

FINAL EVALUATION REPORT
Technology Opportunities Program
Award 36-60-00021
Telemedicine in Daycare Project (TDC)

Primary Objectives:

- I. Implement a telemedicine service in 5 daycare centers, predominantly located in inner city areas of Monroe County (Rochester), New York.
- II. Reduce the impact of illness in daycare on children, parents, center staff, and industry.
- III. Ensure the continuation and expansion of this program beyond the project period and beyond this community.

Background:

This demonstration project sought to develop and implement a telehealth system involving pediatricians at Golisano Children's Hospital and children participating in center-based childcare programs in the city of Rochester, New York. The program was implemented in a step-wise manner to allow both historical and concurrent controls for each participating childcare center so that impact could be measured. The primary measurement of the impact of illness was absence due to illness. Absence from childcare due to an illness episode impacts the child, the family, the staff, and local employers. Inner city children are often participating in a childcare center for educational or enrichment programs such as Early Head Start, Head Start, or Universal Pre-K. Days of lost attendance are lost opportunities for participation in these programs. Often a simple illness results in many days of absence due to the logistics of getting an appointment and transporting the sick child via public transportation to a clinic or emergency department and then to a pharmacy to obtain medication for treatment.

Illness episodes resulting in absence from childcare also have a profound effect on working parents. For parents using childcare, a child's illness accounts for 40% of work absence. (Carabin 1999) In an issue brief produced by the Kaiser Family Foundation in April 2003, 56% of working women surveyed indicated that when their child is sick and cannot attend childcare they either know that they would have to stay home with them or simply have no plan for what to do. Many of the participants in this program come from single parent families, often headed

by a working mother who must bear the full responsibility for caring for a child who cannot attend center-based childcare due to an illness.

Methods:

Before initiating this program at any childcare center, a Community Advisory Board and a Professional Advisory Board were established. Rosters for each board are attached in Appendix A. Participants were carefully chosen to represent community agencies with an interest in childcare and children's health. Participants on the Professional Advisory Board included representatives from each of the major pediatric practices who care for the majority of inner city children in this area. Both groups were convened to discuss how to best implement the program, safety measures, development of practice guidelines, and training requirements.

Childcare centers were selected based on several criteria. We examined population size including how many children each site was licensed to accommodate and how many children were actively enrolled, population demographics, available facilities for housing a telehealth exam room, physical location relating to Frontier Corporation for availability of sDSL service, and the enthusiasm and leadership of the administrative staff at each center. Five candidates were chosen, three inner city centers and two suburban sites. Ultimately funding was only provided for the three inner city centers.

Decisions regarding telehealth equipment were made based on evaluating hardware and software from several vendors who made visits to Rochester for demonstrations and by viewing demonstrations at national/international telehealth conferences with vendor displays. We began by working with Healthworks TMS, a division of Sony Canada. Healthworks served as an integrator and developed PC-based videoconferencing systems for the program utilizing an Aethra CODEC and patient management software. The systems included an AMD ENT scope for ear and throat exams, a digital Sony camera for diagnostic images and video, and a Welch Allyn electronic stethoscope with Meditron software for respiratory evaluations. Eventually the Aethra CODEC and software became too unreliable and was not customizable in the manner that was needed for this program, so a change was made to Zydacron z360 CODECs and 2Opinion patient management software.

Connectivity between Golisano Children's Hospital and the childcare centers relied initially on a solution created by Frontier Corporation involving a DSL/ATM network designed to be reliable and HIPAA compliant. Currently the system is being migrated to commercially available sDSL with VPN service provided by Frontier Corporation. Each PC-based system connects to a central, secure Linux file server (Samba 2.2.3a-12.3 for Debian) located at the medical center where a single patient database is stored containing medical information and images. Each center has access only to patient records generated by their center, while providers may access any patient record. Videoconferencing is currently managed through the Zydacron CODEC and currently requires a minimum available bandwidth of 512K for a resolution adequate for clinical consultation.

Program enrollment began in December 2000 with a two phase process. Each center began collecting daily attendance information for all children enrolled at the center (see attendance data collection instrument Appendix B). More detailed information about absences due to illness was gathered for children for whom consent was obtained. Data recorded for each absence included whether the absence was due to illness or non-illness. If due to illness, a brief parent survey was performed by the site coordinator to determine if a medical visit was made to an office or hospital, where the visit was made, whether a parent missed any work or school due to the illness, and if the parent perceived any difficulty because of the illness. This baseline attendance data was collected for a minimum of 18 weeks including at least 3 winter months in which there was expected to be a higher incidence of illness episodes.

