor island providers. Shriners Hospitals for Children, Honolulu, conducts telemedicine clinics providing pediatric orthopedic consults to Kauai, Maui, four rural sites on Hawai'i, and in the Pacific Basin Regions (e.g., Guam, Saipan, American Samoa, Federated States of Micronesia, and the Republic of the Marshall Islands). A number of community health centers in Hawai'i use teleopthalmology to provide eye examinations to diabetic patients for evaluation of diabetic retinopathy. In Hawai'i the adoption of an electronic medical record at Kaiser Permanente facilitated the use of telehealth applications and they been conducting telehealth visits for about seven years, including visits in nephrology. Some of their telehealth applications use nurses who serve as coordinators working with patients who report high patient satisfaction. Soon they will expand telehealth applications to provide rheumatology and cardiology services to their Hilo facility.

In 2009, HMSA will launch a new Online Health Care Program that will introduce new online access to health care providers. This program may ultimately change the behavior and interaction between the patient and health care professional.

See Appendix E for initial compilation of former and current telehealth projects in Hawaiʻi.

Barriers and Issues

Based on the 44 telehealth project summaries submitted to date, certain trends can be distilled from the identified critical success factors, critical barriers, and lessons learned (see Appendix E). These can be analyzed to define potential barriers and issues that could confront any telehealth project that might be launched in the future. Many of these overlap the critical issues previously identified during the Telehealth Symposium held in November 2007. Additional project summaries are not expected to change the general trends identified in this analysis. General categories are in order of declining frequency of mention:

Staffing and Work Flows: Barriers and issues in staffing and work flow were mentioned by approximately 72% of the projects. In particular, inadequate staffing (clinical, support, and technical) and poor workflow (telehealth technology inconveniently located or poorly integrated with normal workflows) were often cited. Often mentioned was the need for dedicated support staff to coordinate multiple activities at both hub and spoke sites to enable the telehealth encounters run smoothly.

Support and Collaboration: This category includes the critical issues Coordination & Collaboration, and Political Will & Institutional Leadership identified in the Telehealth Symposium, as well as physician/ staff championship/ support/ participation. Issues in this category were identified by approximately 68% of the projects. The critical need for physician champions was mentioned by numerous projects, as well as other project champions or other strong support among administration and support staff. Several projects identified the need for stakeholder communication, participation, and engagement, and addressing of their needs and concerns during development and implementation. Also mentioned was the need for institutional support, alignment with organizational strategy, coordination of new and existing processes, and addressing "frontier" policies, procedures, and protocols.

Technology: Technology issues were mentioned by approximately 40% of the projects, in three general themes: technology success, technology failure, and technology inconvenience. In some cases, the chosen technology was clearly successful for the intended purpose and newer technologies are being explored for further improvement. In other projects, the chosen or available technology lacked critical capability for the intended purpose (e.g., limited bandwidth, capacity, reliability, or resolution) or for future or expanded use (e.g., inadequate security). Backup contingencies are needed to meet service needs if telehealth technologies fail. Additionally, telehealth technology, equipment, and processes must be flexible, easy, and convenient for clinicians to use, or it will not be used.

Business Model: This category includes the symposium critical issues Business Model, Reimbursement & Funding, and Added Value & Incentives. Issues in this category, especially

funding issues causing curtailment (cessation, reduction, lack of expansion) of telehealth services, were mentioned by approximately 33% of the projects. Several projects mentioned the need for added value or incentives to encourage uptake on both ends (hub and spoke), the clear understanding of "what's in it for me". Also mentioned was workload capture for proper credit/revenue to support the business case for telehealth services.

Clinical and Patient Benefit: Clinical and patient benefits were reported for physicians and patients alike, and high levels of satisfaction and acceptance among physicians and patients, even among technology naïve patients by approximately 33% of the projects. One project even noted high acceptance as a barrier (e.g., "Difficult to withdraw support, some patients became dependent on system"). Another project noted that telehealth showed better results than standard care: a case control trial showed treatment at home using telemedicine was equivalent to hospitalization in clinical improvement and safety, "but that patients convalesced at a faster rate at home."

Training and Learning: Issues with training and learning were reported by approximately 25% of the projects. Issues included: steep learning curves for technology and equipment; value of outreach and education; need for flexible and easy processes, technology, and equipment to encourage use in busy schedules; acceptance and comfort with new technology; properly trained staff at both hub and spoke sites; training to include technology, equipment, workflow, and administration; and training prior to launch.

Critical Issues Needed for Success of Telehealth in Hawai`i

As mentioned earlier, the participants of the Telehealth Symposium reached a consensus that the five priorities or critical issues that need to be addressed with respect to telehealth in Hawai`i are: the business model, reimbursement and funding, coordination and collaboration, added values and incentives, and political will and institutional leadership.

A. Business Model

A business plan is critical for the success of any telehealth initiative. It lays out the reasons a telehealth program is needed and a strategy to start and sustain the program

The American Telemedicine Association has an excellent resource, entitled, "Business Plan Template: a document to assist in the business and strategic planning of telehealth programs." This can be found at the following website: http://www.americantelemed.org/ICOT/sigbusiness.htm. It lists 15 well-organized components of a business planning process: 1) Executive Summary 2) Introduction and Background 3) Needs and Demand Assessment 4) Services Plan 5) Internal and External Assessment 6) Marketing Plan 7) Technical Plan 8) Management Plan 9) Regulatory Environment 10) Financial Plan 11) Presentation to Stakeholders 12) Training and Testing 13) Operations Plan 14) Evaluation, Feedback and Refinement 15) Conclusions and Recommendations.

For the State of Hawai'i as a whole, a successful business plan for a telehealth system has been identified as a critical issue. A business plan is needed to sustain the collaboration among

institutions going forward. Many states, including Arizona, Maine, and California, have created state telemedicine business plans that have been implemented successfully. Arizona's statewide infrastructure success focused on core telemedicine network services that recovered costs from site memberships and other centralized mechanisms. The Maine Telehealth Network has an open architecture, which allows easy connectivity between sites statewide, collaborative network and it leverages lower costs of many value chain activities, such as technical support. California's telehealth success is based largely on a collaborative network, a university-based system, and supportive state legislation.

The Hawai'i State Telehealth Collaborative will need to create a business plan that addresses areas of opportunity and a strategy for financial success.

Basic considerations for areas of opportunity include:
- Identifying telehealth administrative and clinical leadership capability to ensure success.
- Assessing the current telehealth programs and looking for applications that are in high demand.
- Determining the value to users of the telehealth system and set program objectives accordingly.
- Looking at how telehealth programs can be integrated into ongoing program delivery and daily clinical workflow.
- Determining how current technology and infrastructure can be leveraged.

Considerations for strategies for financial success include:
- Understanding how revenue can be generated whether it be through contracts, grants, clinical revenue, reimbursements, membership dues, program charges, legislation seed money, or philanthropy.
- Determining the benefits of the telehealth system and how it contributes to cost savings.
- Promoting the telehealth system as an economic benefit.
- Investigating the integration of the telehealth system into a "parent" organization to obtain support.

At the Telehealth Collaborative Symposium in November of 2007, some priority actions that were identified are:
- Developing and sustaining a high quality, integrated infrastructure that would include rural broadband so more areas of the state have access.
- A change in how telehealth is reimbursed.
- Maintaining Act 221, which would enable more investment of high-tech companies in Hawai'i.

Indications of success are: 1) telehealth becomes part of the standard of care; 2) more doctors are involved in telehealth; 3) more high-tech companies thrive in Hawai'i; and 4) more specialties are available for the Neighbor Islands.

B. Reimbursement and Funding

We must explore critical barriers and potential solutions regarding reimbursement and funding from the viewpoints of different stakeholders: patients, physicians, and payers.

Patients:
There is ample evidence of satisfaction among patients who do use telehealth services. The Hawai'i Community Genetics program has seen high satisfaction among participating families from neighbor islands, who might otherwise choose to forego genetic services if they had to travel to O'ahu. Kaiser notes high satisfaction among its members who use telehealth services. Programs to date have shown that in terms of both quality of service and care, patients see telehealth services as equal to face-to-face services.

Physicians:
Convenience and compensation are primary considerations for physicians. For some, there is marginal benefit in substituting telehealth services in place of travel; clinicians sometimes find that the cost of travel for a visit to a neighbor island is amply offset by a long day of back-to-back office visits. There are also drawbacks to some telehealth applications: it is taxing to do back-to-back VTC consultations, and it is inefficient to do sporadic VTC consultations if they cannot be done from their own offices. Current workflows and physical set-ups in many practices do not support convenient and cost-effective use of telehealth. Many physicians are unclear on how to apply for reimbursement, implying the need for a telehealth reimbursement billing guide, such as is available in Utah.

Payors:
Hawai'i Medical Service Association (HMSA) has a payment policy for telehealth services. However, there is a low volume of submissions for reimbursement. HMSA needs to determine what telehealth services are being performed that are not reimbursed and why. As a managed care organization, Kaiser does not deal with reimbursement per se, but does track telehealth services by CPT code. An important consideration for payers is whether actual cost savings can be realized by using telehealth, i.e., Are telehealth services substitutive or additive to face-to-face services? How can the services and any cost savings be properly documented? And, if there are cost savings, what or who should realize that value through reimbursement?

A paradigm shift is needed to address the psychological barriers of both providers and payers, probably through collaboration and financial incentives for both parties. New delivery models beyond VTC, new administrative models to improve efficiency in current practice, ways to improve convenience and cost-effectiveness for providers, and ways to document cost avoidance for payers are needed. Successful programs using telehealth need to be evaluated to determine why they work and how they can be translated to widespread use in Hawai'i.

Recommended next steps for the collaborative to explore include the following:
- Examine different modalities and determine how each modality works.
- Report what practitioners are billing and what payers are reimbursing and where the challenges are; develop a statewide telehealth reimbursement billing guide that meets state and federal regulations, such as, the one in Utah.

- Form small collaborative groups including representatives from each of the following stakeholders: providers, risk management, and telehealth services to further define business case and telehealth success in Hawai'i.
- Determine the evidence that payors need and develop a proposed reimbursement model.

Sub-Issue: Malpractice and Telehealth

Medical Malpractice provides umbrella coverage for physicians who are performing within the scope of practice under licensure statutes established by each individual state. Most states have legislation that addresses telemedicine. Medicare covers telemedicine and law suits that occur while using telemedicine are covered by malpractice carriers.   A description of MIEC coverage, one of the carriers in Hawai'i, can be found at the following website:
http://www.miec.com/basic.htm

The MIEC policy protects physicians:
- Against claims alleging injury or damage caused by delivering or failing to deliver direct health care services to patients.
- When acting as an independent medical examiner.
- When providing advice or consultation regarding the health of persons who are not patients.
- For peer review activities.

The first and third coverages listed above clearly pertain to telehealth as there is direct care to patients or advice or consultation regarding the health of persons who are not patients. There is no stipulation either in Hawai'i State Statue or in the malpractice policy that the service is an in-person visit. Additionally, the services are reimbursed adding further weight to the argument that telehealth is covered under standard malpractice contracts.

The Center for Telehealth & E-Health Law (CTEL) has elaborated upon potential increased liability related to telehealth. CTEL has addressed the issue of an adverse patient outcome when there is equipment failure. This concern occurs in a number of settings using advanced technology and is not unique to telehealth. CTEL does imply that providers using telehealth equipment have some level of responsibility to make sure the system is reliable.

The issue of malpractice coverage is much more confusing when services are provided across state lines. Basically, there are variations in the scope of practice from state to state. The provider is required to meet the scope of practice in the state that the patient resides. This situation is not the primary focus of the report and is included to be more complete in discussing the malpractice issue.

Since the malpractice coverage is defined by the State's statute covering the scope of practice, the American Telemedicine Association recommends "State requirements to mandate payments for telemedicine service should be accompanied with requirements that insurance carriers provide malpractice coverage for those same services." This recommendation establishes a higher level of certainty that telehealth services are explicitly linked to malpractice coverage and the scope of practice.

C. Coordination and Collaboration

In Hawaiʻi, improved coordination and collaboration among major telehealth stakeholders is required for successful integration of services, sharing knowledge, best practices and innovations. In states such as Washington, Alaska, Utah and California, telehealth centers of excellence were created, such as, the Center for Health and Technology, University of California Davis Health System, that play a central role in the implementation of successful telehealth programs in their region. Many of these organizations address 1) technical issues related to infrastructure, 2) clinical needs of the community and health institutions, and 3) monitor federal and state policies that facilitate progress. Hawaiʻi has a need and opportunity to develop such a unified structure to fully and effectively integrate telehealth into existing health systems, develop enabling policies and support sustainability through practical and applicable business models. A key component will be the engagement of stakeholders, at all levels, in the process of developing a strong alliance and strategic plan. Telehealth involves a broad range of stakeholders, including patients (service recipients), health professionals and administrators (service providers), health insurance companies (reimbursement payers), academia (research), technologists (technical infrastructure), policy makers (policy infrastructure), liability insurance companies (legal support services), and others.

There are existing resources and organizations available at the national, regional and state levels. These organizations provide venues for health professionals to share information for the advancement of telehealth. Nationally, there are organizations and resource centers such as the American Telemedicine Association (ATA), the Health Resources Services Association's (HRSA) Office for the Advancement of Telehealth (OAT), and the Association of Telehealth Service Providers (ATSP). Regionally, the Northwest Regional Telehealth Resource Center is made up of 33 telehealth networks, including those in Hawaiʻi and the Pacific territories.

Here in Hawaiʻi, there is the Pacific Island Chapter of the American Telemedicine Association (PICATA) and the Hawaiʻi Telehealth Collaborative. These local organizations are primarily comprised of health care and technology professionals experienced in managing telemedicine programs across the Pacific who volunteer their time to advance telehealth. However, it should be noted that physician representation, particularly medical specialists, needed to champion telemedicine consultations are in the minority and involvement in these organizations has been sporadic. A local resource committed to assisting provider telehealth champions to set up telehealth programs and navigate liability, reimbursement, and HIPAA issues is imperative to telehealth's success in Hawaiʻi.

During the groundbreaking 2007 Hawaiʻi Telehealth Collaborative Symposium, participants offered practical ways of improving cooperation and collaboration in the state:
- Increase awareness and advocacy of stakeholders via a multi-system and a multi-level approach.
- Define a leadership group with a clear mandate and authority to move forward a broad outline and long-term plan.
- Seek funding and resources in collaborative ways for shared goal.
- Develop a broad telehealth strategic plan that addresses the healthcare and human service needs of the State.

- Improve communication among stakeholders (via a collaborative, web site, on-going meetings, etc.)

There are many telehealth initiatives in Hawaiʻi that have demonstrated value by improving access to health services, reducing costs to deliver those services, and improving patient care. However, many of these initiatives fall short of widespread adoption and sustainability. It is clear that a concerted effort and focus on the many interrelated factors and critical issues is imperative for Hawaiʻi to build successful telehealth programs. Taking the Symposium recommendation into consideration, the Task Force will investigate the most practical and efficient structure for strengthening telehealth partnerships and coordination in Hawaiʻi.

D. Added Value and Incentives

Despite known benefits and successes of telehealth programs across the U.S., resistance to widespread adoption in Hawaiʻi continues. For widespread adoption to occur, state policymakers and program planners need to address provider resistance to change as well as other human factors; and, the lack of *market driven* incentives that promote adoption of telehealth technology and practice.

With physician shortages expected to continue in the future, the state must restructure Hawaiʻi's healthcare delivery system, a system that currently favors traditional in person doctor-patient office visits, towards a technologically advanced and less restrictive forward-looking model. Sufficient technical support and user training, financial incentives for telehealth providers, and carefully planned strategies that do not substantially increase provider workload will help bring about a needed paradigm shift in Hawaiʻi's healthcare marketplace.

Possible incentives to reward early adopters of telehealth services with an emphasis on improving access for underserved populations, i.e., communities with provider shortages, prison populations, and areas with health disparities, include:

- Establish a student loan repayment program for telehealth specialists who serve underserved populations.
- Institute telehealth reimbursement incentives for providers who serve underserved populations.
- Design tax benefits for providers who invest in telehealth equipment and infrastructure.
- Create incentives for the John A. Burns School of Medicine, University of Hawaiʻi at Mānoa, to expand telehealth outreach to underserved areas. Many successful telehealth programs are affiliated with medical schools.
- Advocate *market driven* reimbursement incentives to support in-home telehealth services designed to keep the aged and chronically ill in their homes longer.

