

PROJECT NARRATIVE

EXECUTIVE SUMMARY

This demonstration project will be to provide home health monitoring and care for 100 home health patients in the following Kansas counties: Rawlins, Wyandotte and Ellis Counties and Jackson County, Missouri. Each site will serve 25 patients. The program will provide consistent monitoring of an elder or disabled patient's care through the use of interactive monitoring. The system can currently monitor general health, medication, diabetic condition, blood pressure, diet, hygiene and mental health status. Each patient will be linked with a RN and periodically monitored through the system by their physician. The patients will represent varying degrees of health conditions both in a rural and urban setting. Evaluation software will track patient progress and status.

PROBLEM DEFINITION AND NEED ADDRESSED

The central problem this project will address is the increasing population of elderly in both the rural and urban setting and decreasing access to care. The project hopes to find alternative and effective means of providing home health care for the elderly and disabled. It proposes to address the problem of access to home health care, premature institutionalization and declining physical and mental health condition in the elderly patients targeted by the program. In addition, a significant number of these home health visits carried out by these organizations were routine. The procedures and issues listed in the executive summary are a basic and common home health procedure that could be accomplished by using the interactive system. There is a definite need to find more efficient and cost effective ways to address home health. There were 687,794 skilled nursing home visits in Kansas in 1993. \$468,105 of this portion was paid by Medicare, 11,124 by Medicaid and 108,565 by private and other sources.

Hospitalization frequently results in irreversible deterioration in functional ability and quality of life, especially in frail elderly individuals. Some of this deterioration may be due to the acute process which necessitates hospitalization, but much is due to the adverse effects of treatment and deconditioning effects as a result of immobilization. Failure to identify and treat concomitant physiological and psychosocial problems of the elderly, often result in a slow, complicated, unsatisfactory recovery. Some common hazards of hospitalization include adverse effects of polypharmacy, falls, incontinence, confusion, infections, malnutrition, pressure sores and overall rehabilitation.

A study was commissioned by the Kansas Long Term Care Action Committee to evaluate methods and strategies to ensure a responsive, flexible long term home health system. Preliminary findings and recommendations published March 8, 1994 describes the need for additional home and community based services for the growing elderly population of the state of Kansas. "A review of case mix data found that 19% of all nursing home residents had no ADL impairments and had a high level of cognitive functioning. In rural areas, the percentage was 25% and if people with one ADL impairment are included, fully 30% of all residents entered a nursing home because there was simply no other housing and service option available. Many of

these residents are private pay but will spend down and become Medicaid recipients within one year." According to data from the Census, Aging in Kansas, published by the Center on Aging, The University of Kansas Medical Center, April 1993. "Over the next twenty years, the big news in the demography of aging will be the growth of the population over the age of 85, the "oldest of old". According to the Census Bureau, the population aged 85 and older will be the fastest growing age group, doubling in size from 1991 to the year 2020, and increasing fivefold by the year 2050...eight of the top ten states are found in the Midwest."

Source: Kansas Department of Health and Environment, Hospitals and Medical Programs. Kansas Home Care Association, National Association of Home Care. National Long Term Resource Center, University of Minnesota, School of Public Health

The following are the organizations and areas of need which will be served by the project. Each represents a proposed site which will monitor and serve 25 home health patients utilizing the interactive home health system. They will be mentioned in context of the elderly ratio. The reason being, the primary individuals served will be elderly home health patients. The project, however, does not exclude any home bound individual or patient receiving home health.

Hays Medical Center, Applicant - Ellis County, Kansas: Ellis Counties population is 24,004 and is classified partially medically underserved with 17.5% or 4,547 over the age of 65. Low income elderly make up 680 or 14.8 % of the total elderly population. The average per capita income is \$11,459. There is approximately 610 or 19.11% of elderly in Ellis County with limited mobility or limited self care. Hays Medical Center Home Health serves patients that are home bound. The department provides skilled nursing, medical social services, home health aid, occupational therapy and nutritional support needed. The total visits for skilled nursing and home health aid by Hays Medical Center Home Health in July of 1994 was 924, August 1,025 and September 977. 85% of these visits were in Ellis County. The remaining 15% were comprised of surrounding counties.