After a minimum of 18 weeks of baseline data collection, each center began telehealth service. Service was made available for any child with an illness which would otherwise result in the parent being called, or when requested by a parent. Service initiation was staggered such that two centers were never initiating service at the same time to allow for adequate training and to provide concurrent controls. Training to begin telehealth service took approximately 5-10 days and involved a detailed training protocol and competency checklist included in the Manual of Operations in Appendix C. Refinements to this training program have been made which require each trainee to complete the training and demonstrate competency, then complete an 8 week supervised internship period before full certification is awarded. Practice has proven to be the most vital aspect of the training program and an extended period with no practice can adversely affect the Telehealth Assistant's skills.

Each telehealth visit was initiated by a page from the center to the triage nurse or provider on call. Currently there are two senior pediatricians and one pediatric nurse practitioner who routinely take telehealth calls. The provider established a videoconference connection to the childcare center and reviewed health history and current symptoms with the Telehealth Assistant and/or a parent if they were available. Occasionally visits are conducted at drop off or pick up time when the parent is present, or the parent works in the childcare center and is available for the visit. The provider completed an electronic evaluation form for the visit including the diagnosis and any recommendations. A discharge instruction sheet was faxed to the childcare center for the parent to receive along with any additional information or parent educational materials the provider may have determined would be relevant. A similar fax was generated for the child's primary care provider and faxed to the doctor's office so that he or she would have a complete record of recommendations given. Primary care physicians were encouraged to call if they had questions regarding the service or if they wished to receive copies of any images. Examples of each clinical form utilized are found in Appendix D.

After each family's initial encounter with the telehealth program, a telephone survey was administered to determine how parents felt about the program and how the service had impacted them in terms of work and school. They were also asked if they would have taken the child to their doctor's office, an after hours clinic, or an emergency department if the service had not been available. They were given an opportunity to discuss what they liked or disliked about the program and in what specific ways they felt it helped them. A more detailed pre and post economic impact questionnaire was developed recently to gather specific information about parent's occupations, lost wages, and reaction to the service. This instrument is being utilized in the last three childcare centers to initiate service. Both the telephone survey and economic impact questionnaire are available in Appendix E.

Results:

As of 1/28/2004 1251 telehealth visits have been completed with fewer than 3% of visits requiring a referral to see a physician in-person. Visits have been completed at five childcare centers with the final three centers scheduled to begin visits February 1st, March 1st, and April 1st. A draft manuscript "Telemedicine Reduces Absence Due To Illness in Urban Childcare" is attached in Appendix F and includes a detailed bivariate analysis of absence due to illness as

observed in this program before and after telehealth service was initiated. What follows is a summary of this analysis and of our program experience to-date.

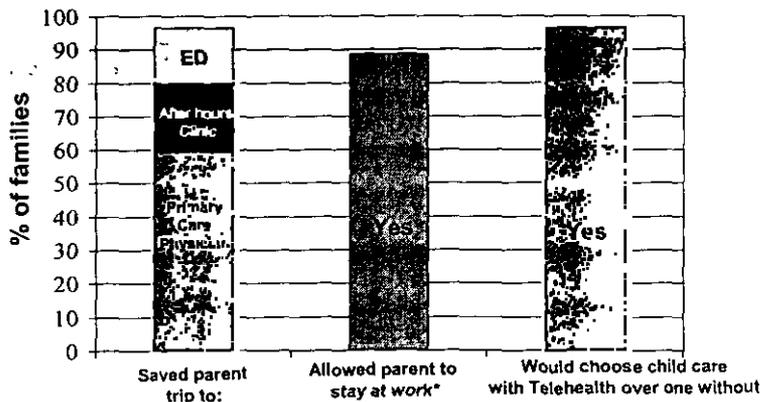
Absence Due to Illness

Over a period of 425 weeks attendance data was recorded at 5 childcare centers with an average enrollment of 138 children per center. Absence due to illness during the observation period averaged 6.3 days of absence per 100 children per week. Predictors of absence included mean age of children at the center, proportion of children at the center covered by Medicaid insurance, season (winter or non-winter), and availability of telehealth service. After adjusting for all covariates, telehealth service remained the strongest predictor of absence due to illness (4.7 vs 8.5, P<.001). A 45% reduction in absence due to illness was attributable to telehealth service.

Parent Telephone Survey

Parents report a savings of an average of 6.0 hours of time that would otherwise be lost to work or school if a telehealth visit had not been possible. In most cases the visit allowed the parent to remain at work or school, and over 95% of parents reported that if the telehealth visit had not been available they would have had to take the child to be seen in-person.