Additional research will be conducted to determine which of these or other incentives have proven results.

E. Political Will and Institutional Leadership

For healthcare system changes to efficiently and effectively have impact on the health situation of our community, policy directives must occur at the state and national levels. Many times, federal policies will ignite the change in state policies and national organizations such as the American Telemedicine Association (ATA), Health Information Management Systems Society (HIMSS), American Medical Informatics Association (AMIA), and the Center for Telehealth Law (CTel) are working to change policy at the national level. However, this takes a long concerted effort as each state is unique in its needs and challenges. ThereforeI, Hawai'i must have a voice in facilitating policy changes to meet the needs of our state.

Political will and institutional leadership was identified during the 2007 Telehealth Symposium as being one of the top 5 critical issues that needs to be addressed to facilitate the adoption and advancement of Telehealth in the State of Hawai'i. During a luncheon meeting/discussion on political will and institution leadership held on May 30th, the participants noted that:
- Telehealth activities in Hawai'i are fragmented.
- The current leader for telehealth in Hawai'i has been an individual (Senator Inouye) and is not systemic/institutional.
- There is no succession plan in place for telehealth issues.
- There is a lack in understanding of telehealth.

The participants also commented on the importance of:
- Identifying advocates with a similar mission and engaging leaders from the community.
- Educating healthcare providers, patients, legislators on the obstacles of reimbursement, liability, institutional sharing of information, HIPAA, etc. and offer solutions.
- Identifying and supporting bills that fit with telehealth.
- Collecting data on the value/benefits of telehealth to the patient, payer, and the physician.

Recommendations from the participants included:
- Formally establish an advocacy group that has government support to bring together multiple organizations that will work on specified objectives toward a goal of improving patient care and efficiency.
- Collaborate and gain support of different organizations and associations,
- Identify, monitor, and support currently proposed legislation that pertains to telehealth and/or issues that telehealth can address (i.e. physician/healthcare provider shortages, healthcare disparities, medical referrals, continuing education, patient centric care, etc.).
- Educate institutional leaders, healthcare providers/organizations, healthcare association, payers, the community, and the legislature.
- Draft policies to be submitted to the legislature.
- Be a resource and expert advisor to the legislative body.

Sub-Issue: Telehealth Legislation

The following sections of the 2008 Hawai'i Revised Statutes pertain to telehealth.
- §431:10A116.3 Coverage for Telehealth.
- §431:10A-116.5 Coverage for Telehealth.
- §432:1601.5 Coverage for Telehealth.
- §432D23.5 Coverage for Telehealth.

- §453-2 License required; exceptions
- §457-2 Definitions
- §457-5 Duties and powers of board.
- §466J-6 Persons exempted.
- §209E-2 Definitions.

This is not intended to be an inclusive list of all current Hawai'i telehealth statutes, but is a representative sample. A review of these statutes reveals contradictory, fragmented, and/or circular references to telehealth and telemedicine in the current laws. Additionally, many of the current statutes were written 25 years or more ago and are dated in light of current telecommunications technologies.

We recommend that the Legislature, with the assistance of the Telehealth Task Force as needed, review the current statutes and introduce legislation to clarify, eliminate discrepancies, and consolidate current statutes. Further, we also recommend that legislation is introduced to revise the definition of medicine to include telehealth activities.

Summary

This report presents preliminary findings of the Telehealth Task Force and includes:
- A history of telehealth in the State of Hawai'i that led to the formation of the Telehealth Task Force
- Findings from the November 2007 Telehealth Symposium, and
- Summaries of past and current telehealth projects in the state.

Participants in the 2007 Telehealth Symposium identified five critical issues needed for the success of telehealth in Hawai'i: 1) developing sustainable business models; 2) improving reimbursement and funding, including malpractice; 3) increasing coordination and collaboration; 4) providing added value and incentives, and 5) developing political will and institutional leadership.

An initial analysis of the telehealth project summaries supports the Symposium findings regarding the issues affecting the success and sustainment of telehealth activities in the state with the addition of: 1) lack of staffing and work force; 2) technology issues; and 3) need for training and learning.

While telehealth in Hawai'i has made some positive strides, it is clear that there are still some significant barriers and issues that need to be addressed before telehealth is integrated seamlessly into the healthcare delivery system. As the Telehealth Task Force continues its work on a strategic plan and a more detailed set of recommendations during the coming year, initial actions that the legislature may take immediately to support telehealth in Hawai'i are:
1) The establishment of a Clinical Informatics Task Force to explore issues pertaining to electronic health records (EHRs), electronic medical records (EMRs), personal health records (PHRs), and health information exchanges (HIEs). Further, an HIT Coordinating Council be established composed of the leadership of the Telehealth, Clinical Informatics, and Broadband Task Forces to coordinate efforts. This will help to ensure maximization of resources, technical and organizational interoperability, and strengthen partnerships and collaboration.

2) A review the current statutes by the Legislature, with the assistance of the Telehealth Task Force as needed, and the introduction of legislation to clarify, eliminate discrepancies, and consolidate current statutes. Further, we also recommend that legislation is introduced to revise the definition of medicine to include telehealth activities.
3) The introduction of legislation to support the sustainability of telehealth business models, such as, incentives for telehealth activities, support for non-state funding, and private/public partnerships.

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APPENDIX A
Hawai'i Telehealth Collaborative Symposium
November 15, 2007
Aggregate Results

Critical Issue: Business Model

Highest Priority Actions
- Rural Broadband
- Change Rules for Reimbursement, possible pilot program
- Maintain Act 221

Key Results
- Every nursing and foster home would be tele-enabled
- More doctors involved in telehealth
- Telehealth becomes part of standard care
- More high-tech companies in Hawai'i
- More specialties, especially on Neighbor Islands

Critical Issue: Reimbursement and Funding

Highest Priority Actions
- Address medical malpractice (legislation or other resources)
- Medicaid and private insurers' consensus on the recognition of telehealth
- Developing measurable outcomes (i.e. travel costs vs. telehealth)

Key Results
- Malpractice is available to cover telehealth
- All payers reimburse telehealth adequately
- More programs have measurable outcomes
- Progress in closing gap between actual utilization and perceived utilization
- Measurements are in place and data is collected. Outcomes are measured – patient and provider. (# sites, # referring physicians, # consultations, etc.). Travel costs/distance, types of applications.

Critical Issue: Coordination and Collaboration

Highest Priority Actions
- Increase awareness an advocacy via multi-system/level approach to all the stakeholders (including congressional, local, government, etc.)
- Define leadership group with clear mandate and authority to make changes to move forward with clear mandate with broad outline and a long-term plan in place

- Seek funding and resources (time, etc.) in collaborative way for shared goals vs. individual attempts
- Broad telehealth strategic plan that addresses the healthcare and human service needs (e.g. social services supported by DOH) of the State

Key Results
- Increased utilization of telehealth services
- Telehealth priority of DOH and other entities
- Integrated into the delivery system
- Leadership group in existence
- Having obtained adequate funding
- Provider adoption and consumer acceptance
- A central strategic plan in place with some activities already in motion
- This central strategic plan would be used by other entities to develop (refer back to) their own plan
- Strong, functional work groups that meet regularly
- Congressional and legislative support
- Telehealth integrates EMR/EHR

Critical Issue: Added Value and Incentives

Highest Priority Actions
- Develop and implement a state strategic plan for telehealth that demonstrated value.
- Develop and implement a standardized set of legal and regulatory operating agreements between sending and receiving institutions.
- Create a clinical group that develops a playbook of telehealth-available serves and addresses integration with traditional healthcare and HER doctor needs on sending and receiving end.

Key Results
- This group did not have time to discuss key results.

Critical Issue: Political Will and Institutional Leadership

Highest Priority Actions
- Advocacy Group
  - Formally establish a collaborative
  - Seek funding to organize and operate
  - Seek business plan development
  - Advocacy role is important
- Educational Campaign
  - Program activity education campaign targeted to various constituencies (legislators, healthcare leaders, physician, business, employers)
  - Program activity

- Institutionalizing technical assistance (planning, training, not technology) to various programs.
- Strategic Plan
    - Develop a strategic plan for the collaborative effort to grow telehealth

Key Results
- Funding for UH/State telehealth programs
- Collection of grants, especially those who don't have any as collaborative members
- Telehealth included in strategic plan in key organizations
- Policy leaders are educated, informed, supportive
- Laws on books to support telehealth
- Better VTC facilities at hospitals
- General purpose access patients for telehealth consultations (kiosks)
- Broader range of telehealth advocates
- Shared vision for telehealth statewide

APPENDIX B
Telehealth Task Force and Work Group Members

TASK FORCE	DESIGNEE	WORK GROUP	AFFILIATION	NAME	TITLE
X			Kaiser Permanente	Alan Lau, MD	MD, Internal Medicine, Nephrology
X			Hepatitis Support Network	Alan Tice , MD	MD, FACP
X			Psychiatric Medical Assoc.	Chad Koyanagi, MD	MD, Addiction Psychiatry, Psychiatry
X			Dept of Health	Chiyome Fukino, MD	Director, State of Hawai`I, Department of Health
	X	X	UH Telecom & Information Policy Group	Christine Higa	Director, PEACESAT, Social Science Research Institute
	X	X	Hawaii Primary Care Assoc.	Christine Sakuda	Principal Investigator
	X	X	American Telemedicine Assoc.	Dale Moyen	Telehealth Manager
X			Hawaii Medical Center	Danelo Canete, MD	MD, Cardiology
	X	X	UH JABSOM Telehealth Research Institute	Deborah Peters, PhD	SeniorScientist/Research Manager
X			Hawaii Primary Care Assoc.	Elizabeth Giesting	Executive Director
X			Queens Medical Center	Gerard K. Akaka, MD	MD, FACP
	X		Hawai`i Medical Center	James Lumeng, MD	MD, Pathology, Internal Medicine, Oncology
	X		Hawaii Rural Health Assoc.	Jana Lindsey RN	Telemedicine Coordinator
		X	Shriners Hospital for Children	Jana Lindsey RN	Telemedicine Coordinator
X			UH JABSOM	Jerris R. Hedges, MD	MD, MS, MMM
X			American Telemedicine Assoc.	Jonathan D. Linkous	Executive Director
		X	Telehealth Research Institute	Joseph Humphry, MD	MD, Internal Medicine
X			Hawaii Rural Health Assoc.	Judy Mikami	Director, Resource Development for Na Pu`uwai
	X	X	Queens Medical Center	Karen Seth	Manager, Neuroscience Institute/Stroke
	X		Kaiser Permanente	Lawrence Eron, MD	MD, Infectious Disease, Internal Medicine
X			Department of Human Services	Lillian Kohler	Director, Department of Human Services
X		X	Hawaii Medical Services Assoc.	Linda Axtell-Thompson	MBA, MA, AVP, Strategy and Privacy
	X	X	Hawaii Health Systems Corp.	Lorna Nekoba	MLS, Medical Librarian, Hilo Medical Center
	X		Dept. of Human Services	Lydia Hemmings	Executive Director, Blueprint for Change
	X		Psychiatric Medical Assoc.	Mike Fukuda, MSW	MSW

X		UH Telecommunications & Information Policy Group	Norman Okamura	Specialist, Social Science Research Institute
	X	Dept of Health/CSHNB	Sylvia Au	MS, Community Genetics Program
X		Veteran's Health Affairs	James Hastings, MD	Director, Pacific Islands Health Care System
X		Tripler Army Medical Center	Suzanne D. Martin	Information Management Division
X		Ho'okele	Dew-Anne Langcaon	CEO
X		Hawai`i State Office of Rural Health	Scott Daniels, PhD	Performance Improvement Coordinator
X		Hawaii Health Systems Corp.	Thomas Driskill	President/CEO

Hawaii Telehealth Bills and Laws (2007-2008 Legislative Session)

Doc #	Description	Status
HB202 HD1	**Relating to Telepsychiatry** (Green) Requires and appropriates funds for the University of Hawaii to expand its existing telepsychiatry project to rural Oahu, rural Kauai, and Hawaii, and to involve advanced graduate psychiatric residents in the provision of the services. (HB202 HD1) **http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=HB202**	8/27/07 D: Carried over to 2008 Regular Session
SB231	**Relating to Telepsychiatry** (Chun Oakland) Appropriates funds to expand the telepsychiatry project at the University of Hawaii; appropriates funds for that purpose. **http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=SB231**	8/27/07 D: Carried over to 2008 Regular Session
HB2246	**Telepharmacy; health care; rural areas** (Herkes) Authorizes pharmacies that dispense medications pursuant to section 340B of the United States Public Health Service Act to engage in telepharmacy dispensing of medication subject to rules created by the Board of Pharmacy. **http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=HB2246**	1/18/08 H: Referred to HLT/HSH, CPC, referral sheet 3
HCR138 HD2 SD1	**Health; Telemedicine** (Evans) Requesting the University of Hawaii John A Burns School of Medicine's Telehealth Research Institute to form a task force to review the potential expansion of the current practices and equipment of Hawaii's Telemedicine System. **http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=HCR138**	5/1/2008 S: Received notice of House Agreement and Adoption in House (Hse. Com. No. 822)
SB977 SD1	**Primary Health Care Services; Rural Areas** (Ige) Appropriates funds to develop a statewide rural training model to provide a pipeline of well trained family physicians to improve health care access and meet the future health needs of the people of Hawaii. (SD1) **http://www.capitol.hawaii.gov/site1/docs/getstatus2.asp?billno=SB977**	8/27/07 D Carried over to 2008 Regular Session

APPENDIX D
Hawaii Telehealth Project Summaries

All summaries are available online at http://www.hawaiitelehealth.net/summary.html

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: LTC C. Becket Mahnke (Christopher.Mahnke@us.army.mil)

PROJECT NAME: Asynchronous Local/Oversees Hospital Academic (ALOHA) System

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center; Departments of Pediatrics and Obstetrics/Gynecology

FUNDING (source and amount): Telemedicine and Advanced Technology Research Center (TATRC), AMEDD Advanced Medical Technology Initiative (AAMTI) 2008 award ($168,000)

START UP FUNDS: See above

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Project initiated spring 2008; ongoing

PURPOSE/INTENT (100 words maximum):

Current Graduate Medical Educational (GME) requirements are not being met by military physicians in the Hawaii-Pacific region due to a combination of geographic, regulatory and educational factors. Resident work hour restrictions have resulted in "Night Float" rotations and the need for external medical rotations have severely limited daytime scheduled educational activities, including departmental lectures and bedside medical rounds. To address this issue, a tele-educational portal within the existing Pacific Asynchronous TeleHealth system (PATH) serving the needs of Pediatric and OB/GYN GME is being developed. The ALOHA system will provide digitally recorded educational lectures within the two departments in an asynchronous ("store-and-forward") mode and provide Residency Program Directors with measures of competence as required by the American College of Graduate Medical Education. The ALOHA system will also ensure that a core curriculum is available to all Pediatric and OB/GYN residents. Future work will focus on expanding these educational opportunities to other GME programs at Tripler Army Medical Center as well as offering Continuing Medical Education (CME) credits for DoD healthcare providers stationed throughout the Pacific region.

MAJOR CRITICAL ACCOMPLISHMENTS:
When complete, the ALOHA system will address educational needs through the creation of a tele-educational portal that will:
1. Provide digitally recorded educational lectures that will be available throughout the medical center for Hawaii-based GME and CME. 2. Provide such recorded educational lectures to remote colleagues in asynchronous mode throughout the Pacific region for CME. 3. Contain interactive, case-based learning modules for independent study. Resident work hour limitations have reduced the number of patient encounters for trainees. The ALOHA system will expose resident trainees to all essential educational materials during training, ensuring a complete educational experience. These cases will be created from both staff teaching files and actual teleconsultations (once protected health information has been removed). 4. Electronically link lectures and case-based learning modules into actual patient cases within the established teleconsultation system. This will provide content-specific educational material for remote providers in the Pacific region. Additionally, this aspect will allow leveraging of diverse, military and geographically relevant patient database for educational means.