Rawlins County Hospital - Rawlins County, Kansas: Rawlins Counties population is 3,404 and is classified medically underserved with 27% or 937 over the age of 65. Low income elderly make up 112 or 11.9% of the total elderly population. The average per capita income is \$10, 488. They are currently licensed for 24 acute care beds. All home health visits are coordinated through the hospital and County Health. They currently see up to 350 elderly home bound patients per month. Many of these patients are in isolated areas surrounding the city of Atwood. The amount of patients and existing staff make it impossible to address the standard daily needs of the home health patients in the area while effectively seeing and treating the acute care patients as well.

KU Medical Center - Wyandotte County, Kansas: They currently have 620 licensed acute beds and 464 staffed acute beds. The home health program will be fully operational and staffed by June 1, 1995. The total population of the county is 166,881 The current number of individuals over the age of 65 is 26,596 or 13.0%. Wyandotte County is designated medically partially underserved. There is currently one physician per 323 persons. Currently there are 46,735 in-patient days for people age 65 and over for urban hospitals in Kansas.

VA Hospital - Jackson County, Missouri: They are currently licensed for ten in-patient Geriatric Evaluations and Management. The home care program has a daily average census of 250 patients. The Geriatrics section provided care for waiting of home bound veterans in both Kansas and Missouri areas. Factors that affect the demand for increased home health care and nurses are:

- Increasing numbers of frail elderly citizens in need of nursing care.
- More severely ill and elderly patients in hospitals requiring higher RN to patient ratio. In 1970 there was one RN to every four patients, in 1993 the ratio is nearly one to one.
- Increasing demand on non-hospital setting for RN, particularly in home care, nursing homes and community health clinics.
- Proliferation to technology translates into a growing need for "high touch" nursing care.

Source: Kansas State Board of Healing Arts and Kansas State Board of Nursing.

WHY IS THIS AN IMPORTANT PROBLEM? WHY DOES THE PROJECT FIT THE TIIAP?

The proposed project will address the problem of home health patients and their access to quality and timely care. The project is designed to address the needs of the home bound elderly (in most cases elderly, but not limited to) in the rural and urban areas. All four counties chosen for sites are partially medically underserved or completely medically underserved. As demonstrated above, the elderly and home bound populations in both the rural and urban populations of Kansas are in significant need. The standard home health visit in many instances addresses issues such as the proper taking of medication, proper insulin management, diet, mental status, mobility, hygiene and physician orders. The project is not meant to replace home health but to reduce the disparities of access created by the travel, staff and time spent on medical care, procedures and check up's. The rural areas targeted have direct problems as to limited access to home health care or none at all. The urban sites have the same problem, but the additional feature of crime, safety and travel for both the home health patient needing to see a physician or the home health professional traveling to the patient. In both instances, if the patient can not receive home health care or travel to the physician, they receive no care. There is not an option between receiving home health care, traveling to the physician (most times very difficult for the home health elderly patient) or no care and communication. The telephone offers communication but extremely limited medical application. Many times elderly patients describe no problems, oblivious to the seriousness of a mental or clinical condition.

The technology involved in this project is relatively simple. The system is comprised of two components. The first is a base station with which the RN or home health professional transmits and records data collected from the patients with each interaction. The base unit is equipped with software for each patient evaluation. The audio and video is transmitted by means of a monitor, demodulator, modulator router and camera to monitor. The receive units are located in the patient's homes. The receive unit is approximately the size of a small TV set and requires no technical manipulation by the home health patient. Patients are contacted by the RN at the base unit, and the receive unit in the home is switched on from the nurse. A confidentiality and privacy agreement is signed before installation.

The interactive home health system operates through the cable TV system. It is for that reason that the bandwidth is such that allows excellent quality. The nurse is currently able to read a medication bottle, syringe, glucometer and blood pressure gauge, simply by having the patient hold the equipment up to the viewer. In addition, the technology is adaptable to satellite, standard telephone lines, fiber optic and T1. For the purposes of this program, the proposed sites will use the local cable TV system. The four home health patients on the system for the last five months have used the cable TV system. The cable companies in the four designated sites have been contacted and the project members anticipate no problem. The 100 patients which will be hooked into the system will pay an additional \$10 extra per month for the interactive service. This cost has been figured into the budget. It is also the intent of the project to connect the interactive home health system into the existing ITV equipment at the sites. All sites will have full ITV capacity at the time of this award. While full ITV is a monumental step for health care, the access and equipment cost can be prohibitive for rural and urban alike. Technologies such as the Interactive Home Health, Internet and Teleradiology have proven to be more cost efficient with usage rates strong. Hays Medical Center has seven teleradiology units on line for seven rural hospitals. The system runs through the phone lines and Hays Medical Center receives an average of 15-20 films per month. At \$35,000 for the base unit and \$2,300 per receive unit the system is quite affordable. It is the central belief of the organization to become involved in technologies that can show future possibility of self sufficiency. The applicant is currently working toward integration with the 21 rural hospitals served in the area. It is a necessity that any telecommunications provided be accessible and affordable to these sites. The future of these organizations and the region will depend on this goal. Organizations such as KU Medical Center and the VA Hospital are equally important as the link to specialty care as a tertiary care center. The nature of the transmission and access mode will make it cost efficient for the sites to operate. When the technology was developed by ResourceLink, it was the intention to make it possible to integrate into existing communication infrastructure.

