TeleKidcare®

University of Kansas Medical Center

Accomplishments

- TeleKidcare® systems are currently in place in 10 Unified School District (USD) 500 schools (9 elementary, 1 middle school)
- Conducted nearly 1900 healthcare consultations (consults) in USD 500 via interactive tele-video (ITV) since project inception
- Provided access for acute and behavioral healthcare for 21,000 students in USD 500 (4,600 direct; 15,400 indirect)
- Agreement with Kansas Medicaid to develop a telemedicine reimbursement policy
- Parental survey results indicated that 98% of parents responding to the questionnaire were "satisfied" or "very satisfied" with services offered through TeleKidcare® (Center for TeleMedicine & TeleHealth, 2003)
- Project replicated in 21 communities throughout the State of Kansas during the past three years
- Trained healthcare providers and administrators from 6 other states regarding implementation of school-based telemedicine programs

Introduction

TeleKidcare® is a telemedicine project that helps parents access healthcare for their school children. The University of Kansas Medical Center (KUMC) has a long-held interest in the health and well-being of the state's rural citizens. Telemedicine, a method of delivering healthcare to patients via interactive tele-video (ITV), began in Kansas in the early 1990s. In 1995, KUMC formally established the Center for TeleMedicine & TeleHealth (CTT). While the primary focus of CTT was directed toward providing specialized healthcare and support to rural physicians and their patients, in 1997 CTT's attention was widened to consider the barriers encountered by urban families and school children when attempting to access healthcare.

At that time, school nurses in Kansas City, Kansas, USD 500, reported an emergent alarming trend among school children who were unable to access healthcare for routine acute conditions such as a suspected strep throat or ear infection, skin irritation, or respiratory ailment. Besides missing several days of school, necessary healthcare intervention was typically not received in a timely fashion, if at all. Barriers adversely affecting access to healthcare included language, inadequate transportation or economic resources, lack of familiarity with the medical community, and citizenship status. When medical treatment was sought, it was often found in the emergency rooms of area hospitals where the per capita costs are significantly higher, having a significant detrimental effect on scarce community and state medical resources.

Kansas City, Kansas, located in Wyandotte County, is an urban metropolitan area. USD 500 serves 20,775 K-12 students (Kansas Department of Education, 2003). For the 2002-03 school year, as a district, 73.5% (15,281) of the student population participates in the federal Free and Reduced Lunch program. Ethnically, the district-wide student demographics are as follows: 49.7% (10,335) Black; 24.8% (5,159) Hispanic; 21.5% (4,461) White; and 4% (820) other. Corresponding statistics for the 10 USD 500 TeleKidcare ®schools (4,584 student count) include 86.5% (3,963) participation in Free and Reduced Lunch program, 55.1% (2,525) Black, 31.3% (1,437) Hispanic, 9.9% (452) White, and 3.7% (170) other.

Working together, KUMC's CTT, Pediatric Clinic and Child Psychiatric Clinic, and the Kansas City, Kansas, public school system (USD 500) developed TeleKidcare®. It consists of ITV systems which are placed in the school health office and in the KU Pediatric Clinic that allow the school nurse and child to see, hear, and interact with the KUMC physician. In addition, this state-of-the art telemedicine technology equipped with a digital otoscope and an electronic stethoscope allows KUMC physicians to diagnose and treat a wide range of ailments including acute conditions such as ear or strep infections as well a chronic conditions such as Attention Deficit Hyperactivity Disorder (ADHD) or asthma.

Goals and Objectives

The main goal of this project is to reduce the time that a child spends out of the classroom recuperating from an acute illness. This goal is based on the fact that TeleKidcare® transforms the school health room from a triage center to a site of care. By facilitating the process of securing health care services for sick children, this project has the added benefit of reducing parental time away from work.

Our objective of establishing and maintaining effective health-oriented collaborations is represented by the fact that TeleKidcare® is a unique project designed, developed, and implemented by the University of Kansas Medical Center and the Kansas City, Kansas public school system specifically to address the shared community goal of keeping children healthy and in school learning by providing health care service to children at school.

During the past five years of TeleKidcare® experience, other complimentary goals have emerged. TeleKidcare® has been instrumental in enhancing the role of the school nurse (Whitten, Kingsley, Cook, Swirczynski, & Doolittle, 2001). No longer simply saddled with various clerical duties, USD 500 school nurses are assigned areas of responsibility that draw on their medical expertise. School nurses are enjoying a renewed appreciation from administrators and faculty members alike for their medical assessment skills and ability to inform and educate school children, their parents, and school personnel regarding health and wellness concerns.