CRITICAL SUCCESS FACTORS:
Active

CRITICAL BARRIERS (overcome or not):
Educator (TAMC staff) and Learner (TAMC Housestaff) participation.

MAJOR LESSON LEARNED:
Financial support for ongoing development past the first GME phase.

CURRENT STATUS (active, planned, dormant, completed, other?):
Ongoing development

PARTNERING ORGANIZATIONS:
Telemedicine and Advanced Technology Research Center (TATRC), DoD healthcare facilities throughout the Pacific region

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champions

TECHNOLOGY USED: Tele-educational portal within the existing Pacific Asynchronous TeleHealth system

TELEHEALTH PROJECT SUMMARY
SUMMARY WRITER: Lawrence Eron MD

PROJECT NAME: Big Island/Moanalua telemedicine hookup

ORGANIZATION/AGENCY (and primary contact): Kaiser Permanente (Mary Hew)

FUNDING (source and amount): Kaiser Permanente IT department $126,046

START UP FUNDS: $126,046

REIMBURSEMENT (submitted/not submitted): NA

DURATION (start time and date): 2005-present

PURPOSE/INTENT (100 words maximum):
Subspecialty consultation between Kaiser Hospital on Oahu and the clinics in Kona and Hilo on the Big Island.

MAJOR CRITICAL ACCOMPLISHMENTS: So far consults have been made to subspecialists in Allergy, Cardiology, Nephrology, Plastic Surgery, Behavioral Health Services

CRITICAL SUCCESS FACTORS:

CRITICAL BARRIERS (overcome or not): Difficulty identifying a willing/interested physician champion

MAJOR LESSON LEARNED: We schedule IT support for every telemed clinic. The equipment learning curve for nurses is steep

CURRENT STATUS (active, planned, dormant, completed, other?): active

PARTNERING ORGANIZATIONS: none

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
No clinical champion. A committee of representatives from administration, appointment staff, and nursing staff meet regularly (every other month) to monitor utilization as well as explore additional telemed opportunities. We use the specialty nurses to ask the physicians to identify potential appropriate patients for telemedicine services.

TECHNOLOGY USED: Tandberg II units

TELEHEALTH PROJECT SUMMARY
SUMMARY WRITER: Sven-Erik Bursell

PROJECT NAME: Diabetes Care and Treatment Project

ORGANIZATION/AGENCY (and primary contact): Telehealth Research Institute, John A. Burns School of Medicine, University of Hawaii

FUNDING (source and amount): Department of Defense ($50M), Indian Health Service ($2.5M), Robert Wood Johnson Foundation ($300,000)

START UP FUNDS:

REIMBURSEMENT (submitted/not submitted): Eye Care program can use CPT 92250 for eye imaging. Reimbursement for care management is pending but not submitted

DURATION (start time and date): October 1, 1998

PURPOSE/INTENT (100 words maximum):

Provide web-based interactive care management and care coordination using telecommunications infrastructure for diabetes health care services including remote surveillance for diabetic retinopathy. The application is an open source software tool for health care delivery based on the Wagner Chronic Care model. The eye care module ensures that all diabetic patients receive appropriate eye care regardless of geographic or cultural barriers. The diabetes care module aggregates medical information from a variety of sources such as the electronic health record, laboratory systems, and the patient home and presents that data in a single dashboa5rd view facilitating face to face and remote encounters.

MAJOR CRITICAL ACCOMPLISHMENTS:
Development of a Telehealth retinal assessment application that increases access of people with diabetes to appropriate medical eye care. This is achieved using low light level sensitive video technology and imaging systems that can image the retina without requiring pharmacologic dilation of the pupil. The results from this research ad development project demonstrated that the system provided diagnoses of diabetic retinopathy that were equivalent to those obtained through dilate eye stereo retinal 35mm photography and to dilated eye examination performed by retinal specialists. Analysis also showed that the system cost less than traditional eye care and saved more sight. In a large retrospective study results also showed that patients who underwent this examination were more compliant to subsequent standard eye care, were more compliant to subsequent diabetes clinic visits and showed lower A1c and lipid levels than patients who had not undergone the teleretinal surveillance intervention.

Use of the diabetes care management program has also shown benefit with respect to improvement in A1c, lipid, and adherence to regular foot and eye examinations for patients with diabetes. Additionally, results from this study also showed a significant reduction in patient stress associated with dealing with diabetes as measured using the PAIDS tool.

The eye care program is now deployed in over 60 sites throughout the Indian Health Service. The results from this development effort also formed the basis for the VA National Teleretinal Screening program which was based on the model developed out of the core research and development effort.

CRITICAL SUCCESS FACTORS:
For the eye care module the critical success factor was the clinical validation with respect to diagnostic accuracy.
Other factors are the additional training the retinal imager specialists receive in basic diabetes self management that can be conveyed to the patient at the time of the imaging. We have found that this is a very powerful teaching moment as patient is able to see their own eye up on the monitor screen.

For the diabetes care management a critical success factor was engaging users in a user centered design process for the application.

CRITICAL BARRIERS (overcome or not):

Perception by ophthalmologists that this program would be taking patients away from them—have been able to show that in fact they will increase the number of patients that they see and the number of procedures that they will perform.
Need to establish a credible quality assurance program with appropriate population and organization reporting with respect to performance

Need to bridge the health care connection between ophthalmology and internal medicine

MAJOR LESSON LEARNED:
Human factor evaluations are essential
Include all stakeholders in the development process

CURRENT STATUS (active, planned, dormant, completed, other?):
Program is active with 4 participating clinics in Hawaii

PARTNERING ORGANIZATIONS:
Department of Defense, Veteran Health Affairs, Indian Health Service and Joslin Diabetes Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

There are a number of clinical champions associated with this project

TECHNOLOGY USED:
Eye Care program:
Topcon Non-mydriatic retinal fundus camera with a low light level sensitive digital video camera.
Industry standard PACS infrastructure
DICOM and HL-7 compliance
VPN connectivity and security for retinal image transmission to evaluation centers.

Diabetes Care Platform
Industry Standard web browser technology,
Oracle data base
HIPAA compliance
Open Source software to facilitate interoperability and collaboration (Currently interfaced to VA VistA, Dod, AHLTA, and HIS RPMS EHRs, as well as to a number of commercially available HER systems)
Java software development environment, also use .NET and Visual Basic languages.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: COL Suzie Martin

PROJECT NAME: eICU

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center, Critical Care Medicine

FUNDING (source and amount): Congressional Appropriations totaling $6,411,500 since FY02

START UP FUNDS: Initial research funding was $1.2M

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Started 2003

PURPOSE/INTENT (100 words maximum):
To provide board certified critical care specialist services to remote Intensive Care Units using a proprietary technology solution (eICU®, VISICU Inc., Baltimore, MD) which is HIPAA compliant and FDA approved. Daily physician to physician consultation rounds and multi-disciplinary (pharmacy, respiratory therapy, critical care nursing and physician specialty) consultation rounds are offered to the Naval Hospital Guam and the 121 General Hospital in Yongsan, Seoul Korea.

MAJOR CRITICAL ACCOMPLISHMENTS:
Overcomes the gaps in care resulting from shortages of board certified critical care specialists and critical care nurses in the military health system. Benefits include improved clinical outcomes, reduced clinical variation, increased patient safety, and more efficient resource utilization, as well as reduced mortality and ICU length of stay

CRITICAL SUCCESS FACTORS:
Four "hard factors" contribute to the success of the eICU Program: 1) project continuity, 2) performance integrity, 3) commitment of senior government personnel, and 4) additional effort of medical and clinical personnel needed to fulfill eICU requirements.

CRITICAL BARRIERS (overcome or not):
Limited in scope to an intermittent consultative care model due to funding provided. Full benefit of the system and expansion to other facilities or for continuous operations would require more funding. Current funding will only sustain the system at its current operational level through May 2009.

MAJOR LESSON LEARNED:
Success is realized in saving just one life, but security requirement limit the capabilities of the robust medical and clinical interface. To remediate this issue, a Liaison position was established to support the additional operational activities until such time as system integration can be accomplished.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS:
Tripler Army Medical Center, John A. Burns School of Medicine, Pacific Telehealth and Technology Hui, Naval Hospital Guam and 121 General Hospital, Korea.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion

TECHNOLOGY USED: Proprietary technology solution (eICU®, VISICU Inc., Baltimore, MD)

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: Fetal TeleUltasound

ORGANIZATION/AGENCY (and primary contact): Hawaii Pacific Health / Fetal Diagnostic Center

FUNDING (source and amount): U.S. Dept of Commerce - Technology Opportunities Program: $550,000

START UP FUNDS: Weinberg Grant 1998: $200,000 + $1,185,000 matching funds

REIMBURSEMENT (submitted/not submitted): Submitted

DURATION (start time and date): 10/01/1999 to 09/30/2003

PURPOSE/INTENT (100 words maximum):
To improve access to specialty medical care for women in Hawaii with High Risk pregnancies, the Kapi`olani Medical Center for Women and Children Fetal TeleUltrasound Project began in October 1999 with the goal to link the Neighbor Islands of Hawaii to Hawaii's urban center of Honolulu on the Island of Oahu via real time clinical video conferencing (telemedicine) systems and the necessary network infrastructure. 10 Remote Ultrasound Examination sites were established across the Hawaiian Islands with the Hub site located at Kapiolani Medical Center for Women and Children in Honolulu.

MAJOR CRITICAL ACCOMPLISHMENTS:
281 Patients seen during Pilot Project Period of 3/01/2001 to /09/30/2003. Awards: Telecon National 12/2000 - Best Healthcare Project in US; Hawaii Pono Tech 12/2001 - Best Non Profit Project in Hawaii. Fetal TeleUltrasound Program featured on PBS Kids Health Episode #104. Fetal TeleUltrasound was first program of it's kind in U.S.

CRITICAL SUCCESS FACTORS:
100% of the 98 patient surveys received answered Yes to the question 'Would you be agreeable to using teleultrasound again"?

CRITICAL BARRIERS (overcome or not):
After departure of original Physician Champion, utilization of service has dropped significantly.

MAJOR LESSON LEARNED:
Must have strong physician champion and physician motivation to utilize telemedicine.

CURRENT STATUS (active, planned, dormant, completed, other?):
Still active and operationalized however only offered within HPH system at this time due to lack of utilization and cost of maintaining ISDN network to neighbor island sites.

PARTNERING ORGANIZATIONS:
Hawaii Radiology Associates, Maui Radiologic Associates, North Hawaii Community Hospital, Kapiolani Medical Center at Pali Momi; Wilcox Hospital; Hawaii Health Systems Corporation; Kauai Veterans Memorial Hospital; Maui Memorial Hospital; Molokai General Hospital; & The State of Hawaii Telehealth Access Network.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Yes - Hawaii Pacific Health Telehealth Manager

TECHNOLOGY USED: Tandberg Health Care System III over direct dial 768kbps ISDN lines

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Christine Maii Sakuda

PROJECT NAME: Hawaii Community Telehealth Network Program

ORGANIZATION/AGENCY (and primary contact): Hawai`i Primary Care Association, Christine Maii Sakuda

FUNDING (source and amount): $958,000.00

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted):

DURATION (start time and date): 9/1/08-8/31/09

PURPOSE/INTENT (100 words maximum):
The goal of the project is to increase access to high quality health care to all communities in need across the Hawaiian Islands by advocating for, expanding, and improving health information technology with a focus on telehealth and telemedicine services for HPCA member Community Health Centers and Native Hawaiian Health Care Systems.

Goal 1. Telemedicine and Distance Education: Increase access to specialty health care, distance learning, emergency preparedness, and administrative linkages via telemedicine, videoteleconferencing, and web-based applications.

Goal 2. Quality Improvement: Demonstrate and increase health system quality via improved health information systems.

Project Activities. Tele-dermatology, tele-behavioral health, OB-GYN, distance education, emergency preparedness, VTC bridge support, administrative support, community outreach, CHC network facilitation, and coordination and project management of health information technology related initiatives.

MAJOR CRITICAL ACCOMPLISHMENTS:
TBD

CRITICAL SUCCESS FACTORS:
Dependent upon the success of reimbursement, engaging specialist champions, adequate telemedicine coordinator resources at the hub and spoke site.

CRITICAL BARRIERS (overcome or not):
Getting reimbursed for telemedicine services, limited supply of medical specialists and site coordinators.

MAJOR LESSON LEARNED:
Not applicable.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active as of October 2008.

PARTNERING ORGANIZATIONS:
Federally Qualified Community Health Centers (CHCs), Native Hawaiian Health Care Systems, Kuakini Hospital, Rehabilitation Hospital of the Pacific, Ke Anuenue Area Health Education Center (AHEC), Dr. Doug Johnson (dermatologist), and, Dr. Chad Koyanagi (psychiatrist).

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
TECHNOLOGY USED: A mix of PRI, IP T-1 lines, frame-relay, DSL, and ISDN. Tandberg MCU is mostly supported by an ISDN PRI and cable broadband IT transport. Most spoke sites have 384kbs ISDN connectivity but some are some are migrating to IP.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Karen Seth

PROJECT NAME: Hawaii Neuroscience Telehealth Network

ORGANIZATION/AGENCY (and primary contact): The Queen's Medical Center Neuroscience Institute

FUNDING (source and amount): Office for the Advancement of Telehealth - $479,318 over two years

START UP FUNDS: Queen Emma Research Fund - $25,000

REIMBURSEMENT (submitted/not submitted): not submitted

DURATION (start time and date): 9/30/2006 to present

PURPOSE/INTENT (100 words maximum):

Neurology and neurosurgery specialty care are not widely available in rural settings. The overall objective of the project is to improve the quality of acute neurological and neurosurgical care for patients with stroke and other acute neurological injuries at rural sites throughout the state of Hawaii through a neuroscience telehealth network. The project will determine if this network 1) is easy to use with few system or technical failures, and 2) will enhance the quality and scope of patient care at the initiating sites, during transport and for those who are transferred.

MAJOR CRITICAL ACCOMPLISHMENTS: Established initial site at Hilo Medical Center Emergency Department.

CRITICAL SUCCESS FACTORS: No sites existed prior to grant award. A team of committed specialty providers, clinical champions at all sites, communication, network management by a designated project manager, outreach and education have been key to developing this network.

CRITICAL BARRIERS (overcome or not): QMC spent much of the first year overcoming the following challenges: establishing the protocol and informed consents, obtaining Institutional Review Board approval, solidifying the data collection system and personnel at the hub site, and overcoming the challenge of executing subcontracts.   Since project start-up, the primary challenges have included patient enrollment, which has been limited by time pressure in the Emergency Dept. and malpractice coverage related issues that resulted in QMC implementing a restrictive research protocol imposed by the Institutional Review Board (IRB). To overcome those challenges, QMC agreed to seek changes in the self-insured policy for malpractice and to take the project out of the research protocol. Informed consent is now included with the rural hospital's regular consent. The project is now a service project rather than a research study. Grant funding will sustain project until August 2009.

MAJOR LESSON LEARNED: Consistent communication and face-to-face contact between providers is needed to establish a project successfully. The process that is set-up for the telehealth sessions and the technology and equipment needs to be flexible and very easy to use for the providers; otherwise they will not take the time out of the busy clinical schedule to use the technology.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: Hilo Medical Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? The physician champion is Cherylee Chang, MD, Medical Director, Queen's Neuroscience Institute/Neurocritical Care and there is project management, administrative and data support from the Neuroscience Institute.

