



New York Study Shows Telemedicine is Effective for Care of Low-Income Children in School-Based Settings

Telehealth care program for low-income, inner-city children

SUMMARY

Pediatricians and staff at the [University of Rochester Medical Center](#) expanded a pilot project in Rochester called Health-E-Access, which they had created in 2001 to study the use of telemedicine to treat inner-city preschool and elementary school-aged students. Telemedicine uses remote diagnostic tools and Web-based interactions, rather than costly and time-consuming visits to a doctor's office.

The project was part of the Robert Wood Johnson Foundation (RWJF) *Local Funding Partnerships* (LFP) national program (for more information see the [Special Report](#)).

Key Results

From 2003 through 2006, Health-E-Access expanded from three to 10 child-care centers, and began serving 11 elementary schools, covering more than 2,000 children. From its inception through 2006, the project logged 4,555 telemedicine visits. Over 40 Rochester clinicians used telemedicine to treat child patients in child-care centers and schools.

Key Findings

- The project researchers reported in the May 2005 issue of *Pediatrics* that telemedicine, as applied to children in five Rochester child-care centers, reduced the number of child-care days these children missed due to illness by 63 percent when compared to a control group without telemedicine and adjusting for other variables.
- In the article, researchers cited survey results showing that at those child-care centers 91.2 percent of the telemedicine visits allowed parents to stay at work, and that 93.8 of the child illnesses handled by telemedicine would have otherwise resulted in a visit to a doctor's office or emergency room.
- In an unpublished research paper researchers concluded that telemedicine visits appear to be replacing about half of the participating children's expected visits to doctors' offices, including expensive visits to hospital emergency departments.

Funding

RWJF supported this project with \$499,899 from September 2002 through October 2006. Local sources matched these funds.

THE PROBLEM

With an increasing number of American households headed by either single parents or two working parents, many preschool children spend time daily in child care outside the home. In 1995, according to the U.S. Department of Education, some 60 percent of American children under the age of five took part in non-parental day care or early education programs such as Head Start.

This trend—accelerating with the advent of welfare-to-work programs throughout the 1990s—is significant for health care, because numerous studies have also shown children in these settings more frequently suffer acute illnesses such as respiratory or ear infections, and with greater intensity.

Many day care facilities require parents to immediately take home a child with symptoms of acute illness, and present a doctor's note that the child is healthy before that child can return—a significant burden on working parents, especially in inner-city environments.

A 1989 study (Bell DM et al, "Illness Associated with Child Care: A Study of Incidence and Cost Comparison with Child Care Homes and Households," *American Journal of Public Health*, 79(4): 479–484, 1989) found that among parents using child care outside the home, child illness accounted for 40 percent of missed time from work. A 2003 nationwide study financed by the Kaiser Family Foundation found that 61 percent of working women surveyed had no one to help with child care the next time their child is sick.

During the 1990s, a number of telemedicine systems were launched in rural communities in the United States with funding from the federal Office for Rural Healthcare. In such systems, patients are examined in remote locations using basic tools such as a video camera or an endoscope (giving video of the throat interior), and the result transmitted to a doctor for diagnosis. As technology improved, most telemedicine systems began to offer broadband access for both real-time and stored audio and video communication with a health care professional.

In 2001–2002 pediatricians at the University of Rochester Medical Center began a pilot project at three inner-city child-care centers to study the effects of telemedicine on problems in health care access for 483 children in an urban, high poverty area where parents have limited access to transportation or phones, and where service from health centers or hospital-based clinics is also limited.

Initial funding for their work came from the Technology Opportunities program of the U.S. Department of Commerce, as well as \$50,000 from the medical center.

CONTEXT

In 1987, the RWJF Board of Trustees authorized \$8 million to fund a two-year trial of a matching grants program to be called the *Local Funding Partnerships* program. Many matching grants programs set up by national foundations seek to replicate ideas formulated by the national institution itself.

Local Funding Partnerships was to be different. The local community would identify a pressing need, design the strategy for addressing it and put together a funding package that would provide at least one dollar of outside support for every one dollar of RWJF grant money. Each project would have one lead local funder, but additional supporters would be welcomed.

To be eligible, a project would have to fall within the general scope of RWJF's interest in health and health care. But a proposal would not have to meet the kind of specific criteria common to other RWJF programs. Instead of top-down, *Local Funding Partnerships* would be bottom-up—with an emphasis on innovation. RWJF hoped this local "ownership" would ensure sufficient support to keep the project going long after the RWJF grant ended. The program ran from March 1982 to July 2015.

THE PROJECT

Initial Phase

Pediatricians and staff at the [University of Rochester Medical Center](#), a medical, nursing and dental school and associated hospitals complex, expanded their pilot project from its three inner-city child-care centers.