Through telemedicine, the school nurse introduces a typically reticent family to the local health care community. The school nurse models appropriate interaction between a physician and patient by asking questions and pursing clarification on topics not fully explained during the TeleKidcare® consult. The school nurse often facilitates a family's application for Medicaid or Health Wave (Kansas' SCHIP). The family is introduced to preferred alternative community medical resources (other than the more costly local emergency room).

School children and parents alike receive education and counseling about chronic medical and psychiatric concerns that affect the family. This increases the child's self-efficacy in disease management. A child with asthma learns how to monitor her own warning signs and need for the inhaler. A child with ADHD learns how his medication changes his brain chemistry and has the opportunity to make better choices.

Furthermore, since the neighborhood school's atmosphere is one of nurture and acceptance, TeleKidcare® provides a safe, non-threatening environment to facilitate the movement of underserved families into an established healthcare delivery system.

Model

A TeleKidcare® consult begins as a routine visit to the school health room. The school nurse begins the customary triage protocol of checking vital signs, documenting chief complaints, and obtaining the child's relevant medical history. Once the school nurse determines that the child should be further assessed by a physician, the child's parent or guardian is contacted. If symptoms warrant, the school nurse will introduce TeleKidcare® during the notification process. The school nurse describes the TeleKidcare® consult process, assuring them that the ultimate decision regarding the use of TeleKidcare® is the parent's. If the offer is accepted, the school nurse initiates the scheduling process and establishes a consult time mutually agreeable with the parent and provider. The school nurse gathers the recent medical history of the student from the parent and encourages the parent to come to the school at the appointed time to participate in the consult.

Parental consent is obtained in various ways. TeleKidcare® parental consent forms are part of the routine enrollment package at the schools. Consent forms are also available at the TeleKidcare® table at 'Meet the Teacher' night and during parent-teacher conferences. When a signed parental consent form is not on file prior to the consult, verbal consent, witnessed by a third party, is obtained. Verbal consent is always followed with a request for written consent. TeleKidcare® protocol is to contact the parent prior to a consult even when a signed consent form is on file. We feel it is critical to accurately document the child's recent medical history as reported by the parent. Information can be checked and verified regarding recently discovered food or drug allergies, immunization records can be updated, and a general account of the child's recent physical symptoms can be noted. In addition, encouraging parental participation during the actual consult is important to the overall goal of TeleKidcare®.

Prior to the consult, the recent medical history along with the presenting assessment report prepared by the school nurse and the signed parental consent form are faxed directly to the TeleKidcare® pediatrician. In order to maintain privacy and confidentiality, medical records and other supplemental information are faxed directly from the school health room to the pediatrician's telemedicine suite.

During the TeleKidcare® visit, the school nurse, student, and parent sit in front of the ITV system located in the school nurse's office. At the scheduled time, the school nurse calls the Pediatric Clinic at KUMC. Once telecommunication is established, the pediatrician can see, hear, and talk to the school nurse, student, and parent in real-time. During the visit, the pediatrician consults with the student and parent about the student's general health and presenting condition. If the parent is unable to be present during the visit, a regular telephone connection is established in order to include the parent in the consult process.

The school nurse uses the digital otoscope to provide a close-up view of the child's ear, mouth, and throat or questionable skin rash or irritation for the pediatrician. The otoscope transmission is displayed on the pediatrician's monitor as well as on the health room monitor so that the child and other participants can see, for example, how a fluid-filled tympanic membrane appears.

As the nurse places the stethoscope over the student's heart and lungs, the physician hears the patient's heart and lung sounds transmitted over an analog telephone line.

Using information gathered from the nurse's initial assessment of the student and the pediatrician's tele-evaluation, the physician determines the diagnosis and develops a treatment plan. If a prescription is required, the physician may fax the order to the school nurse or call the parent's preferred pharmacy. Orders for controlled medication prescribed by the child psychiatrist for the student are often mailed directly to the school nurse.

By interrupting the typical cycle of sending a sick child home with an advisement that the child be evaluated by a healthcare provider, TeleKidcare® ensures that a parent can arrange for their child to be assessed by a physician before leaving school. In addition, if a prescription is ordered or if recommendations are made for over-the-counter medication, the parent is able to gather the necessary items and begin treatment for the child sooner than usual.