TECHNOLOGY USED: Installation of the equipment and technical support of the telehealth system is provided by Interactive Care Technologies, LLC, which is headquartered in Honolulu, HI. Daniel Davis, MD, CEO, provides technical consultation. The telehealth system includes a sophisticated ASP server application and ISP routing methodology that layers

internet connectivity and wireless, stand-alone, high-resolution, examination camera systems with one-touch activation that will be placed in Emergency Departments at rural sites.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Lianne Hasegawa, MS, CGC

PROJECT NAME: Hawaii Practice Model

ORGANIZATION/AGENCY (and primary contact): Western States Genetic Services Collaborative

FUNDING (source and amount): HRSA (federal) - $5,000.00 (not including in-kind DOH contributions)

START UP FUNDS:

REIMBURSEMENT (submitted/not submitted): Submitted

DURATION (start time and date): February 2006

PURPOSE/INTENT (100 words maximum):

The purpose of this project is to increase access to genetic and hematologic services to neighbor island families through the use of telemedicine. Satisfaction surveys, completed by families, specialists, and onsite facilitators, record satisfaction with the services, and results are compared to similar surveys completed by families and specialists participating in in-person neighbor island outreach clinics. Time and cost data is also being recorded for both telemedicine and outreach clinics and will be compared.

MAJOR CRITICAL ACCOMPLISHMENTS:

Fourteen telemedicine sessions have been completed so far to follow up on positive newborn screening or genetic testing results. Satisfaction survey results show that families are very satisfied with the telemedicine services.

CRITICAL SUCCESS FACTORS:

Our specialists are very willing to participate in telemedicine. We have excellent onsite facilitators to help the families on the neighbor islands, and to help schedule the telemedicine clinics--these are the social workers at the DOH's District Health Offices.

CRITICAL BARRIERS (overcome or not):

Telemedicine equipment used by the specialist is located off-site, so the specialist must drive between her clinic and the telemedicine site. We must compete for the telemedicine site with other DOH programs and cannot always have our first choice of dates. Connections do not always work and have failed twice. Resolution is not great. Reimbursement is poor. PCPs do not always know that telemedicine is an option, so uptake is lower than expected.

MAJOR LESSON LEARNED:

We need telemedicine equipment installed in the specialist's office so that the sessions can be worked into the regular work flow.

CURRENT STATUS (active, planned, dormant, completed, other?): active

PARTNERING ORGANIZATIONS:

Hawaii Department of Health provides telemedicine facilities and connections. Hawaii Pacific Health will be providing the equipment and connection in the specialist's office.
IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Sylvia Au, the PI of the Western States Genetic Services Collaborative, oversees the telemedicine program.

TECHNOLOGY USED:

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: LTC C. Becket Mahnke (Christopher.Mahnke@us.army.mil)

PROJECT NAME: Heartsounds Tele-Auscultation

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center; Dept of Pediatrics (Cardiology)

FUNDING (source and amount): Telemedicine and Advanced Technology Research Center (TATRC), Army Medical Department (AMEDD) Advanced Medical Technology Initiative (AAMTI) and AMEDD Advances in Medical Practice (AMP) Program

START UP FUNDS: Equipment initially funded through AMEDD Advances in Medical Practice (AMP) Program $157,500

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 2005 to present

PURPOSE/INTENT (100 words maximum):
Heart murmurs are present in over 50% of pediatric patients, yet only 1% of children have heart defects. As such, primary care physicians must quickly and accurately determine which patients require further cardiac evaluation from a large patient population. The high prevalence of cardiac findings results in frequent evaluations of innocent heart murmurs (the most common reason for pediatric cardiology referral). Many of these patients will require air-evacuation of the patient and family members to TAMC for pediatric cardiology consultation. These referrals of patients with normal findings generate unnecessary costs and significant parental stress. Pediatric cardiologists can accurately diagnose the innocent heart murmur by auscultation alone, thereby eliminating the need for more costly studies. Advances in electronic stethoscopy allow for the acquisition of digital heartsounds with transmission of these sounds to a computer for further evaluation and storage, creating the potential for telecardiology evaluation.

MAJOR CRITICAL ACCOMPLISHMENTS:
TAMC has developed a high-quality, user-friendly pediatric tele-auscultation system for remote telecardiology evaluation. This Heartsounds system utilizes digital heartsound recordings for telecardiology consultation that 1) improves access to pediatric cardiology care, 2) improves quality of care for those patients with abnormalities detected by facilitating appropriate early transfer, and 3) decreases cost by eliminating the need for travel by the majority patient population with innocent findings. The Heartsounds system can diagnose normal/innocent heartsound findings with a high degree of accuracy, resulting in faster diagnosis as well as reducing the need for travel to the pediatric cardiologist. The Advances in Medical Practice (AMP) program has funded the deployment six heartsound recording devices throughout the Pacific Region.

CRITICAL SUCCESS FACTORS:
Success will rely on ongoing collaboration between clinicians, engineers and industry partners.

CRITICAL BARRIERS (overcome or not):
Adoption and acceptance of the new tele-auscultation technology will be critical. Understanding the effect of the new technology for both providers and patients must be continually evaluated.

MAJOR LESSON LEARNED:
Recording, transmission, playback, and storage of medical sound information is a complex process which must be optimized for this technology to become an accepted medical practice.

CURRENT STATUS (active, planned, dormant, completed, other?):
Deployment of the auscultation devices will occur in 2009. Further refinements to all parts of the tele-auscultation system are ongoing.
PARTNERING ORGANIZATIONS:
Telemedicine and Advanced Technology Research Center (TATRC), Zargis Medical and University of Hawaii

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Clinical Champion

TECHNOLOGY USED: Tele-auscultation and automated interpretation

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Keli Acquaro, DOH - CAMHD

PROJECT NAME: The Hilo Telehealth Pilot Project

ORGANIZATION/AGENCY (and primary contact): UH Manoa - Department of Psychiatry; Dr. Dan Alicata

FUNDING (source and amount): A grant through the UH Department of Psychiatry

START UP FUNDS: UH would need to provide this data

REIMBURSEMENT (submitted/not submitted): Not submitted

DURATION (start time and date): October 2008

PURPOSE/INTENT (100 words maximum):
The primary purpose of the Hilo Telehealth Pilot Project is to improve access to psychiatric services for clients of the Department of Health - Child and Adolescent Mental Health Division- Hawaii Family Guidance Center in East Hawaii. It also provides a training opportunity for fellows from the UH-Manoa Department of Psychiatry, and can provide a valuable resource in terms of accessing clinical consultation for the youth we serve.

MAJOR CRITICAL ACCOMPLISHMENTS:
We have Tandberg equipment at our Hilo site. The initial pilot group of youth who will receive telehealth services have been identified, have consented to participation in the project, and have already had face to face appointments with the UH fellows and faculty who will be providing services.

CRITICAL SUCCESS FACTORS:
All involved are invested in the project and want to see it succeed so that it can expand islandwide. Staff excitement has enabled clients to feel comfortable participating. Initial face to face visits are facilitating relationships before the equipment goes "live".

CRITICAL BARRIERS (overcome or not):
We are having problems getting our connection up and running through Roadrunner and will have to use an ISDN line until that can be resolved. Unfortunately, this has delayed our use of the telehealth equipment until January 2009.

MAJOR LESSON LEARNED:
Since the connection is taking longer than expected, it is good that we had a contingency plan of doctors flying over for face to face visits until the equipment can be used so care is not interrupted.

CURRENT STATUS (active, planned, dormant, completed, other?):
Face to face visits are happening but we will not be able to do telehealth sessions using the equipment until January 2009.

PARTNERING ORGANIZATIONS:
Department of Health - Child and Adolescent Mental Health Division and the University of Hawaii - Manoa Department of Psychiatry.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Alicata from UH is the primary point of contact; Drs. Ulrich and Lieberman from CAMHD are supporting him in overseeing the project.

TECHNOLOGY USED: Tandberg system

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Linda Axtell-Thompson, HMSA

PROJECT NAME: HMSA's Online Care

ORGANIZATION/AGENCY (and primary contact): Hawaii Medical Service Association (HMSA), Michael J. Cheng, Senior Vice President

FUNDING (source and amount): na

START UP FUNDS: na

REIMBURSEMENT (submitted/not submitted): na

DURATION (start time and date): Scheduled to launch in early 2009.

PURPOSE/INTENT (100 words maximum):
HMSA's Online Care program will be available to all Hawaii residents, not just HMSA members. Consumers can talk to local credentialed physicians from HMSA's participating provider network, live on-demand, via a system available 24 hours a day. Sessions will be secure and private, using internet-based videoconferencing, secure chat, or telephone. Physicians can review claims and other health information the patient makes available, talk with patients, prescribe medications as physicians deem appropriate and consistent with standards of care, and recommend follow-up care. Session notes will be maintained electronically, and can be forwarded upon patient request to their primary care physician.

MAJOR CRITICAL ACCOMPLISHMENTS: na

CRITICAL SUCCESS FACTORS:
Achieve and maintain balance on a meaningful level between supply (of physicians providing services) and demand (of patients requesting services). Physician support is critical to the success of this project.

CRITICAL BARRIERS (overcome or not):
It is critical to address knowledge and comfort barriers of physicians and consumers to provide and receive care through a new medium.

MAJOR LESSON LEARNED:
Beyond the known technical challenges, this technology also faces "frontier" policy issues concerning health plan functions and standards of care in the community.

CURRENT STATUS (active, planned, dormant, completed, other?):
Scheduled to launch in early 2009.

PARTNERING ORGANIZATIONS:
American Well's Online Healthcare MarketplaceTM enables live communication between consumer and health care provider using internet-based videoconferencing, secure chat, and telephone.
Microsoft's HealthVaultTM is an online consumer health platform that allows consumers to collect, store and manage personal health information from multiple sources and share it with physicians, family members, and other trusted third parties.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
HMSA's Online Care is overseen by an executive steering committee; clinical involvement is provided by an HMSA medical director dedicated to the program.

TECHNOLOGY USED: Internet-based videoconferencing, secure chat, and telephone; internet-based personal

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Nancy Johnson

PROJECT NAME: HMSA Telehomecare Demonstration

ORGANIZATION/AGENCY (and primary contact): UH MCC, Nancy Johnson

FUNDING (source and amount): HELP Innovations, HMSA (reimbursed visits)

START UP FUNDS: I have to research, I do not have file right now.

REIMBURSEMENT (submitted/not submitted): submitted-?$30/visit, will check

DURATION (start time and date): 1999, 1 year

PURPOSE/INTENT (100 words maximum):
MMMC Case Managers identified "high risk" patients, who were at risk for repeat hospitalization. Patients were primarily CHF, COPD, diabetic, asthma, cardiomyopathy. Patients were referred by physician.

Data collected included: intake referral form, patient consent form, discharge data form, mini mental status form, patient qualifying assessment form, pre & post SF36 Health Status Profile, Oasis Admission Assessment form, Patient satisfaction, physician Satisfaction, Utilization. During each visit NP collected self reported weight, BS, BP, subjective symptoms.

60 patients participated, nurse practitioner made 2-3 visits/week.

MAJOR CRITICAL ACCOMPLISHMENTS:
Reduced ER visits & hospitalizations, shorter hospital stays--early discharge "telehealth was there."

CRITICAL SUCCESS FACTORS:
Patient and physician satisfaction.

CRITICAL BARRIERS (overcome or not):
Difficult to withdraw support, some patients became dependent on system.

MAJOR LESSON LEARNED:
Supported premise that telehome care will reduce readmission rates in high risk patients with chronic illness.

CURRENT STATUS (active, planned, dormant, completed, other?):
Dormant

PARTNERING ORGANIZATIONS:
HMSA, MMMC

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Steve Moser

TECHNOLOGY USED:
HELPLink patient unit "videophone" POTS

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Nancy Johnson

PROJECT NAME: HOPE

ORGANIZATION/AGENCY (and primary contact): UH Maui Community College, Nancy Johnson

FUNDING (source and amount): AHEC, HMSA Foundation

START UP FUNDS: $25,000 HMSA, ? I have to look this up for AHEC

REIMBURSEMENT (submitted/not submitted): not submitted

DURATION (start time and date): 1 year- 2000

PURPOSE/INTENT (100 words maximum):
Research Question:
Will telehome care visits with structured educational protocols have a significant impact on progression of renal disease in Native Hawaiian diabetics? Progression of renal disease was measured via HbA1c and microalbinuria.

30 experimental patients who had 1-2 structured e-health visits by nurse practitioner/week. 30 control patients who had routine care from physicians.

Data collected included: demographic, health beliefs, locus of control, BP, blood glucose, weight, patient satisfaction with telehome care.

MAJOR CRITICAL ACCOMPLISHMENTS:
Successful utilization of e-health to impact health care outcomes. 70% retention of patients over 1 year.

CRITICAL SUCCESS FACTORS:
Telehealth was well accepted by patients who had little prior computer experience.

CRITICAL BARRIERS (overcome or not):
Required IT support, used ECET student who was excellent. Most patients had two visits by IT, 1 instillation/1 support.

MAJOR LESSON LEARNED:
This was done prior to HIPAA and used Netmeeting which would no longer be allowed. Need VPN.

CURRENT STATUS (active, planned, dormant, completed, other?): Dormant

PARTNERING ORGANIZATIONS: HMSA, AHEC

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Allied Health nursing faculty

TECHNOLOGY USED:
Internet, NEC 466 Cache Pentium PC 64 Mb, Intel camera, Internet

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: HPH Continuing Medical Education (CME) via live video conferencing

ORGANIZATION/AGENCY (and primary contact):   HAWAII PACIFIC HEALTH / Telehealth Dept – Dale Moyen, Telehealth Manager

FUNDING (source and amount):   Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): September 1, 2002

PURPOSE/INTENT (100 words maximum): This project involved implementing video conferencing and integrated audio visual capabilities at the Kapiolani Medical Center for Women and Children's Auditorium as well as facilities at each Hawaii Pacific Health Facility. Pediatric & OB/GYN Grand Rounds, and Pediatric Noon Conference are broadcast via video conferencing weekly from Kapiolani's Auditorium.   Weekly CME presentations are broadcast from Straub Hospital weekly. Pre Treatment Cancer Conferences are broadcast monthly from Kapiolani Women's Center and Pali Momi Hospital. All CME broadcasts are fully interactive and can qualify for CME credit.

MAJOR CRITICAL ACCOMPLISHMENTS: The Hawaii Pacific Health CME program has been running successfully for over six years now.

CRITICAL SUCCESS FACTORS: Video Conferencing scheduling and support process is required to be successful. Audio Visual equipment and video conferencing systems must be easy to use and reliable. Approximately 175 CME video conferences are held each year within Hawaii Pacific Health now.

CRITICAL BARRIERS (overcome or not):   To receive CME credit, the CME video conferencing process must be integrated with each Facility's overall CME accreditation process – overcome.

MAJOR LESSON LEARNED: This is the most successful Telehealth on-going Program within HPH at this time

CURRENT STATUS (active, planned, dormant, completed, other?): Active and fully operationalized.

PARTNERING ORGANIZATIONS: University of Hawaii John A. Burns School of Medicine, Hawaii Health Systems Corporation, Queens Medical Center, Shriners Hospitals for Children, Kaiser Permanente, Hawaii Medical Centers, Molokai General Hospital, North Hawaii Community Hospital, Tripler Army Medical Center, Saipan Commonwealth Medical Center, Yap Health Center, Wahiawa General Hospital

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Telehealth Department

TECHNOLOGY USED: Real Time ISDN and IP based Tandberg video conferencing systems, Accord / Polycom MGC100 Multipoint Video Conferencing Unit (Bridge), integrated with room-based built-in audio visual systems.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: HPH Nurse Education / Learning Center

ORGANIZATION/AGENCY (and primary contact):   Hawaii Pacific Health – Dale Moyen, Telehealth Manager

FUNDING (source and amount): Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

START UP FUNDS: $32,000

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): September 2008

PURPOSE/INTENT (100 words maximum): To provide Nurse Education delivery across all Hawaii Pacific Health Facilities utilizing real time video conferencing from conference rooms, operating rooms, and simulation lab via real time video conferencing simultaneously to Nursing students at various HPH locations.

MAJOR CRITICAL ACCOMPLISHMENTS: Peri-Operative Nurse Intern Training via video conferencing started in October, 2008. 4 training sessions conducted to students simultaneously at all 4 HPH Hospitals – Straub, Kapiolani, Pali Momi, and Wilcox. Classes on-going. Simulation lab training to start in February of 2009.

CRITICAL SUCCESS FACTORS: Training is successfully delivered to Nursing Students at their home Hospital so eliminate travel time and cost, making class attendance convenient with less impact to the work day.