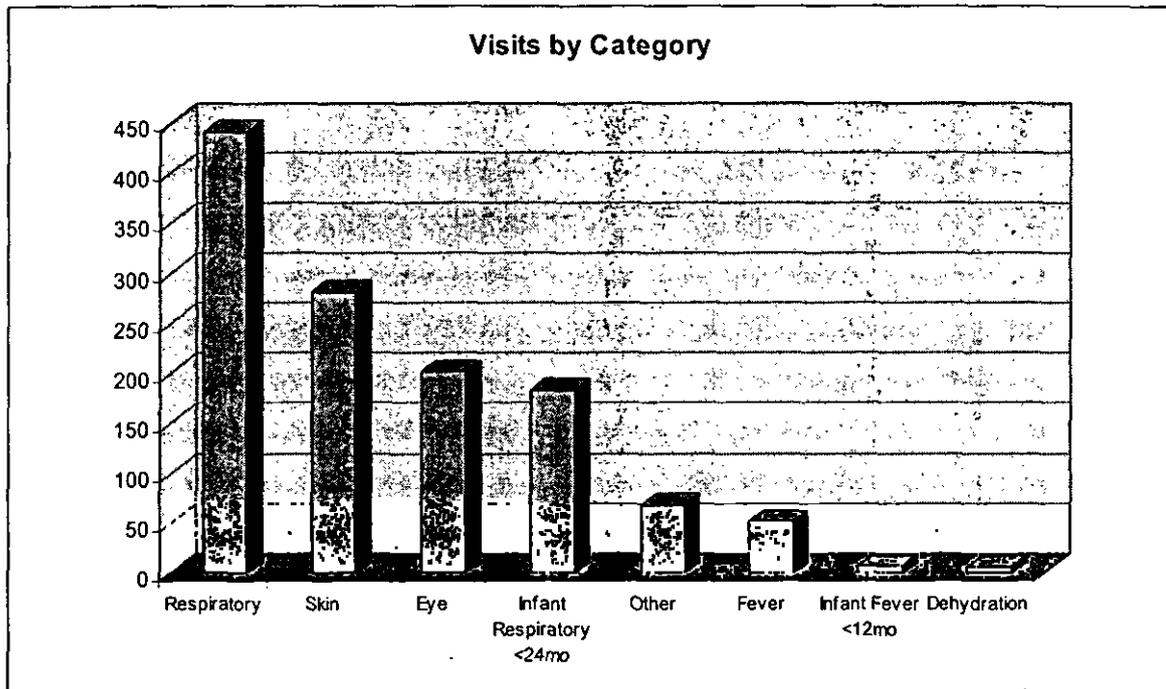
Parent Satisfaction



* Parent estimate of work time saved: 6.0 hrs

Types of Illness Visits

Each visit was categorized into 1 of 8 illness descriptions including Respiratory, Respiratory Infant (<24mo), skin, eye, fever, fever infant (<12mo), dehydration/GE, and other. Respiratory, skin, and eye problems are the majority of illnesses seen in this telehealth program. Skin problems typically include ringworm of the skin or scalp and rashes. Eye problems are predominantly conjunctivitis. Ear infections are categorized as respiratory because they typically include respiratory symptoms and ear complaints make up the majority of respiratory cases.



Program Expansion:

A primary goal of this demonstration project was to ensure expansion of this program to other groups and additional communities. Key to expansion is insurance reimbursement for the service to develop an ongoing funding stream rather than funding pools such as grant and philanthropic support. Legislation pending in the NY State Senate and Assembly could be key to providing Medicaid reimbursement for telehealth services. Details regarding the 4 key pieces of legislation follow.

Senate Bill S1095

BILL NUMBER: S1095

SPONSOR: HANNON

TITLE OF BILL: An act to enact the "telemedicine access act"; and to amend the public health law, the insurance law and the education law, in relation to the utilization of telemedicine

PURPOSE: This legislation authorizes the utilization of telemedicine in the treatment of patients, and authorizes the education department to license physicians to engage in telemedicine.

JUSTIFICATION: Although the majority of New York State residents continue to have access to high quality medical care, there are several factors that continue to pose significant barriers to the delivery of health services in medically underserved rural and urban areas. These areas have difficulty attracting and retaining health professionals, as well as supporting local health facilities to provide a continuum of health care. In addition many health care providers in medically underserved areas are isolated from mentors, colleagues, and the information resources necessary to support them personally and professionally. Telemedicine, broadly defined as the use of telecommunications and information technology to deliver medical services and information from one location to another, is part of a developing multifaceted approach addressing problems of provider distribution and access. This method of delivering medical services and information has been utilized in one form or another for approximately 30 years, and telemedicine projects currently exist in 40 states. The employment of health systems in medically underserved areas by improving communication capabilities and providing convenient access to up-to-date information, consultations, and other forms of support. In addition, the use of telecommunications and information systems to deliver health services has the potential to reduce costs, and change for the better the conditions of practice in medically underserved areas.