In order to assure continuity of care, when a child has a primary care provider listed on his or her medical card, the TeleKidcare® pediatrician's clinic notes are forwarded by fax to the assigned provider. At the present time, TeleKidcare® uses integrated switched digital network (ISDN) telecommunication lines operating at 128 Kbps. In our current mode of operation, TeleKidcare® is HIPPA compliant. Great care is taken to ensure patient privacy and confidentiality both during the actual consult and with the processing of health records.

Results

As a research and development project, TeleKidcare® consults are accompanied by a variety of forms and surveys to document services provided, student and parental demographics, and to track user satisfaction. A scheduling form is completed by the CTT staff when each consult is scheduled. It captures student demographics, presenting symptoms, medical insurance coverage, physician assigned, and tracts the number of consults that were successfully completed. During the consult, the School Nurse Record of Consult form catalogs people present during the consult, diagnosis, referrals for further evaluation or requests for a follow-up consult, and the destination of the child after the consult. CTT exercises great control over the completion of these two forms, therefore, this type of information has been collected on nearly 100% of the consults.

Figure 1 shows reported healthcare coverage from questionnaires collected for the period beginning with the pilot project (February 1998) through completion of the first two full school years of the program (Spring 2000). The majority of children (78%) were either insured by Medicaid (46%) or uninsured (32%). Only 8% of children were covered by a private plan. Figure 2 highlights the most frequent diagnoses rendered by physicians during 705 TeleKidcare® consults performed from Fall 1999 to Spring 2001. The most frequent diagnoses involved the eye, ear, nose or throat (EENT; 47%). Behavioral health-related diagnoses were made in 25% of cases, followed by dermatological diagnoses in 18% of cases.

At the beginning of the second full year of the program (1999-2000), a third tool, a comprehensive parental survey, was developed that captures economic and educational status, resources accessed for previous healthcare needs, geographic distance between home or job, the school and previous healthcare delivery site(s), as well as overall satisfaction levels with the telemedicine visit and electronic interaction with the physician. Parental participation in this survey was voluntary. The return rate for fully completed questionnaires was 43%; these questionnaires were used to compute cost analyses (see the following paragraph). About 62% of all returned surveys had a fully completed parental satisfaction section; these responses were incorporated into the satisfaction measures highlighted at the beginning of this article. At the

beginning of the 2002-2003 school year, a simpler parental survey form was developed. Complex questions were replaced with questions that focus on the general health of the student, parent-estimated student sick days during the prior 12 months, and the geographic site of the most recent encounter with a healthcare professional. Questions surrounding communicative interaction with the physician and overall satisfaction with the telemedicine visit remain unchanged.

Generally, average cost of a telemedicine consult is strongly influenced by the accumulated number of consults provided at a site. Cost analyses suggest that as the total number of telemedicine encounters at a given site approaches 165, the average cost of a TeleKidcare® consult and a that of face-to-face consult performed in a medical center pediatric ambulatory (Doolittle, Williams, & Cook, 2003). As the cumulative number of telemedicine consults at a given site exceeds 200, the average cost for a TeleKidcare® consult is estimated to be equal to or about 9.5% less than that for a conventional ambulatory care visit (Doolittle, et. al., 2003). Based on this research, if a site is conducting an average of 40 consults per month, the total cost per visit would be equal to or less than a medical center visit after 5 months of operation. As the number of telemedicine consults continues to increase, the average cost per visit would continue to decrease.

School nurse satisfaction is reflected in their enthusiasm for TeleKidcare® by noting that, "This is taking us into 21st century nursing!"(Whitten, et. al., 2001, p. 177) or that they have moved beyond simply dispensing band-aids and into the position where they are using their medical training to the fullest.

Conclusions

In summary, TeleKidcare® "brings" the doctor into the school nurse's office. By using telemedicine technology, the student can be seen in a timely way without leaving the school building. Children can be examined on the same day without missing hours of class time while sitting in a waiting room, for example.

By utilizing strategies developed by TeleKidcare®, parents can satisfy their children's healthcare needs without jeopardizing their income, salary, or employment status. By bringing together school nurses, physicians, and parents at the school-site, this health delivery mechanism provides for a continuum of care unobtainable through traditional school health delivery systems.