CRITICAL BARRIERS (overcome or not): Availability of conference rooms and operating rooms to hold training sessions.

MAJOR LESSON LEARNED: N/A

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: N/A

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Suzanne Waters, System Director of Education, Hawaii Pacific Health

TECHNOLOGY USED: Real Time Tandberg Video Conferencing Systems and Accord / Polycom MGC100 multipoint video conferencing bridge.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: HPH PATH (Pacific Asynchronus Telehealth - DoD Technology Transfer Project)

ORGANIZATION/AGENCY (and primary contact):
Hawaii Pacific Health – Kapiolani Medical Center for Women & Children - Contact: Dale Moyen, Telehealth Manager

FUNDING (source and amount): The Pacific Telehealth & Technology Hui   / DoD

START UP FUNDS:

REIMBURSEMENT (submitted/not submitted): Not Submitted

DURATION (start time and date): February 2003 through February 2006

PURPOSE/INTENT (100 words maximum):

To improve access to Specialty Pediatric Medical at Kapiolani Medical Center from Rural Primary Care Centers throughout Hawaii using interactive secure web based Telehealth application using only a PC with Internet access. HPH Path had the ability to document and communicate medical condition as well as include digital images, audio, and video clips. The main function of the system was to provide Primary Care to Speciality Care Physician to Physician Consultations.

MAJOR CRITICAL ACCOMPLISHMENTS: Adapted PATH for civilian use. Implemented within a corporate firewall with DMZ. Ensured HIPAA compliance and secure internet connectivity.

CRITICAL SUCCESS FACTORS: System architecture compliant with civilian corporate computing security standards for transfer of medical information over the public internet.

CRITICAL BARRIERS (overcome or not):   Getting civilian Primary Care Physicians to accept and use PATH. Major Physician concerns included unclear reimbursement guidelines, liability risk, and time needed to type information into the system.

MAJOR LESSON LEARNED: For Telehealth to be successful there has to be clear guidance on reimbursement process, malpractice coverage, and no negative impact to clinical workflow. A mandate to use Telehealth is also helpful but not always feasible.

CURRENT STATUS (active, planned, dormant, completed, other?): Dormant. HPH PATH application and servers have been transferred to the University of Hawaii Telecommunications Information & Policy Group (TIPG) for on-going implementation and support.

PARTNERING ORGANIZATIONS: University of Hawaii JABSOM – Koko'okolu Pediatric Fellowship Program, The Pacific Telehealth & Technolgy Hui, Kapiolani Medical Center for Women & Children, and Hawaii Pacific Health Information Systems.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr Chris Derauf, Pediatric Medical Director and Koko'okolu Principle Investigator

TECHNOLOGY USED: Store & Forward web-based Telehealth via internet connectivity

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: Kapiolani Pediatric Cardiology Pre Transport Tele-Access

ORGANIZATION/AGENCY (and primary contact): Hawaii Pacific Health / Kapiolani Medical Center for Women and Children - Dale Moyen, Telehealth Manager

FUNDING (source and amount): Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): submitted

DURATION (start time and date): January 2008

PURPOSE/INTENT (100 words maximum): To provide access via real time Telemedicine to Kapiolani Medical Center for Women and Children's NICU. To improve access to this Specialty Care from Rural Hawaii and the Pacific. To provide Triage via Real Time Video Conferencing from referring Hospitals to Kapiolani NICU prior to transporting newborn.

MAJOR CRITICAL ACCOMPLISHMENTS: 6 consultations have been completed.

CRITICAL SUCCESS FACTORS: On-going utilization of equipment and service. Expansion to all HHSC Hospitals

CRITICAL BARRIERS (overcome or not): Physician Acceptance and Reimbursement – overcome.

MAJOR LESSON LEARNED: A very good use of Telemedicine technology.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: Hawaii Health Systems Corporation – Hilo Medical Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Dr Balaraman – Kapiolani Medical Center for Women & Children / NICU

TECHNOLOGY USED: Real Time Tandberg HCSIII Telemedicine System over ISDN direct dial lines.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: Kapiolani Neo-Natal Intensive Care Unit (NICU) Pre Transport Tele-Access

ORGANIZATION/AGENCY (and primary contact):   Hawaii Pacific Health / Kapiolani Medical Center for Women and Children – Dale Moyen, Telehealth Manager

FUNDING (source and amount): Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): submitted

DURATION (start time and date): June 2008

PURPOSE/INTENT (100 words maximum): To provide access via real time Telemedicine to Kapiolani Medical Center for Women and Children's Pediatric Cardiologists. To improve access to this Specialty Care from Rural Hawaii and the Pacific. To provide live pediatric cardiology echo interpretation at Kapiolani via Real Time Video Conferencing from referring Hospitals to determine condition and need for transport.

MAJOR CRITICAL ACCOMPLISHMENTS: 4 consultations have been completed.

CRITICAL SUCCESS FACTORS: On-going utilization of equipment and service. Expansion to all HHSC Hospitals

CRITICAL BARRIERS (overcome or not): Physician Acceptance and Reimbursement – overcome.

MAJOR LESSON LEARNED: A very good use of Telemedicine technology.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: Hawaii Health Systems Corporation – Hilo Medical Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Dr James Sim and Venu Reddy, Pediatric Cardiology – Kapiolani Medical Center for Women & Children

TECHNOLOGY USED: Real Time Tandberg HCSIII Telemedicine System over ISDN direct dial lines. Ultrasound Imaging system with pediatric cardiac probe.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dr. Raymond A. Folen

PROJECT NAME: Low Bandwidth Behavioral Telehealth

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center

FUNDING (source and amount): US Army Medical Command

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Started 1998 through 2000

PURPOSE/INTENT (100 words maximum):
Proof of concept project to determine if low bandwidth telecommunications and remote control of medical equipment could be successfully implemented to provide patient care in remote areas with limited telecommunications infrastructures.

MAJOR CRITICAL ACCOMPLISHMENTS:
The project produced a number of notable firsts in technology development and application. Using off-the-shelf low-bandwidth videoconferencing equipment, the project was able to provide psychotherapy, counseling and psychological testing services over a standard phone line to remote locations in Guam, Korea and Japan. The project also produced the first multi-site low bandwidth synchronous bridging system, linking up multiple sites via single phone lines to establish connectivity. The project also produced the first remote-controlled biofeedback and psychological testing system and successfully deployed these systems to Guam, Korea and Japan. Project development and treatment outcomes were described in 15 peer-reviewed publications and 16 peer-reviewed presentations (list available upon request).

CRITICAL SUCCESS FACTORS:
A project champion at each remote site was essential. Proof of concept was clearly demonstrated within the project timeframe.

CRITICAL BARRIERS (overcome or not):
Project funding did not include future sustainment. Project champions rotated to other assignments.

MAJOR LESSON LEARNED:
In order to maintain maximum participation in telehealth, remote sites need to see a benefit (make their job easier or give them something they really want and need). Remote sites must have full time support to respond to contingencies or emergencies that may arrive during a treatment session. Credentialing must be active at both locations if providers are seeing patients independently vs consulting with another provider.

CURRENT STATUS (active, planned, dormant, completed, other?):
Not currently active

PARTNERING ORGANIZATIONS:
Military facilities in Guam, Korea and Japan

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Multiple Clinical Champions at different locations

TECHNOLOGY USED: low bandwidth synchronous bridging telecommunications system

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jeffrey Yu, MD

PROJECT NAME: Molokai Radiology

ORGANIZATION/AGENCY (and primary contact): Queen's Medical Center and Molokai General Hospital

FUNDING (source and amount): Jeffrey Yu - Personal Time

START UP FUNDS: $0

REIMBURSEMENT (submitted/not submitted): $0

DURATION (start time and date): April 2001

PURPOSE/INTENT (100 words maximum):

To improve the interpretation turn-around time of Radiological procedures performed at Molokai General Hospital by moving to a teleradiology transmission vs on-site interpretation.

MAJOR CRITICAL ACCOMPLISHMENTS: Improved Radiology turn-around time from 1 week for preliminary interpretation and 2 weeks for final interpretation to 4 hours for preliminary and max 1 day for final interpretation.

CRITICAL SUCCESS FACTORS: 1) Reduction or elimination of data entry 2) Sufficient bandwidth for image transmission 3) Properly educating and informing all people involved of their workflow steps and how important it is that they comply, 4) Setting up QA processes that are intertwined with workflow aka that cannot be skipped.

CRITICAL BARRIERS (overcome or not): 1) Consistent Radiology interpretation

MAJOR LESSON LEARNED: 1) See critical success factors.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: QMC, MGH

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? Yes

TECHNOLOGY USED: Custom Written Radiology Information System and DICOM Image Transmission

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: National Diabetic Teleretinal Screening Program

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): VISN

START UP FUNDS:

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 2007; implementation at Hilo, Maui, Kauai CBOCs in 2/08.

PURPOSE/INTENT (100 words maximum):
Teleretinal Imaging Overview:

Visual impairment is a common complication of diabetes. VHA is able to outperform the commercial managed care sector in screening for this. Maintaining and exceeding current rates of screening for diabetic retinopathy is the VHA's rational for exploring the use of teleretinal imaging.

In FY 2000, Congress recognized this important issue and required the VA to collaborate with the Joslin Vision Network (JVN) and implement teleretinal imaging to assess diabetic retinopathy. Since January 2006, VHA has implemented comprehensive teleretinal imaging programs in 158 sites nationwide.

(information obtained from the VA Care Coordination Services web page).

MAJOR CRITICAL ACCOMPLISHMENTS:
Installation of Topcon camera and VistA Imaging portal to include alpha versions at the Hilo, Maui, and Kauai CBOCs. Four images trained by Boston Training Center in2/08.

CRITICAL SUCCESS FACTORS:
Initiation of the program in 2/08.

CRITICAL BARRIERS (overcome or not):
Staff attrition at the Hilo CBOC: pending hire of an RN; lack of designated clinic time at Maui and Kauai CBOCs: recently designated Monday am as Teleretinal Imaging Clinic at Maui and Kauai CBOC.

MAJOR LESSON LEARNED:
Imperative to have staff dedicated to Telehealth to allow for full implementation and expansion of the service.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active: Maui and Kauai CBOC; Dormant: Hilo CBOC; Planned: American Samoa CBOC.

PARTNERING ORGANIZATIONS:
Joslin Vision Network; Boston VA Training Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Casey Rogers, Dr. Alan Riezman

TECHNOLOGY USED: Topcon non mydriatic retinal camera: VistA Imaging

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Lorna Nekoba

PROJECT NAME: Nursery Pediatric Tele-Echocardiography

ORGANIZATION/AGENCY (and primary contact): Hilo Med Ctr (HMC)-Kapiolani Med Ctr for Women and Children

FUNDING (source and amount): HMC/Kapiolani Medical Center

START UP FUNDS: HMC/Kapiolani Medical Center/Kapiolani Health Foundation

REIMBURSEMENT (submitted/not submitted): Startup in progress

DURATION (start time and date): Startup in progress

PURPOSE/INTENT (100 words maximum):
The Nursery Tele-Echocardiography program is designed to assist Hilo physicians with patient management decisions for the care of babies in the Hilo Medical Center nursery.
The telemedicine program will enable consultations with neonatologists and pediatric cardiology specialists via real-time live videoteleconferencing and tele-echocardiograpy. Telemedicine will allow specialists in Honolulu to examine radiographic images and visually examine babies in Hilo. The new service will enhance management of neonates and in some cases avoid unnecessary transfers to Honolulu.

MAJOR CRITICAL ACCOMPLISHMENTS:
Establishing hospital policies and procedures, protocols.

CRITICAL SUCCESS FACTORS:
Establishing hospital policies and procedures, protocols.

CRITICAL BARRIERS (overcome or not):
Scheduling times when physicians/staff able to meet for program planning.

MAJOR LESSON LEARNED:
Support from physicians and clinical staff key to program implementation and sustainability.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active.

PARTNERING ORGANIZATIONS:
Kapiolani Medical Center and Hilo Medical Center.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Kapiolani Medical Center has a telehealth program with staffing.
HMC has telehealth champions, no official committee.

TECHNOLOGY USED: Tandberg HCS III Telemedicine System

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Nancy Johnson

PROJECT NAME: OHANA

ORGANIZATION/AGENCY (and primary contact): UH MCC

FUNDING (source and amount): Rural Utilities

START UP FUNDS: I have to check

REIMBURSEMENT (submitted/not submitted): no

DURATION (start time and date): pending 2 years 2008 we hope

PURPOSE/INTENT (100 words maximum):
Validate that structured e-health visits reduce hospitalization and ER usage, and enhance general health. Goal is to involve entire OHANA in healthier life choices.
Funds provided for laptop computer in Native Hawaiian student homes with Internet connection. If family members qualify (ie chronic disease that would benefit from disease management, willing to participate, and referred by personal physician) they will be provided 1 visit/week with nurse practitioner using structured education protocols.

MAJOR CRITICAL ACCOMPLISHMENTS: na

CRITICAL SUCCESS FACTORS: Active participation

CRITICAL BARRIERS (overcome or not): Selection of participants pending

MAJOR LESSON LEARNED:

CURRENT STATUS (active, planned, dormant, completed, other?): Pending

PARTNERING ORGANIZATIONS: American Telecare

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
MCC Allied Health Department

TECHNOLOGY USED: American Telecare

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Joe Humphry,MD

PROJECT NAME: Ohana Health Home Glucose Monitoring Program

ORGANIZATION/AGENCY (and primary contact): University of Hawaii Department of Electrical Engineering

FUNDING (source and amount): Department of Defense

START UP FUNDS: Approximately $100,000

REIMBURSEMENT (submitted/not submitted): Not Submitted

DURATION (start time and date): 1/1999-8/1999

PURPOSE/INTENT (100 words maximum):
The demonstration project tested the impact of remote monitoring and home based patients support in the management of diabetes. Twenty two minority patients in the Waianae community were provided computers ($500 ea.) and software to upload their home glucose monitoring data back to their primary care providers. Only 2 patient had ever used a computer prior to the project. Patient training and support was provided by a community health worker from the Waianae Coast Community Health Center. In addition to providing data uploads, the patients were able to participate in 2 web based "chat" rooms related to diabetes with a provider and the community health worker.

MAJOR CRITICAL ACCOMPLISHMENTS:
The patients' average A1C dropped 1.5% with improved overall health and the demonstration of the feasibility of remote monitoiring

CRITICAL SUCCESS FACTORS:
Having a community health worker who was culturally sensitive be the primary contact for the patient for training and support.

CRITICAL BARRIERS (overcome or not):
Two patients did not send data because they refused to test their blood glucose.

MAJOR LESSON LEARNED:
Computer naive minority patients all adopted and adapted to the new technology. There was increase family involvement related to diabetes care as younger family members often assisted with the use of the computer.

CURRENT STATUS (active, planned, dormant, completed, other?):
Completed

PARTNERING ORGANIZATIONS:
Waianae Coast Comprehensive Health Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

TECHNOLOGY USED: Web based software allowing remote monitoring of glucose.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: LTC C. Becket Mahnke (Christopher.Mahnke@us.army.mil)

PROJECT NAME: Pacific Asynchronous TeleHealth (PATH) System: Pediatric and Adult Specialty Teleconsultation in the Pacific Region

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center Department of Pediatrics

FUNDING (source and amount): US Army Medical Command

START UP FUNDS: Initially funded as a research endeavor through the Pacific Telehealth and Technology Hui with Congressional Appropriation

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 2000 to present

PURPOSE/INTENT (100 words maximum):
TAMC serves as the military's tertiary medical care facility for the entire Pacific region. Healthcare providers at remote military treatment facilities in Japan, South Korea, and Guam have limited or no access to specialty consultation services. This created a need for asynchronous teleconsultation capabilities between Western Pacific Military Treatment Facilities and TAMC. The Pacific Asynchronous TeleHealth (PATH) system is an internet-based, asynchronous (store-&-forward), HIPAA-compliant, provider-to-provider teleconsultation system. The PATH website is hosted at TAMC. Remote providers only require a computer with internet connection and browser software, making it readily available regardless of time and location. Remote providers enter patient demographics, history/physical exam data, and supplementary multimedia (pictures, video, or sound) as dictated by the clinical need. Cases are screened by physician consult managers at TAMC and forwarded to the appropriate specialists. Providers are notified of new comments via e-mail. Physician workload is captured via a disposition module.