The product and development has lived up to that expectation. All maintenance and upgrades to the equipment are included at no extra costs to the sites. The services and technology can be applied to any setting, rural or urban. The base stations can transmit effectively as near as 200 yards or as far away as 500 miles. For the purposes of this pilot project, the radius will be 100 miles. The system will be fully adaptable after the initial 25 patients at each site. Each base station can handle up to 90 patients. A presentation was made to the State of Kansas Department of Social and Rehabilitative Services Home and Community Based Workgroup by the members of the designated sites. The object of the presentation was to present the interactive system to the state to consider a \$10 per visit reimbursement which would generate \$12,000 per month or \$144,000 per year. The state requested additional information on the project which was supplied to them. The chairwoman commented that she was impressed and encouraged by the project. It is currently under consideration for reimbursement.

It is a central intent of the project to show the effectiveness of the system in both an urban and rural setting. The evaluation data collected on each patient at each interaction will be aggregated and examined for that purpose. The design of the technology was largely a result of suggestions and ideas from home health RN's and health professionals. It was created with the idea to have cost efficient transmission, overhead and replication. If reimbursement is granted by the state, the

system will pay for itself at a rural or urban site within one year. It is impossible for organizations involved in home health care to be involved in technologies or services that are not cost efficient.

HOW WILL YOU CARRY OUT THE PROJECT?

The technical description of the system has been adequately explained in the review question. A time table and technical blue print has been provided in the appendices. It should be mentioned that four patients have been on this system for five months in Lawrence, Kansas. Data has been collected on a daily basis on each patient. The equipment and transmission has had no problems. The standard home health equipment used by the patient would consist of a glucose monitor, blood pressure cuff and any normal equipment used by home health patients. For the purpose of this one year project, the vital signs and chemical tests would be limited to only those which are simple and easily done by an elderly or home bound patient. If the grant is awarded, each organizations coordinator and RN will meet to review these implementation steps first. The cable companies will be notified that the prearranged agreement will progress, then the following will take place. An RN will initially contact from a pool of prospects currently assembled by the home health agency and organizations in each community. Each site has no lack of patient and family interest in the program. The RN and coordinator will meet with the prospective patient and their family. If the patient and family believe it is a viable option, the patient will undergo a medical evaluation in keeping with the realistic goals of the program. If the patient is suitable for the program, the nurse will then explain the schedule and interactive path of care involved for that particular patient. The family will then be encouraged to contact the nurse. The family will be sent a report of the patients progress of care, medication, psychological status, diet, exercise and progress once every two months.

A contract between the organization and the patient will be signed for the privacy and confidentiality of information and interaction.; also an agreement to use the data gathered without the patient name. The specific equipment will be ordered and any technical changes or modifications made. Equipment will be installed in the home and the base station installed at the organization. Training will take place for the site personnel and home health patients. The RN will be trained on evaluation software, and the project will become fully operational within two months of the date of award. Regular in home visits would be conducted as needed in addition to being on the system. When a patient's independence may be enhanced by another specific service in a cost effective manner, the request may be initiated by the client during an on-line visit. The site coordinator will develop a service/referral base and contact with the appropriate organization, public or private.

WHAT ARE YOUR QUALIFICATIONS AND WHO ARE YOUR PARTNERS?