Senate Bill S463A and (same-as bill) Assembly Bill A7155A

BILL NUMBER: S463A

SPONSOR: HANNON

TITLE OF BILL: An act to establish the statewide telemedicine/telehealth task force, and providing for its powers and duties

PURPOSE: The purpose of this measure is to provide a framework for the development of telehealth and telemedicine programs.

JUSTIFICATION: One measure of a community's quality of life is the availability, accessibility, and quality of its health care services. The Internet and other electronic technologies have the potential to fundamentally reshape health care service delivery in ways that improve quality of and access to care in a cost-efficient manner. Technology can bring cutting-edge health care to any location, help reduce and prevent medication errors, and enhance information about state-of-the-art health care.

Large segments of New York's population in rural and other medically underserved areas have difficulty accessing primary health care and specialty services as well as health education. Providers in these communities are often isolated from mentors, colleagues and information necessary to provide optimal patient care. The purpose of this bill is to serve as a catalyst to expand and improve telehealth and telemedicine programs in communities across the State. Through an integrated telecommunications system, patients and providers across the continuum of care can have increased access to medical treatment and state-of-the-art health care, as well as educational and professional training opportunities.

Congress recognized these benefits in the Balanced Budget Act of 1997 when it authorized Medicare reimbursement for telemedicine services. However, the issues are more complex at the state level because each state has the authority to set its own requirements for licensure and credentialing, as well as different rules for insurance and Medicaid programs.

This bill provides a structure for statewide policy development, as well as the ability to conduct demonstration programs to assess the effectiveness and value of utilizing telemedicine and telehealth to improve the quality and scope of health services available to the residents of New York State.

Assembly Bill A6029

BILL NUMBER: A6029

SPONSOR: Schimminger (MS)

TITLE OF BILL: An act to amend the public health law, in relation to a study of telemedicine and providing for the repeal of such provisions

upon expiration thereof

PURPOSE OR GENERAL IDEA OF BILL: This bill provides that a study be done by the Commissioners of Health and Education on telemedicine.

SUMMARY OF SPECIFIC PROVISIONS: Section 1: Amends the public health law by adding a new article 17.

Section 2: Effective date

JUSTIFICATION: Like many other industries, the pace of technological innovation has radically affected the health care industry. Technologies such as the internet, enormous computer databases, audio and video-teleconferencing, high-resolution cameras, satellites and other innovations, afford many new and effective means of providing health care. The use of telemedicine to share medical knowledge allows doctors and other providers to collaborate to the benefit of their patients. Telemedicine benefits rural areas by allowing general practitioners in remote areas to instantly contact specialists in urban medical centers and share data. This technology saves precious time in treating patients; it saves time for doctors who once needed to transport themselves or their patients across large distances. Further, it reduces the need for duplication records, tests, examinations, and generally makes the health care system more efficient. Telemedicine saves lives, and saves tremendous costs associated with health care.

The benefits of telemedicine, however, hindered by serious issues such as patient privacy. When medical records and other information are transmitted across communication and information networks, it is accessible by a number of people who should not be privy to such information. This type of unauthorized access can negatively affect the patient if misused. Patients' confidential medical records might be transmitted to employers, insurers, the media and others. Moreover, the fear of the lack of privacy may dissuade patients from taking advantage of telemedicine's many benefits.

This bill would require the Department of Health and Education to study the issue of telemedicine, with several specific points such as technical, legal and cost related issues, and patient privacy as priorities, and with the general purpose of making New York's telemedicine system efficient and safe so that the state can reap the benefits of this technology.

Efforts are also underway to develop a reimbursement strategy with the two primary private health insurance providers in the Rochester Area, Excellus Blue Cross/Shield and Preferred Care. We have met with representatives from each of these organizations and have begun the process of applying for reimbursement approval. The major obstacle to approval of reimbursement from private insurers is the lack of evidence about how suburban families with private insurance might utilize the service. 66% of our current study population is covered by Medicaid insurance and we have very little evidence regarding suburban families with private coverage and how they may differ. A pilot of telehealth in suburban childcare may need to be completed before final approval for reimbursement from private insurance can be reached.

Conclusion:

Telehealth services holds substantial potential to reduce the impact of illness on health, education, and economic status of urban children and families using center-based childcare. Work is yet to be completed toward ensuring appropriate insurance reimbursement for these services, but progress has been made that would not have been possible without this demonstration project.