MAJOR CRITICAL ACCOMPLISHMENTS:
PATH is currently processing >500 consults/yr (adult and pediatric cases), and has increased >20%/yr. Benefits include improved care access and quality at a decreased cost (Callahan et al, Arch Pediatr Adolesc Med 2005). Cost avoidance is estimated at nearly $200,000 per year for local medical consultation and/or evacuation to Tripler. A workload capture module is providing specialist physicians with appropriate RVU credit for their participation.

CRITICAL SUCCESS FACTORS:
Must have dedicated technical support to troubleshoot user problems, upgrades and maintenance. Need physician consult managers to review cases, forward to the appropriate specialty providers and ensure that consults are answered in a timely manner. Specialty physicians must participate in program.

CRITICAL BARRIERS (overcome or not):
Workload capture is critical to support the business case for program continuation and funding. The referring facilities need local support and must realize the potential benefit of the telemedical approach.

MAJOR LESSON LEARNED:
The teleconsultation process must be optimized for both referring physician and consultants to maximize use of their time without administrative redundancies. This has been done by improving the consult submission process, media handling protocols, and case management techniques. Furthermore, specialized modules for case management, patient administration and workload capture were required. Institutional support is critical for long-term sustainment and success.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS: Pacific Telehealth and Technology Hui, 12 US military clinics in the Pacifand 4 clinics in Washington, California and Alaska

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion

TECHNOLOGY USED: Internet-based, asynchronous (store-&-forward), HIPAA-compliant, provider-to-provider teleconsultation system

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: COL Suzie Martin

PROJECT NAME: Pacific Island Health Care Program

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center, Critical Care Medicine

FUNDING (source and amount): Current funding through US Army Medical Command; $3.3 - $4.6 M annually

START UP FUNDS: Initially funded through Congressional Appropriation of $4.5 M

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Started 1990

PURPOSE/INTENT (100 words maximum):
To provide humanitarian medical care to the underserved Pacific Islanders of the Marshall Islands, the Federated States of Micronesia, the Republic of Palau, the Commonwealth of Northern Mariana Islands, American Samoa and Guam; and to provide Tripler resident with a unique patient case mix for education and training in diagnosis and treatment of acute and chronic diseases prevalent in the developing world. The Program uses a store and forward, web-based consultation and referral system. Medical providers using 10 telemedicine workstations throughout the remote Pacific send requests to Tripler where they are forwarded to the appropriate specialist for treatment or referral determination.

MAJOR CRITICAL ACCOMPLISHMENTS:
Since 1998 it is estimated that nearly 3,500 patients have benefited from the program as well as 250 residents. Over 50 abstracts and peer reviewed publication have been published. Over 337 remote providers have benefited from distance education and learning.

CRITICAL SUCCESS FACTORS:
Ability to leverage store and forward technology to bridge distances in excess of 5,000 miles, 5 time zones and the International Date Line.

CRITICAL BARRIERS (overcome or not):
Funding of the program must be obtained year to year. The Pacific Islands fall under the Department of the Interior. Although Department of Defense is charged with making medical facilities and services available to the Pacific Island peoples, Tripler is not funded for this mission.

MAJOR LESSON LEARNED:
Decreases, adjustments or decrements in funding seriously decreases the number of patients that can be accepted into program. The project is central to Graduate Medical Education and prepares providers for wartime missions

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS:
US Associated Pacific Islands, Pacific Telehealth and Technology Hui

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion

TECHNOLOGY USED: Web based store and forward

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: MAJ Jordan Pinsker, MD (jordan.pinsker@amedd.army.mil)

PROJECT NAME: Pediatric Diabetes Education Portal (PDeP)

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center, Department of Pediatrics (Endocrinology)

FUNDING (source and amount): $170,000.00 – US Army Telemedicine and Advanced Technology Research Center (TATRC) Army Medical Department (AMEDD) Advanced Medical Technology Initiative

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Started 29 Sep 08

PURPOSE/INTENT (100 words maximum):
Childhood diabetes is a chronic disease that if not managed well can lead to numerous complications including heart disease, eye disease, kidney disease and neuropathy. Education about their disease is given at the time of diagnosis, but these materials can be overwhelming for new patients and are often not fully understood. Therefore families are in need of continued education as they encounter problems managing their diabetes.
Tripler Pediatric Endocrinology Clinic plans to augment the Pacific Asynchronous TeleHealth System (PATH) with the Pediatric Diabetes Education Portal (PDeP), and to use new technologies in the pediatric endocrinology clinic to prevent hyperglycemia while avoiding hypoglycemia.

MAJOR CRITICAL ACCOMPLISHMENTS:
The PDeP system will be an internet based web site for patients and families consisting of:
1) Electronic versions of all the patient education materials that are given at diagnosis for continual review.
2) Fingerstick A1c testing to give immediate feedback to patients while still at the clinic, but also posted to the PDeP website for review. By allowing instant feedback and review of A1c results, Tripler providers expect to see improved diabetes control and improved compliance with treatment plan changes.
3) A Continuous Glucose Monitoring System (CGMS) as a tool to give patients and families more insight into when hypoglycemia is occurring. Summary screens of CGMS readings will also be posted to the PDeP site for patient review.
4) Patient to physician electronic communication that will enable the physician to refer the patient back to the appropriate education resource on the site. This system is HIPAA compliant will generate increased workload capture and increase access to care.

CRITICAL SUCCESS FACTORS:
Physician and patient (or parent) participation

CRITICAL BARRIERS (overcome or not):
Financial support for ongoing development beyond initial phase.

MAJOR LESSON LEARNED:
These different modalities of evaluation and education that provide frequent feedback to patients should improve overall diabetes care, as shown by lower A1c results and improved patient satisfaction. Further projects will focus on real time uploading of blood sugar logs to the system using cellular and Bluetooth devices to improve access to care.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS:
US Army Telemedicine and Advanced Technology Research Center (TATRC)

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion

TECHNOLOGY USED: web-based

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: Pediatric Specialty Center Tele-Access

ORGANIZATION/AGENCY (and primary contact): Hawaii Pacific Health / Kapiolani Medical Center for Women and Children - Dale Moyen, Telehealth Manager

FUNDING (source and amount): Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

START UP FUNDS: N/A

REIMBURSEMENT (submitted/not submitted): submitted

DURATION (start time and date): January 2002 to present

PURPOSE/INTENT (100 words maximum): To provide access via real time Telemedicine to Kapiolani Medical Center for Women and Children's Pediatric Specialty Center. To improve access to this Specialty Care from Rural Hawaii and the Pacific.

MAJOR CRITICAL ACCOMPLISHMENTS: Telemedicine Consultations have been conducted throughout Hawaii and the Pacific for examinations and follow-up on on-going cases.

CRITICAL SUCCESS FACTORS: On-going utilization of equipment and service.

CRITICAL BARRIERS (overcome or not): Physician Acceptance and Reimbursement – overcome.

MAJOR LESSON LEARNED: A very good use of Telemedicine technology.

CURRENT STATUS (active, planned, dormant, completed, other?): Active & fully operationalized.

PARTNERING ORGANIZATIONS: University of Hawaii John A. Burns School of Medicine, Hawaii Health Systems Corporation, Queens Medical Center, Shriners Hospitals for Children, Molokai General Hospital, Hawaii Primary Care Association, North Hawaii Community Hospital, Tripler Army Medical Center, Saipan Commonwealth Medical Center, Yap Health Center, LBJ Hospital – American Samoa, Wahiawa General Hospital

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr David Kurahara – Kapiolani Medical Center for Women & Children / Pediatric Rheumatologist

TECHNOLOGY USED: Real Time Tandberg HCSIII Telemedicine System over ISDN direct dial lines. System is also integrated with audio visual recording and exam room observation system for training of Pediatric Residents.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Karen Seth

PROJECT NAME: Queen's Movement Disorder Telemedicine Clinic

ORGANIZATION/AGENCY (and primary contact): The Queen's Medical Center Neuroscience Institute

FUNDING (source and amount): $1,200 educational grants from pharmaceutical companies per clinic

START UP FUNDS: Weinberg Foundation and Queen's Health Systems for equipment costs

REIMBURSEMENT (submitted/not submitted): not submitted

DURATION (start time and date): 2001- present

PURPOSE/INTENT (100 words maximum):

The community lacks extensive expertise in the field of movement disorders. Telemedicine enables Honolulu physicians to interact with a movement disorder expert at the University of Virginia and gain further expertise in a real-time and practical situation. The purpose of the quarterly clinic is to educate physicians on management of patients with movement disorders, such as severe Parkinson's Disease, unusual variant and typical progressive supranuclear palsy, severe torticollis, orthostatic essential tremor, restless legs syndrome, and multisystem atrophy and identify what treatment modalities are best for which patient population.

MAJOR CRITICAL ACCOMPLISHMENTS: QMC has been able to sustain this clinic for the past seven years.   Both physician and patient are present to benefit from the expertise and education.

CRITICAL SUCCESS FACTORS: Clinical coordination from a local neurologist who is the physician champion, administrative and grant writing assistance from the Queen's Neuroscience Institute, CME support from the Queen's CME office and commitment from University of Virginia movement disorder expert, Frederick Wooten, MD.

CRITICAL BARRIERS (overcome or not): Funding (overcome so far)

MAJOR LESSON LEARNED: Telemedicine is particularly helpful for treating movement disorders because one needs to observe a motion before a diagnosis can be made.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: University of Virginia

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Anthony Mauro, MD, local community neurologist is the clinical champion, and the Queen's Neuroscience Institute provides the administrative support.

TECHNOLOGY USED: Digital videoconferencing equipment with high speed ISDN line at the Queen's Conference Center.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Daniel C Davis Jr MD FACP

PROJECT NAME: Telecare for Medically Fragile Patients

ORGANIZATION/AGENCY (and primary contact): Interactive Care Technology LLC

FUNDING (source and amount): private

START UP FUNDS: private

REIMBURSEMENT (submitted/not submitted): partial insurance, partial private pay

DURATION (start time and date): 2005-2008

PURPOSE/INTENT (100 words maximum): The purpose of iCare Tech's Telecare for Medically Fragile Patients is to test the Video Housecall™ and Virtual Care Team™, web-enabled telemedicine platform and tech enabled care model, for medically fragile patients to enable such patients to remain in their home, to improve the quality and safety of their care, and to avoid institutionalization.

MAJOR CRITICAL ACCOMPLISHMENTS:
We have successfully field tested with over 20,000 patient care days iCare Tech's Video Housecall™ and Virtual Care Team™ telemedicine platform for use in private homes, care homes, nursing homes, and small rural care facilities. Video Housecall enables frequent and instantaneous video examination through the iCare ExamCam™, a unique high quality pan-tilt-zoom digital video camera that operates over the web with no computer at the remote site and with a single off-on switch. The Virtual Care Team™ is iCare's web-based care management ASP platform and care model for medically fragile patients that helps coordinate and coach in-home care givers.

With over 20,000 patient care days, patient, family, and care giver satisfaction has been high. We believe this tech-enabled care model reduces hospitals days for medically fragile patients to less than 80% of conventional care.

We have an ongoing IRB approved case control study to confirm quality and cost benefits of this tech-enabled care model for the medically fragile population.

CRITICAL SUCCESS FACTORS:
Developing new camera devices that are targeted at ease-of-use by families and care givers, requiring no training.
Avoiding the limitations of consumer grade web-cams.
Avoiding the requirement for remote users to use a computer.
Using consumer grade, inexpensive broadband and IP connectivity.
Integrating the video house call with a web enabled care management application.
Plug-andPlay installation and remote maintenance.

CRITICAL BARRIERS (overcome or not):
Lack of readily available reimbursement
Silo'd medical and nursing specialists
Consultants' concerns about professional liability
Lack of adequate wireless wide area broadband
MAJOR LESSON LEARNED:
People and organizational barriers are more prevalent and more difficullt to overcome than technical barriers.
Simple technology is better than multiple, complex features.

CURRENT STATUS (active, planned, dormant, completed, other?):
We have an ongoing care model with live medically fragile patients with complex problems such as home ventilators, severe CHF, neurodegenerative disease, ALS, post polio, Parkinson's, and COPD.

We also currently support several care homes with Video Housecall and Virtual Care Team.

We have two hospitals using our wireless mesh Video Housecall to link a referral center and a rural hospital in the Hawaii Neuroscience Telehealth Network, a telestroke triage project.

PARTNERING ORGANIZATIONS:
Queen's Medical Center
Health Care Alternatives
Medical Associates, Ltd.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champions are Dan Davis MD (iCare Tech) and Cory Lee RN (Health Care Alternatives) for the Telecare for Medically Fragile Patients and Cherylee Chang MD (Queen's) for the Hawaii Neuroscience Telehealth Network.

TECHNOLOGY USED:
Interactive Care Technologies' Video Housecall™, iCare ExamCam™, and Virtual Care Team™… wireless, web-based, ASP delivered, HIPAA compliant

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jana Lindsey

PROJECT NAME: Shriners Telemedicine Program

ORGANIZATION/AGENCY (and primary contact): Shriners Hospitals for Children, Honolulu

FUNDING (source and amount): Shriners' Operational Budget

START UP FUNDS: Weinberg Foundation

REIMBURSEMENT (submitted/not submitted): Reimbursement not submitted

DURATION (start time and date): Since August 1998

PURPOSE/INTENT (100 words maximum):
The telemedicine program at Shriners exist to increase patient care access, enhance care coordination, and provide healthcare education and training. The Shriners Telemedicine Program also aims to improve efficiency & efficacy for the patients it serves, it's community, the hospital, and the Shriners organization.

MAJOR CRITICAL ACCOMPLISHMENTS:
Telemedicine Program advanced from a grant funded program to a fully budgeted program at Shriners. MOU agreements with other organizations including the National Guard Bureau.

CRITICAL SUCCESS FACTORS:
Upper management and medical staff support. Clinical champion is a physician. Active involvement in local and national telehealth and healthcare organizations (i.e. ATA, HIMSS, HSRHA, PPDLA, Telehealth Task Force, etc.)

CRITICAL BARRIERS (overcome or not):
Inoperability in the Pacific, Legal approval of MOUs, insufficient facilitators

MAJOR LESSON LEARNED:
Both parties (hub & spoke) need to realize a value or provided an incentive. The TM program must be supported by both Administration & Clinical, and aligned with the mission/strategic plan of the organization.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active, and growing as mandated by corporate.

PARTNERING ORGANIZATIONS:
TipG/STAN/PEACESAT, Hawaii State Department of Health, Hawaii Pacific Health, Hawaii Primary Care Association, Hawaii Health Systems Corporation, Child & Family Services, National Guard Bureau.

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
At Honolulu: Assistant Chief of Staff/Medical Director of Telemedicine & Outreach Services; At the Corporate Level: Telemedicine Governance Council

TECHNOLOGY USED: Real time video teleconferencing & Store-n-Forward

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dale Moyen

PROJECT NAME: Straub Intensivists' / Kapiolani AICU Tele-ICU

ORGANIZATION/AGENCY (and primary contact):   Hawaii Pacific Health – Dale Moyen, Telehealth Manager

FUNDING (source and amount): Telehealth operational budget

START UP FUNDS: Harry & Jeanette Weinberg Foundation - $1,250,000 Telemedicine Grant

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): June 2008

PURPOSE/INTENT (100 words maximum): To provide the ability to Triage and monitor patients from the Kapiolani Hospital's Adult Intensive Care Unit to the On-Call Intensivists office at Straub Hospital.

MAJOR CRITICAL ACCOMPLISHMENTS: Vital Signs Monitor and Patient view are transmitted live simultaneously from Kapiolani AICU to Straub Intensivist. All AICU Nursing Staff at Kapiolani Hospital has been trained.

CRITICAL SUCCESS FACTORS: On-going utilization of equipment and service.

CRITICAL BARRIERS (overcome or not): Intensivists reluctant to use system – not overcome.

MAJOR LESSON LEARNED: Get Intensivist support early.