HAYS MEDICAL CENTER: The medical center is a non-profit hospital which is staffed for 99 acute care beds and 60 ambulatory beds. It is a major provider of health services to Northwest Kansas. 47% of admissions are from outside Hays. Hays Medical Center provides care regardless of financial condition. The hospital is designated an Essential Access Community Hospital serving Grisell Memorial Hospital in Ransom, Kansas and Rawlins County Hospital in Atwood, Kansas as the RCPH counterpart. Hays Medical Center is connected by full ITV to both sites and currently conducts ITV consults with KU Medical Center. KU and Hays Medical Center also

conduct a family practice residency program and Teleoncology. There is currently Teleradiology service to seven rural hospitals in Western Kansas, in addition to a regional cancer center. Hays Medical Center's Home Health sees an average of 1,000 patients per month. The Director of Home Health, Marie Leiker, has interviewed and operated the interactive home health system. She fully supports it along with the administration and board. Dr. Robert Cox, M.D., will be medical advisor for the program. He is currently on staff at Hays Medical Center and recognized within the state and nationally as a founder and leader in Telemedicine.

KU MEDICAL CENTER

KU is the major tertiary and academic medical center in Kansas. Currently it is supplying full ITV consult to Hays Medical Center. Dr. Ace Allen, Pamela Whitten and Dr. Gary Doolittle will supply evaluation and dissemination of all interactive patient material. All individuals have extensive experience in Telemedicine and evaluation. The medical center has started home health service from the family practice department, headed by Dr. Jane Murray. Dr. Murray has been present at the presentations to the state on the issues of reimbursement. The medical center also developed the software which allows patient data and evaluation for each patient and interaction. A copy of the form is included in the appendix.

KANSAS CITY VETERANS ADMINISTRATION MEDICAL CENTER

The geriatrics section at the KCVAMC is a section within the medical service. The "core" staff consist of 1/4 physicians (all have faculty appointments at KUMC), a gerontological nurse specialist, social worker and program assistant. Other clinical staff who support the Geriatrics section include physical therapist, pharmacist, dietician, and psychologist. The primary clinical programs, operated by the Geriatrics section, includes a ten patient Geriatrics Evaluation and Management (GEM) Unit, as well as daily outpatient Geriatrics clinics and a Geriatric Assessment Clinic. The philosophy and goals and procedures of the inpatient unit are attached. The KCVAMC also has a Community Care Program which coordinates VA home care, nursing home and assisted living. This active home care program provides home visits by contracting with a Kansas community agency (VNA Visiting Nurse Association). The home care program has an average daily census of 250 patients at any time. It provides care for 3,000 home bound patients in both the Kansas and Missouri areas. Dr. Rooney, M.D. Chief of Geriatrics, will function as coordinator and medical advisor for the interactive home health site at the VA. In addition, Stephanie Studenski, M.D. M.P.H., will also provide supervision and coordination for the project. She is Director of the KU Center on Aging and part-time KCVA DEM physician.

RAWLINS COUNTY HOSPITAL

Rawlins County Hospital has one physician, Dr. Willard F. Werner. The hospital is a Rural Primary Care Hospital whose counterpart EACH is Hays Medical Center. Rawlins County Hospital is connected to Hays Medical Center for Teleradiology and receives mobile mammography and nuclear medicine from Hays Medical Center as well. They will have full ITV capacity by August of 1996. Shirley Organ is the public health nurse who supplies and organizes all home health care for the county. They see approximately 250 patients per month through the program. There are many elderly and home bound in the area who simply do not get care. Don Kessen functions as the CEO of the hospital and will coordinate and facilitate the project. The Board and Ms. Organ are aware and extremely supportive of the program. In addition, there is a

RN home health nurse available through the hospital to staff and run the interactive home health monitors. This is a true rural site classified MUA. All the sites mentioned have met and understand the commitment and dedication needed for the success of the project. The partners have participated in gathering information, soliciting support, organizing and meeting concerning the project as a whole. The applicant is greatly encouraged by the participation and understanding of the application and need for replication of the project model.

WHO WILL BENEFIT FROM THE PROJECT?

The end users benefiting from this project will be the home bound and those individuals receiving or requiring home health care. The majority will be elderly individuals 65 and older by nature of the demographic. Specific explanation of this population in each county has been provided in the second section of this narrative. The 25 patients at each site will be kept as general as possible to get an accurate cross action from the home health population. The only exception will be made with a selection of cancer patients, preferably receiving hospice care. The project will strive to demonstrate the effects of the interactive home health by using the system on ten hospice patients. Dr Carlson at Hays Medical Center and Dr. Ace Allen (both oncologists) and Dr. Rooney have all offered to evaluate and interview cancer patients over the system. If the full ITV systems are integrated with the interactive home health systems, the physicians at KU Medical Center could consult directly into the home health patient's home if needed. There are significant benefits to the end users psychological condition as well as medical. Many home health patients become isolated, depressed and anxious due to the solitary lifestyle due to multiple ambulance rides, hospitalization and family calls. The four patients in the alpha testing have shown marked improvements in physiological condition, amount of ER calls and physician visits. The following are examples of current system users and end users for the system:

Lois Conrad is a 67 year old COPD (Chronic Obstructive Pulmonary Disease) diabetic patient. She had experienced general medical complications due to the medical condition and acute anxiety due to lack of oxygen. Lois was required to see her physician three times per month associated with the condition. After being on the system five months, Lois is required to see her physician once every two months. Lois previously had multiple emergency room visits each year. She has had none since being on the system. This saves Ms. Conrad \$1,200 per year.

Percy Kaiser is a 65 year old male with multiple medication and therapy needs. Mr. Kaiser previously required a LPN five times per week. Since being on the interactive system 20 minutes twice per day, he is required to have a LPN visit once per week. In addition, this currently saves him \$4,800 per year.

Care in a private nursing home costing around \$29,200 per year equals \$60 per day. The state cost is approximately \$14,400 per year. The cost of being on the interactive home health system at \$10 per visit twice a day equals \$4,800. A confidentiality and privacy agreement is signed before any patient is put on the system. The applicant has included letters of support from agencies as well as individuals. All organizations involved have received multiple calls, inquires and request to have family members or their institutions written into this proposal. The home bound isolated and families have personally contacted Hays Medical Center requesting that they be chosen as a patient. There has been no end to the interest and support for this project. We have so far received over 50 support letters from elderly, family and health professionals. In

addition, we have a family practice, oncologist, radiologist and psychologist willing to donate time to see patients over the system.

HOW WILL YOU KNOW YOUR PROJECT IS SUCCESSFUL?

Dr. Ace Allen, MD and Pamela Whitten, PHD candidate at KU Medical Center have agreed to function as evaluators for the duration of the project. Dr. Allen has developed a software program which will allow for the evaluation of each patient by encounter. The software program can run on any personnel computer. The interactive base unit has its own computer, the software program will be preloaded. There is a computerized form which will be filled out by the RN at the time of the interactive visit. Four questions about the nurses satisfaction with the interactions were answered as follows: 1) How satisfied are you that we are able to address the client's medical problem?; 2) How satisfied are you that you were able to address this clients emotional problems?; 3) How satisfied are you that you were able to communicate with this client? and 4) How satisfied are you that you didn't miss any important data because this visit was performed via TeleVideo rather than in person? Each interactive visit will be documented. The process data will be collected from project files. The aggregation of this data will be accomplished every two months, analyzed and provided to local, state and federal concerns. The outcome data will analyze changing perspectives of the home health patients and professionals participating in the program. The aggregation will also be used to modify and improve the patient care as required. The impact data will rely upon longitudinal tracking of patients and be conducted upon an annual basis. Client outcomes will be standardized and correlated with services rendered and consumer satisfaction. The result of this project will be examined in light of traditional care provided for these individuals. Each interactive visit will be documented for each patient. The evaluation system will be divided into three central parts.

Satisfaction: It is important to separate satisfaction into meaningful categories (general sense of comfort, clinical encounter, technology and ability to communicate. **Efficacy:** An issue is whether the interactive video encounters inhibit or disallow the passage of certain important medical information. If so, it is important to determine those circumstances or medical conditions that are particularly well or ill suited to the interactive video nursing unit. For example, the system seems well suited for checking if the patients are taking their medication properly, blood sugars, emotional well being, and diet. However, likely to be less reliable for assisting with dressing changes and the like. Other comparisons could be conducted in a more "laboratory setting" where the quality of medical information exchange can be compared to between various "on-site" versus TeleVideo-mediated model situations. **Cost Effectiveness:** The most inefficient aspects of home health care is the "windshield time" accrued by the visiting nurses. A significant portion of a visiting nurse's time is spent driving, parking etc. The preliminary findings suggest that home health care can be delivered many times more efficiently when parts of the care are administered through a TeleVideo system, which is not effected by distance and weather. The evaluation will examine costs and benefits from several perspectives; the patient, visiting nurse, home health agency, third party carrier and the broader social perspective in relation to replicating the interactive home health system in additional sites, both rural and urban. *Preliminary data and evaluation findings for alpha testing is available in appendix.*