Future

One of the most exciting elements of TeleKidcare® is the progress that has been made in the reimbursement arena. Since the inception of TeleKidcare®, healthcare providers have not been reimbursed for their professional expertise – TeleKidcare® has been provided free of charge. Various grant and foundation awards have supported a portion of the research time, but not clinical time. During the past 18 months, CTT has worked closely with the Kansas Medicaid office to develop a reimbursement policy. The draft school-based telemedicine reimbursement

policy is entering the final phase of adoption and implementation. As written, the policy will include several key diagnostic and consultation CPT codes. CTT has been informed by the Kansas Medicaid office that they expect the new policy to become effective in mid-2003.

Expansion of TeleKidcare® throughout communities in Kansas will continue with funding from the Kansas Children's Initiative Fund. These sites are community focused projects connecting schools with local healthcare providers. Currently there are 15 TeleKidcare® sites in Kansas outside USD 500.

The first stage of a research study addressing obesity in school-aged children coupled with the effects of ITV group behavior sessions focused on health and nutrition education will be completed in June 2003.

Counseling and therapy for psychosocial issues in certain children at participating schools should continue to increase. Areas of intervention will include behavior management or counseling and therapy as recommended for friends and family of children with life-limiting illnesses.

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Figures

Figure 1. Reported Health Care Coverage By TeleKidcare® Users (Whitten, et.al, 2001)

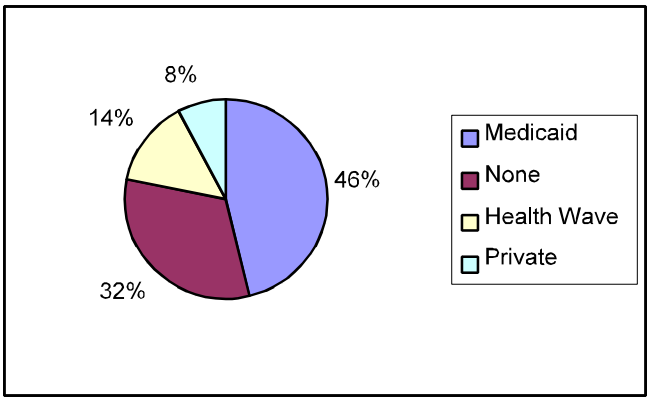
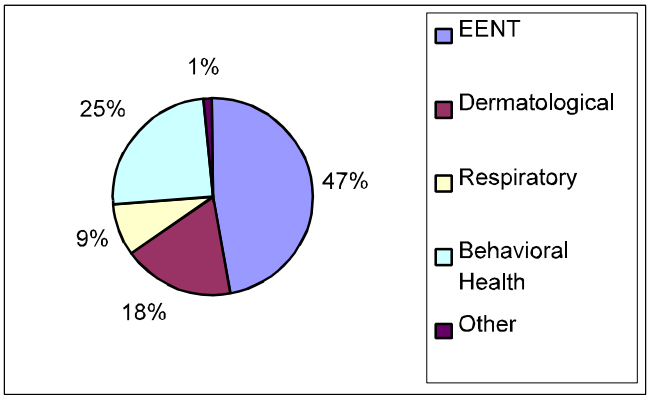


Figure 2. TeleKidcare® Diagnoses for 705 Consults Performed During 1999-00 and 2000-01 (Center for TeleMedicine & TeleHealth, 2003)



References

Center for TeleMedicine & TeleHealth, University of Kansas Medical Center. (2003) [TeleKidcare scheduling surveys and records of consults]. Unpublished raw data.

Doolittle, G.C., Williams, A.R., & Cook, D. J. (2003). An estimation of costs of a pediatric telemedicine practice in public schools. Medical Care, 41, 100-109.

Kansas State Department of Education, Statistics K-12, Wyandotte County, Kansas City USD 500 Enrollment Statistics 2002-03 (2003, February 25). Retrieved February 25, 2003 from http://www.ksbe.state.ks.us/Welcome.html

Whitten, P., Kingsley, C., Cook, D., Swirczynski, D., & Doolittle, G. (2001). School-based telehealth: An empirical analysis of teacher, nurse, and administrator perceptions. Journal of School Health, 71, 173-199.

TeleKidcare® Project (http://www2.kumc.edu/telemedicine/tkc.html)

Models That Work Campaign (http://www.bphc.hrsa.gov/mtw/default.htm)