CURRENT STATUS (active, planned, dormant, completed, other?): In development – equipment in place.

PARTNERING ORGANIZATIONS: N/A

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

Dr Ken Robbins, Medical Director - Straub Hospital & Martha Smith, COO Kapiolani Medical Center for Women & Children

TECHNOLOGY USED: Real Time Tandberg HCSIII Telemedicine System integrated using Duo Video to transmit both Patient Room view and Vitals Signs Monitor live simultaneously.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: Teledermatology

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): N/A

START UP FUNDS: N/A; using existing equipment

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 10/07

PURPOSE/INTENT (100 words maximum):
Teledermatology Overview: VHA experience is that teledermatology can result in treatment initiation significantly sooner than patients receiving usual care and avoid the need for a face-to-face dermatology clinic appointment in 18.5% of patients and that Teledermatology is cost-effective in decreasing the time required for patients to reach a point of initial definitive care (information obtained from the VA Care Coordination Services web page).
Initially, veterans in Honolulu were scheduled with a designated MD to complete the Teledermatology template. All veterans at the outlying CBOCs had this template completed by their designated PCP. The designated provider for this service was changed in 7/07. In an effort to increase access to this service, the clinic was updated to streamline the process. We are now using one Teledermatology consult which is completed by one provider. Patients at the outlying CBOCs are interview via real-time VTC and images taken by CBOC Telehealth Coordinators. An interfacility consult is place to the San Francisco VA Medical Center; Dermatology Service. Template and images reviewed by Dr. Dennis Oh and recommendations are forwarded to the patient's PCP.

MAJOR CRITICAL ACCOMPLISHMENTS:
Increased access to all veterans

CRITICAL SUCCESS FACTORS:
Availability of needed equipment, properly trained staff, appropriate clinic creation to account for work load credits, and standardize process to schedule consultations, evaluate patients, and forward recommendations to PCP.

CRITICAL BARRIERS (overcome or not):
Staff attrition at the Hilo CBOC: pending hire of an RN; lack of staffing at American Samoa to support the Telehealth service.

MAJOR LESSON LEARNED:
Imperative to have staff dedicated to Telehealth to allow for full implementation and expansion of the service.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active: Kona, Maui, Kauai, and Guam CBOC; Dormant: Hilo, CBOC; Planned: American Samoa CBOC

PARTNERING ORGANIZATIONS:
San Francisco VAMC Dermatology Service: consultant

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
PIHCS Telehealth Team: Dr. Reese Omizo, Jaclyn Griffin, NP, Myrel Baptiste, MA
Consultant: Dr. Dennis Oh; San Francisco VAMC

TECHNOLOGY USED: Tandberg HCSIII, Sony or Cannon Digital Still Camera

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Lawrence Eron MD

PROJECT NAME: Teledermatology

ORGANIZATION/AGENCY (and primary contact): Kaiser Permanente

FUNDING (source and amount): none--Digital cameras are owned by providers.

START UP FUNDS: zero

REIMBURSEMENT (submitted/not submitted): none

DURATION (start time and date): 2005-present

PURPOSE/INTENT (100 words maximum): Dr. Bradley Lau has been using store and forward for teledermatology consults with primary care providers to allow them to provide history with some digital pictures sent by email via Lotus Notes. Responses are sent back.

MAJOR CRITICAL ACCOMPLISHMENTS: The cases are primarily from the Big Island between the Kona clinic and Kaiser dermatology on Oahu. Limited cases have also been sent from the Kaiser clinic in Nanaikeola, Waimea on the Big Island Funding source. Teleconferencing camera equipment was used to transmit live video images from the Kaiser clinic in Kona of a child with a rash that were viewed and therapeutic decisions were then discussed with the mother. Follow up was done by phone. Image quality was marginal for the size of the rash being treated.
Most of the benefit was in getting history and discussion of treatment with the mother and family.

CRITICAL SUCCESS FACTORS: see above

CRITICAL BARRIERS (overcome or not): The current system (Epic) does not support the storage of images. We are limited to patients that don't require diagnosis of a small melanoma which would be hard to see clearly on camera and limited to patients that don't need a procedure done- no biopsy or treatment with liquid nitrogen. Anyone needing a procedure is better seen in person. The quality of digital images varies greatly partly due to less experience with using the digital cameras. It is difficult to make an evaluation if the image is blurry or if the color is affected by poor lighting. A standardization of image capture would be helpful but digital cameras used do vary widely.

MAJOR LESSON LEARNED: We need to be working on an integrated image collection storage system to work with epic for all specialists that have a need to be documenting digital or video images- Derm, Eye, ENT, GI, Pulmonology, etc.

CURRENT STATUS (active, planned, dormant, completed, other?): active

PARTNERING ORGANIZATIONS: none

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? no

TECHNOLOGY USED: digital camera images via store and forward

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Floyd Tokusato

PROJECT NAME: Telehealth and Telemedicine

ORGANIZATION/AGENCY (and primary contact): HHSC/Kona Community Hospital - Floyd Tokusato

FUNDING (source and amount): USDA grant $397,000.00; Local purchases $7,000.00

START UP FUNDS: none

REIMBURSEMENT (submitted/not submitted): none

DURATION (start time and date): 1995 to present

PURPOSE/INTENT (100 words maximum):
Telehealth and Telemedicine capabilities to remotely assess patients with specialty care providers. The current system has been in use for remote neonatal, psychiatric, dermatological, and other medical assessments by remote providers. Secondary uses include teleconferencing for meetings, education, and physician grand rounds.

MAJOR CRITICAL ACCOMPLISHMENTS:
Neonatal telemedicine sessions between our Neonatal unit and Kapiolani Children's Center for critical care neonatal assessment and stabilization prior to transport

CRITICAL SUCCESS FACTORS:
Coordination with remote facility for unsupported direct dial capabilities for 24/7 emergency telemedicine sessions as they arise.

CRITICAL BARRIERS (overcome or not):
Having local and remote medical staff available and trained to use equipment.
Having a pool of specialty providers ready for remote assessments

MAJOR LESSON LEARNED:

CURRENT STATUS (active, planned, dormant, completed, other?):
Equipment is dated, a few units don't work at all, most diagnostic instruments don't work, these include scopes and illuminators.
Connection is sometimes unreliable, resolution not good enough for detail needed in dermatology and neonatal assessments.

PARTNERING ORGANIZATIONS:
Kapiolani Children's and Women's Center, Queens Medical Center

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Wesley Sugai, KCH Pediatrician is the clinical champion. No committee locally

TECHNOLOGY USED:
Tanberg, Polycom, VTC units, Dell, IBM PC's, IBM, Dell, Sony displays, Sony cameras, Welch Allen Scopes, AMD illuminators, over T-1 connection using TCP/IP.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: Telehealth MOVE! Group

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): N/A

START UP FUNDS: N/A; using existing equipment

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 1/08

PURPOSE/INTENT (100 words maximum):
MOVE! Overview: MOVE! is a national weight management program designed by the VA National Center for Health Promotion and Disease Prevention (NCP), a part of the Office of Patient Care Services, to help veterans lose weight, keep it off and improve their health.
(information obtained from the VA MOVE! homepage).

PIHCS Telehealth MOVE! group consists of a Psychologist, Registered Dietician, RN, and a Physical Therapy Assistant who, as a team, provide patient education, as outlined by the nation-wide MOVE! program, to the veterans at the Hilo, Kona, and Maui CBOCs.

MAJOR CRITICAL ACCOMPLISHMENTS:
Expansion of the MOVE! program at PIHCS

CRITICAL SUCCESS FACTORS:
Allows for veterans at designated CBOCs to participate in the MOVE! program

CRITICAL BARRIERS (overcome or not):
Improper clinic set-up: rectified; lack of staffing at the Kauai, American Samoa, Guam CBOC that have prohibited expansion to all CBOCs.

MAJOR LESSON LEARNED:
Imperative to have proper clinics set-up complete prior to initiation of the clinic to ensure proper work load credit.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active: Hilo, Kona, Maui CBOC; Planned: Kauai, Guam, American Samoa

PARTNERING ORGANIZATIONS:
N/A

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Erica Pang

TECHNOLOGY USED: Tanberg MXP

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: Telehealth Patient Education Clinic

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): VA

START UP FUNDS: N/A; utilizing existing VTC equipment at all clinics

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): State date: 4/08 with Hilo and Maui CBOC; 10/08 with Kauai, Kona, American Samoa

PURPOSE/INTENT (100 words maximum):
Provide 1:1 patient education on various pertinent health problems with provider(s) located at the Honolulu VA and patient at CBOC. Staff shortages, time zone differences, and limited user training have posed challenges to providing this service to both the American Samoa and Guam CBOC.

MAJOR CRITICAL ACCOMPLISHMENTS:
Establishment of provider lead patient education clinic for all CBOCs

CRITICAL SUCCESS FACTORS:
Provides patient education done by provider on an individual basis to address various health problems.

CRITICAL BARRIERS (overcome or not):
Staff shortage, time zone differences between sites, limited user training regarding the use of a telehealth clinic to include equipment, proper documentation, note title, encounter information

MAJOR LESSON LEARNED:
Each clinic, originating and distant sites, must be set up properly, note titles in place, and staff available and trained prior to commencement of the clinic.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS:
none

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Yes: PIHCS Telehealth Team: Dr. Reese Omizo, Jaclyn Griffin, NP, Myrel Baptiste, MA

TECHNOLOGY USED: real time VTC equipment Tandberg HCS III or Tandberg MXP

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: Telehealth Primary Care – Mental Health Integrated Care Chronic Pain Management Group

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): VA

START UP FUNDS: N/A; using existing equipment

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 9/1/08

PURPOSE/INTENT (100 words maximum):
Primary Care – Mental Health Integrated Care Chronic Pain Management Group:
Clinic Name: Hon TH Psychology ICT
Purpose: The purpose of the PC-MH integrated care chronic pain management group is to provide psychological evaluation and treatment to veterans with chronic pain in the primary care location. Chronic pain is considered to be pain lasting three months or more. The chronic pain management group is a time-limited, structured, skills training group that will require the active participation of the veteran. Referred veterans will have a psychological evaluation to determine their needs and suitability for the group treatment. If the group treatment is determined not to meet their needs, the psychologist will explore with them other resources or provide individual care on a time-limited basis. The group will meet weekly for ten weeks. The length of each session will be 90 minutes. Each session will have a didactic part and an experiential part. The goals of all treatment are to decrease the level of pain and/or suffering the veteran is experiencing, to reduce the patient's inappropriate use of medical interventions, and to increase his or her ability to effectively cope with pain on a daily basis. (information obtained from Dr. Chukabarah)

MAJOR CRITICAL ACCOMPLISHMENTS:
10 week recurrent clinic with Kona CBOC on every Thursday of the month

CRITICAL SUCCESS FACTORS:
Support from local (Honolulu) Telehealth coordination on the first of clinic and periodically over the subsequent month

CRITICAL BARRIERS (overcome or not):
Overcome: reluctance to initiate a Telehealth clinic as a component of the existing in person clinic available to Honolulu VA patients only.
Unresolved: staffing constraints at the Hilo, American Samoa, and Guam CBOCs that have prohibited expansion to all outlying CBOCs.

MAJOR LESSON LEARNED:
Imperative to have proper clinics set-up complete prior to initiation of the clinic to ensure proper work load credit.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active: Kona CBOC; Planned: Hilo, Maui, Kauai, Guam, and American Samoa CBOC

PARTNERING ORGANIZATIONS: N/A

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Dr. Christine Chukabarah

TECHNOLOGY USED: Tandberg HCSIII

Telehealth Services at VA Pacific Islands Health Care System

Updated August 15, 2008

Telehealth Services at VAPIHCS began with the help of the Pacific Telehealth & Technology Hui (Hui) in 2001. Prior to Hui involvement, occasional telephonic consultation and videoteleconferencing (VTC) were the only forms of telehealth practiced.

Regarding the pacific Telehealth & Technology Hui:

Background: In December 1999, VAPIHCS, Honolulu and Tripler Army Medical Center (TAMC) at the urging of Senator Daniel K. Inouye signed a Memorandum of Agreement to establish the first joint DoD/VA telehealth partnership. The *DoD/VA Pacific Telehealth and Technology Hui*, as it is known, is responsible for executing telehealth and technology dollars provided in DoD appropriations for the Hawaii Federal Health Care Partnership. The Network established by language included in the FY '01 appropriation, includes DoD, VA, and the Native Hawaiian Healthcare System. The Network is one of two such networks – the other being the Alaska Federal Health Care Partnership comprised of VA, DoD, the U.S. Coast Guard, and the Indian Health Service.

Objective/Purpose: Provide equitable, safe health care for all veterans in the Pacific Islands Healthcare System.

Military Relevance: Active duty personnel in Am Samoa have limited access to VTC units at the CBOC. Guam CBOC is located in the Guam Naval Hospital. This clinic can provide VTC connectivity to DoD sites via a multipoint conferencing unit on the VA network to connect to DoD sites on a dial-up VTC network (such as TAMC)

The following table is a summary of telehealth services provided at VAPIHCS:

Telehealth Specialty	CBOC Availability	Consultant Information	Telehealth Technology
Dermatology	ALL (except Am Sam)	SFVAMC	Store/Fwd (VistA Imaging)
Dietetics	ALL	VA	VTC
Cardiology (on hiatus – staffing)	ALL	VA	VTC Digital Steth
Surgery Pre/post-op	ALL	SFVAMC Gen Surg	VTC
Vascular Surgery	ALL	Martinez	VTC
Orthopedic Surgery	ALL	Palo Alto	VTC
Spinal Cord Injury Clinic	ALL	PAVAMC	Multipoint VTC
PFTs (on hiatus- staffing/equipment	ALL	VA	Brentwood
ADDS	Maui, Hilo, Kauai, Guam, Am Sm	VA Pharmacy	ADDS
Home Telehealth	Honolulu, Hilo	VA	Health Buddy
Tele Mental Health C&P	ALL	VA	VTC
Staff CME Activities	ALL	Varies	VTC

ADDS – Automatic Drug Dispensing System   PAVAMC – Palo Alto VAMC

DoD – Dept of Defense   PFT – Pulmonary Functions Test

ICU – Intensive Care Unit   SFVAMC – San Francisco VAMC

UH – University of Hawaii   VTC – Video Teleconference

Current usage: In the last 6 months, telehealth traffic has been at a vary low level due to staffing shortages. The following information covers the last 180 days.

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CLINIC NAME:	Encount.	Visits	Uniques
TH HON NUTRITION PROVIDER	26	26	25
KAU TH MH ROGERS	24	24	12
HIL TH DERM	20	20	20
TH MH HON GERI PSYCH	16	16	4
TH HON PA SCI	7	7	7
TH HON VASC SURG PROVIDER	7	7	7
TH HON GEN SURG PROVIDER	6	6	5
KAU TH PFT	4	4	4
TH HON NEUROSURG PROVIDER	3	3	3
TH MH HIL PSY ASSESSMENT	2	2	1
TH MH HON C&P	2	2	2
HIL TH NUTRITION	4	4	4
KON TH MH TSRP INDIV	1	1	1
KON TH NUTRITION	1	1	1
MAU TH GEN SURG PROVIDER 1	3	3	2
MAU TH MH SPRENGER	3	3	2
MAU TH NUTRITION	12	12	12
MAU TH VASC SURG PROVIDER 1	1	1	1
REPORT TOTAL:	142	140	111

Reese Omizo, M.D.
VAPIHCS

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TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Pauline A. Mashima (Pauline.Mashima@amedd.army.mil)

PROJECT NAME: Telehealth Voice Therapy in Remote Regions in the Pacific Basin

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center (TAMC), Department of Surgery, Otolaryngology Service, Speech Pathology Section (P. Mashima)
FUNDING (source and amount): US Army Telemedicine and Advanced Technology Research Center (TATRC) (Project awarded $173,500 from the "Healthcare Advances through Research in Telehealth")

START UP FUNDS: Same as above

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): July 2004 to present

PURPOSE/INTENT (100 words maximum):
Diagnostic and rehabilitative services for communication and swallowing disorders are provided in the Speech Pathology Clinic at TAMC for a patient population from a widely dispersed geographic area. Voice disorders range from mild hoarseness to complete loss of voice and impair communication effectiveness. Patients are medically evacuated from Japan, Korea, and Guam to TAMC for voice therapy. In addition to transportation costs, time away from work, and displacement from family support during their treatment, patients are generally seen for a period of two weeks rather than the recommended course of 8 weeks. The telehealth model of service delivery offers the potential to improve access to and quality of care for this patient population. The focus of this study is to evaluate the clinical appropriateness, technical acceptability, and operational effectiveness for the remote delivery of voice therapy via video teleconferencing.