Between April 2003 and the spring of 2004, they added telemedicine capability at five additional inner-city child-care centers, and collected baseline data on attendance and illnesses of registered children at these centers. Staff at the project, now called "Health-E-Access," also engaged the collaboration of staff at three primary health care centers in the community, so that children diagnosed at telemedicine sites could be evaluated by their existing family physician's office.

Project staff trained participating child care personnel—many without prior experience in health care—in basic diagnostic techniques and how to collect a medical history.

Project staff collected data on telemedicine "visits" conducted at the eight child-care centers to assess the impact of telemedicine on the project's patients, and surveyed

parents on the impact of the telemedicine project on their job performance as well as on their overall access to the health care system (see [Methodology](#)).

Communications

These researchers published findings based on data from the first three child-care centers in a May 2005 article in *Pediatrics* (see the [Bibliography](#)).

An Expanded Project

Following the 2004 receipt of substantial additional funding from two federal agencies (see [Other Funding](#)) Health-E-Access expanded its telemedicine coverage to 10 child-care centers and nine elementary schools, serving approximately 2,000 enrolled children, most of them from inner-city neighborhoods. This expansion included two elementary schools in suburban locations.

This federal participation, according to the project director, helped convince major health insurers in the Rochester area—including the affiliate of Blue Cross used by the majority of health care consumers in the region—to reimburse providers for telemedicine visits on a demonstration basis.

In the expanded project, most of the enrolled children saw their regular family health care provider when using the telemedicine system. Project staff placed a stronger emphasis after 2004 on adding pediatricians from additional health care centers and clinics to those clinicians already using the telemedicine network.

In 2005, Health-E-Access initiated a teledentistry screening pilot effort at six of its participating health care centers, using the infrastructure created by the telemedicine project. The teledentistry used video cameras and computers to aid dentists in identifying early childhood caries, or ECC, a dental disease that tends to strike disadvantaged children.

One of several grants from New York state funded a new telemedicine site in September 2006 at the [Mary Cariola Child Center](#) for developmentally challenged children, most of whom have multiple disabilities and are difficult to transport to a conventional doctor's office.

Technical Consultant

A Pittsford, N.Y., based consultant, [Tel-e-Atrics](#), designed and implemented the Web-based communications and data system used to support this project. The company markets this Internet telemedicine platform elsewhere in the country. More information on the Internet "platform" they developed for this project may be viewed [online](#).

Media Attention and Awards

Health-E-Access has received considerable media attention, both in the Rochester area and beyond. The Associated Press, NBC and CBS News featured it in 2005 in a widely distributed article and in television reports. Video from the NBC and CBS News stories is viewable [online](#).

The project received two awards: the 2005 Friends of Ibero Award from the Ibero Action League, a community group serving Rochester's Latino community, and the 2006 Innovation Award for Telemedicine from the [American Telemedicine Association](#), the leading advocacy group for telemedicine.

Other Funding

Additional funding was received throughout the project, allowing for its expansion:

- The Health-E-Access project received funding from the [Rochester Area Community Foundation](#) matching the 2002 RWJF grant, as required under the *Local Funding Partnerships* program. The combined monies funded an initial project expansion from three child-care centers to eight.
- Two federal grants in 2004 totaling just over \$1.4 million from the [Agency for Healthcare Research Quality](#) and AHRQ's Maternal and Child Health Bureau allowed staff to expand the project further to 10 child-care centers and nine elementary schools.
- A grant of \$48,000 in 2005 from the [Aetna Foundation](#) funded a teledentistry screening pilot in 2005 at six of the project's healthcare centers.
- New York State awarded grants to the project totaling \$396,000 through 2006.

Methodology

Published Study

From January 1, 2001, through June 20, 2003, the University of Rochester Medical Center researchers studied the before-and-after impacts of telemedicine on children's absences due to illness (ADI), at five child-care centers—the three from the initial pilot project and the first two that had been added with the RWJF funding. Enrollment at the five centers averaged 138 children—with Medicaid covering 66 percent of the children.

In addition to comparing absence-due-to-illness statistics of telemedicine patients against the baseline data for the child-care centers in the project, University of Rochester Medical Center researchers looked at hospital emergency department records for each registered child over a five-year period.

At four of the centers, the researchers collected baseline data from before the availability of telemedicine for a minimum of 18 weeks. At the fifth center, they collected data on children both with and without telemedicine during the same time period.

The survey data came from detailed attendance records as well as interviews with staff and parents. For purposes of comparison, researchers adjusted the data for variables such as season of the year and insurance coverage. The researchers obtained 400 weeks of valid observation from the five centers, including 201 total weeks that telemedicine services were available. During those weeks, 940 telemedicine encounters took place.