MAJOR CRITICAL ACCOMPLISHMENTS:
Provided treatment to patients in MTF in Japan who otherwise would not have had access to care. Established proof of concept to demonstrate the validity of remote delivery systems for speech pathology. Presented findings of pilot study in the American Journal of Speech-Language Pathology and at national conferences for speech pathologists.

CRITICAL SUCCESS FACTORS:
Project management and technical support provided by the Pacific Telehealth & Technology Hui were critical to the success of the project. It was also important to have a coordinator at the Naval Hospital in Yokosuka who was hired by the Hui to serve as a "champion" at the remote site.

CRITICAL BARRIERS (overcome or not):
Executing personnel contract for remote site coordinator at NH Yokosuka was difficult and took seven months to complete; provider at TAMC was unable to capture RVUs for treating patients in Japan.

MAJOR LESSON LEARNED:
In addition to addressing clinical, technical and workflow issues when developing a telehealth program, administrative support and cooperative business agreements are critical to ensure successful implementation and sustainment.

CURRENT STATUS (active, planned, dormant, completed, other?):
In process of analyzing data for research project including comparisons of pre- and post-treatment voice samples, fiberoptic laryngoscopy samples, acoustic measures, and patient satisfaction measures. A planned initiative is to use the telehealth model of service delivery for service members with mild traumatic brain injury (mTBI). Telehealth is ideally suited for Speech Pathology's mTBI clinical protocol because of the intensive course of cognitive-communication rehabilitation and the importance of multidisciplinary care. Symptoms associated with mTBI such as fatigue, headaches, blurred vision, memory impairment, and confusion often limit or impede daily activities including driving. Connectivity with satellite clinics via VTC systems will link providers and patients to improve access to care. Because TBI rehabilitation for Warriors in Transition requires the cooperation of multiple disciplines, a VTC network will also facilitate the coordination of clinical services among providers at TAMC and satellite clinics.

PARTNERING ORGANIZATIONS:
US Army Telemedicine and Advanced Technology Research Center (TATRC)

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Speech Pathology's telehealth program is coordinated by Pauline Mashima with technical expertise from John Draude. Gregory Suenaga served as Project Manager and Neil Sakauye served as technical advisor for the research phase.

TECHNOLOGY USED: The synchronous, interactive telehealth model is being used with Tandberg 880 video teleconferencing systems at each site and connectivity over ISDN lines at 384 Kbps.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jaclyn Griffin, NP

PROJECT NAME: Telehealth Wound Care Clinic

ORGANIZATION/AGENCY (and primary contact): Department of Veteran's Affairs

FUNDING (source and amount): N/A

START UP FUNDS: N/A; using existing equipment; Tandberg HCSIII and Sony or Canon Digital Still Camera

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): 8/1/08

PURPOSE/INTENT (100 words maximum):
Provide wound consultation and follow up to veteran's at all outlying CBOCs (Hilo, Kona, Maui, Kauai, and Guam). Service is available to the American Samoa CBOC; will commence once staff is available at the American Samoa CBOC. Service includes both real time VTC to interview patients and use of store and forward images to evaluate the wound.

MAJOR CRITICAL ACCOMPLISHMENTS:
New service to PIHCS; provides wound consultation by wound care certified NP.

CRITICAL SUCCESS FACTORS:
Availability of specialist and staff at CBOCS except the American Samoa.

CRITICAL BARRIERS (overcome or not):
Lack of staff at the American Samoa.

MAJOR LESSON LEARNED:
Imperative to have staff dedicated to Telehealth to allow for expansion of the service to all CBOCs.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active: Hilo, Kona, Maui, Kauai, Guam CBOC; Planned: America Samoa

PARTNERING ORGANIZATIONS:
N/A

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Jaclyn Griffin, NP

TECHNOLOGY USED: Tandberg HCSIII and Sony or Canon Digital Still Camera.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: COL Suzie Martin

PROJECT NAME: Tele-radiology

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center Department of Radiology

FUNDING (source and amount): US Army Medical Command

START UP FUNDS: US Army Medical Department

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Started 1996

PURPOSE/INTENT (100 words maximum):
To make services of radiologists available to clinics and medical facilities where they do not have a radiologist on staff, they have a gap in coverage, or they require more specialized reading or interpretation. Digital radiological images are transferred to Tripler across broadband using MedWeb servers.

MAJOR CRITICAL ACCOMPLISHMENTS:
Have been able to provide services or partial coverage for military facilities at Schofield Barracks, Hickam Air Force Base and Pearl Harbor on Oahu, as well as Camp Zama, Japan and 121 Hospital, Korea.

CRITICAL SUCCESS FACTORS:
Remote sites must have digital equipment and server and staff with skills to take the images.

CRITICAL BARRIERS (overcome or not):
Equipment at remote sites must be able to match format of Tripler server.

MAJOR LESSON LEARNED:
There is no difference in the technology or images between radiographs taken at Tripler and those received through the server from the perspective of the radiologist.

CURRENT STATUS (active, planned, dormant, completed, other?):
Active

PARTNERING ORGANIZATIONS:
DoD Healthcare facilities throughout the US and Pacific Region

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion

TECHNOLOGY USED: Digital radiological images transferred across broadband using MedWeb servers

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Mr. John Draude

PROJECT NAME: Traumatic Brain Injury Telemedicine (TELE-TBI)

ORGANIZATION/AGENCY (and primary contact): Tripler Army Medical Center

FUNDING (source and amount): US Army Medical Command; $1.5 M initial funding provided

START UP FUNDS: Same as above

REIMBURSEMENT (submitted/not submitted): N/A

DURATION (start time and date): Expected to commence in late 2008 or early 2009 depending on equipment arrival

PURPOSE/INTENT (100 words maximum):
To expand access to specialty care and expertise throughout the Pacific for Traumatic Brain Injury (TBI) assessment and treatment. The initial emphasis will be to provide a limited spectrum of clinical, behavioral and rehabilitation services between Tripler Army Medical Center and Schofield Barracks Health Clinic followed by linkage to American Samoa. Additional sites may include Guam, Korea and Japan where there are military elements.

MAJOR CRITICAL ACCOMPLISHMENTS:
The TBI network will be designed to augment existing services and extend services throughout the Pacific and back to Mainland assets if needed. The initial services will include psychology, audiology, speech pathology and rehabilitative medicine (occupational and physical therapy). Telemedicine will mitigate staffing shortages and facilitate a flexible response to surges in demand.
Planning has been completed to procure new VTC equipment to augment and upgrade VTC capabilities at Tripler and Schofield Barracks to provide a better infrastructure to conduct telehealth sessions to and from those locations. We are also currently in communication with the Veterans Administration to potentially utilize existing VTC capability to conduct telehealth sessions from American Samoa back to Tripler.

CRITICAL SUCCESS FACTORS:
TBI telemedicine program will design, implement and integrate a customized TBI telemedicine program, using existing and new potential programs, based upon a needs assessment of TBI services. This project will maximize existing TBI resources (e.g. expert staff, facilities), and supplemental staff and resources for equipment, as directed by both operational requirements and clinical workload (historical and projected).
The program will initially provide a local TBI telehealth director, clinical director, and technical support to work with the clinicians to better define the telehealth programs/procedures and workflow, to schedule and operate the defined sessions, and collect the metrics of success and issues in utilizing telehealth for these sessions. The project will follow with providing telehealth coordinators at remote locations which can coordinate the execution of these sessions at those locations.

CRITICAL BARRIERS (overcome or not):
Expansion to American Samoa and other remote sites is dependent on the quality of the VTC capabilities (bandwidth) at those locations as well as the willingness of the staff at those locations to support. Linkage or bridging to locations outside of the networked system in the Army Medical Department will rely on ISDN technology which is subject to phone line costs and long distance charges. Another critical factor will be to get qualified telehealth coordinators at these remote locations that can successfully coordinate these sessions with the existing clinical staff at those remote locations back to Tripler and other clinical expertise locations.

MAJOR LESSON LEARNED:
Project is just beginning.

CURRENT STATUS (active, planned, dormant, completed, other?): Pending equipment arrival and staffing actions.
Expected timeframe for VTC equipment delivery and installation is tentatively scheduled for Nov-Dec 2008 timeframe.
Initial staffing for the Tele-TBI support is expected in the October 2008 timeframe.

PARTNERING ORGANIZATIONS: US Army Telemedicine and Advanced Technology Research Center (TATRC) and VA Pacific Islands Health Care System

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? Committee

TECHNOLOGY USED: IP and ISDN based VTC

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Lawrence Eron MD

PROJECT NAME: Virtual Hospital

ORGANIZATION/AGENCY (and primary contact): Lawrence Eron MD

FUNDING (source and amount): Kaiser Permanente $80,000

START UP FUNDS: $80,000

REIMBURSEMENT (submitted/not submitted): $80,000/$80,000

DURATION (start time and date): 2002-2004

PURPOSE/INTENT (100 words maximum): Patients with acute infections, who otherwise would have been hospitalized, were treated at home using telemedicine.

MAJOR CRITICAL ACCOMPLISHMENTS: Outcomes were measured in a case control trial, which demonstrated that hospitalization compared to treatment at home using telemedicine were equivalent as far as clinical improvement and safety, but that patients convalesced at a faster rate at home.

CRITICAL SUCCESS FACTORS: See above

CRITICAL BARRIERS (overcome or not): We attempted to switch from POTS to broadband cable transmission to obtain better quality images. However, our IT consultant was withdrawn due to Kaiser Permanente's need for his expertise in establishing an electronic medical record system region-wide. Furthermore, Kaiser Permanente withdrew overall funding for the project due to a severe budget shortfall for the entire organization.

MAJOR LESSON LEARNED: POTS lacks sufficient bandwidth to allow transmission of quality video images as well as auscultatory sounds.

CURRENT STATUS (active, planned, dormant, completed, other?): dormant

PARTNERING ORGANIZATIONS: Kaiser Permanente

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? I'm as close to it as there is at Kaiser.

TECHNOLOGY USED: Equipment was from American Telecare Inc in Minneapolis. We used POTS connections.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Jeffrey Yu, MD

PROJECT NAME: Waianae Coast Radiology

ORGANIZATION/AGENCY (and primary contact): Queen's Medical Center and Waianae Coast Comprehensive Health Center

FUNDING (source and amount): Jeffrey Yu - Personal Time

START UP FUNDS: $0

REIMBURSEMENT (submitted/not submitted): $0

DURATION (start time and date): April 2001

PURPOSE/INTENT (100 words maximum):

To improve the interpretation turn-around time of Radiological procedures performed at Waianae by moving to a teleradiology transmission vs on-site interpretation.

MAJOR CRITICAL ACCOMPLISHMENTS: Improved Radiology turn-around time from 1 week for preliminary interpretation and 2 weeks for final interpretation to 4 hours for preliminary and maximum 1 day for final interpretation.

CRITICAL SUCCESS FACTORS: 1) Reduction or elimination of data entry 2) Sufficient bandwidth for image transmission 3) Properly educating and informing all people involved of their workflow steps and how important it is that they comply, 4) Setting up QA processes that are intertwined with workflow aka that cannot be skipped.

CRITICAL BARRIERS (overcome or not): 1) Consistent Radiology interpretation

MAJOR LESSON LEARNED: 1) See critical success factors.

CURRENT STATUS (active, planned, dormant, completed, other?): Active

PARTNERING ORGANIZATIONS: QMC, WCCHC

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM? Yes

TECHNOLOGY USED: Custom Written Radiology Information System and DICOM Transmission

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Dew-Anne Langcaon

PROJECT NAME: Cellphone glucose monitoring of gestational diabetes patients

ORGANIZATION/AGENCY (and primary contact): Ho'okele Personal Health Planners, LLC and Kapi'olani Medical Center for Women and Children

FUNDING (source and amount): HMSA Community Health Initiative grant

START UP FUNDS: $50,000

REIMBURSEMENT (submitted/not submitted): n/a

DURATION (start time and date): December 2008 – May 2009

PURPOSE/INTENT (100 words maximum): The purpose of the study is to research the following: Does cell phone-blue tooth technology for the outpatient management of diabetes in pregnancy improve patient compliance and satisfaction when compared with traditional methods of blood sugar reporting?

MAJOR CRITICAL ACCOMPLISHMENTS:
Study is just getting underway.

CRITICAL SUCCESS FACTORS:
Study just underway.

CRITICAL BARRIERS (overcome or not):
IRB process took nearly 12 months.

MAJOR LESSON LEARNED:
Study just underway.

CURRENT STATUS (active, planned, dormant, completed, other?):
Study just beginning.

PARTNERING ORGANIZATIONS:
Ho'okele Personal Health Planners, LLC
Kapi'olani Medical Center for Women and Children
JABSOM – OB/GYN Department
HMSA
Confidant Hawaii
AT&T

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Principal Investigator – Dr. Lisa Bartholemew

TECHNOLOGY USED:
Confidant Bluetooth converter and diabetic clinical information system.

TELEHEALTH PROJECT SUMMARY

SUMMARY WRITER: Christine Maii Sakuda

PROJECT NAME: Community Health Center Focused Web-based Dermatology

ORGANIZATION/AGENCY (and primary contact): Hawai'i Primary Care Association

FUNDING (source and amount): Department of Health and Human Services, Health Resource Services Association, Office for the Advancement of Telehealth.

START UP FUNDS: $200,000

REIMBURSEMENT (submitted/not submitted): Yes, HMSA

DURATION (start time and date): Project initiated spring 2005 and ongoing.

PURPOSE/INTENT (100 words maximum):

Current Graduate Medical Educational (GME) requirements are not being met by military physicians in the Hawaii-Pacific region due to a combination of geographic, regulatory and educational factors. Resident work hour restrictions have resulted in "Night Float" rotations and the need for external medical rotations have severely limited daytime scheduled educational activities, including departmental lectures and bedside medical rounds. To address this issue, a tele-educational portal within the existing Pacific Asynchronous TeleHealth system (PATH) serving the needs of Pediatric and OB/GYN GME is being developed. The ALOHA system will provide digitally recorded educational lectures within the two departments in an asynchronous ("store-and-forward") mode and provide Residency Program Directors with measures of competence as required by the American College of Graduate Medical Education. The ALOHA system will also ensure that a core curriculum is available to all Pediatric and OB/GYN residents. Future work will focus on expanding these educational opportunities to other GME programs at Tripler Army Medical Center as well as offering Continuing Medical Education (CME) credits for DoD healthcare providers stationed throughout the Pacific region.

MAJOR CRITICAL ACCOMPLISHMENTS:
Facilitated strong partnerships between primary care providers at the community health centers, the dermatologist and the technology vendor: Teledermaotlogy Solutions.   Teledermatology cases are reimbursed by HMSA. In 2008 , mpore primary care sites are being added to the project.

CRITICAL SUCCESS FACTORS: See above.

CRITICAL BARRIERS (overcome or not):
Lack of a dedicate telemedicine coordinator at the primary care site. Insurance providers lack of telemedicine reimbursement advocacy.

MAJOR LESSON LEARNED:
Need to develop strong partnerships between providers and insurers and patients.

CURRENT STATUS (active, planned, dormant, completed, other?): Ongoing development

PARTNERING ORGANIZATIONS:
The Hawai'i Primary Care Association, Doug Johnson-dermatologist, Molokai Community Health Center, Bay Clinic, Kokua Kalihi Valley Comprehensive Family Services, TeleDerm Solutions, HMSA, AlohaCare

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?
Clinical Champion: Doug Johnson, overseer of program: Christine Sakuda

TECHNOLOGY USED: Nikon digital camera, web-based telemedicine software, internet connection.