Also, researchers surveyed the parents on the impact of the telemedicine project on their job performance as well as overall access to the health care system.

Unpublished Study

For the unpublished study on utilization rates and doctor's visits, the researchers examined the medical records of 112 children who participated in the Rochester telemedicine project at the initial three child care facilities. Using records of these children both before and during the period they had access to the telemedicine services, the researchers studied 2,591 medical visits that took place over 5,240 child-months of observation. Their analysis focused on 533 acute illnesses that occurred while the children attended child care.

RESULTS

According to project staff Health-E-Access achieved the following:

- **Telemedicine visits increased sharply in each of the three years of the RWJF funded expansion.** From 174 telemedicine visits in 2001 (the year preceding the funded expansion), telemedicine visits increased to 447 in 2002; 576 telemedicine visits in 2003; 1,002 visits in 2004; and 1,219 in 2005, for total of 3,244 in the period funded by RWJF. According to the project director, the increased visits reflected both the addition of new sites as well as increasing acceptance and awareness of the program.
- **As of January 2007, 22 sites participated in the telemedicine project since it first started (before RWJF funding).** These may be broken down as follows:
 - Six urban child-care centers.
 - Four suburban child-care centers.
 - Seven urban elementary schools.
 - Four suburban elementary schools.
 - One regional child development center.

- **From 2001 through 2006, child telemedicine visits totaled 4,555.**
- **In early 2007, the project involved the collaboration of 10 primary care practices, one behavioral health practice and one children's dental practice.** Among the 10 primary care practices, 42 different clinicians had done one or more telemedicine visits.

Findings

Based on a study of telemedicine at five Rochester inner-city child-care centers, researchers reported the following project findings in *Pediatrics* in May 2005 (see the [Bibliography](#)):

- **Absences due to illness (ADI) dropped significantly with the advent of telemedicine.** The researchers found that ADI during the weeks with telemedicine (4.07 absences per 100 child-days) was less than half that of the weeks without telemedicine (8.78 absences per 100 child-days). They reported that after adjusting for other variables, telemedicine remained the strongest predictor of ADI. A 63 percent reduction in ADI was attributable to telemedicine, they reported.
- **Telemedicine also decreased the time that parents missed work due to child illness.** In surveys, parents said that 91.2 percent of telemedicine contacts allowed them to stay at work and that 93.8 percent of the problems that were handled through telemedicine would have otherwise led to visits to a doctor's office or emergency room. In the 940 telemedicine encounters, the telehealth clinicians recommended that only seven percent of the children be excluded from child care and concluded that 2.8 percent required an in-person visit to a physician.

In an unpublished article (see the [Bibliography](#)), project staff reported:

- **Telemedicine visits appear to be replacing about half of the participating children's expected visits to doctors' offices, including expensive visits to hospital emergency departments.** Researchers looked at all telemedicine visits in Health-e-Access through October 2006 and found a rate of 182 telemedicine visits per 100 children per year. This compared to a doctor visit rate before telemedicine of "400 to 500 per 100 children per year," according to Project Director McConnochie in a November 2006 interview for this report. He concluded that "for these children, close to half of their visits are being done by telemedicine."

LESSONS LEARNED

1. **Be flexible in what you ask other staff to do, especially in unionized "shops."** Officials with Health-e-Access learned that expanding the program into public elementary schools presented issues that had not been a problem with the child-care centers involved earlier, in part because unionized school nurses had strict rules regarding what tasks they could and could not perform. Project staff addressed this

issue by adding roving telemedicine staff members who visited the unionized schools.
(Project Director)

AFTERWARD

Project staff is preparing an analysis of gathered data on the cost of health care for families of children with and without access to telemedicine at schools or in child-care settings.

As of the end of 2006, they were hopeful that area insurers would make their demonstration-basis reimbursement of the project's telemedicine providers standard when the federal grants to the project, totaling nearly \$1.4 million, expire in September 2007. This would make telemedicine in Rochester permanently self-supporting.

In a January 2007 interview for this report, the project director noted that there are efforts underway to expand the teledentistry effort of Health-e-Access to other sites in Rochester as well as the Akron, Ohio, area.

Project Director McConnochie wrote in January 2007 about the project:

Our research demonstrates so far that we have developed a telemedicine model that works to vastly improve convenience of access for acute medical problems and promote access to the primary care medical home. We expect that analysis in progress will also demonstrate that this model reduces healthcare costs. Together, these findings will constitute a compelling case for insurance reimbursement for telemedicine, which in turn will ensure sustainability.

Health-e-Access has been designated a "Bright Star" in the *Local Funding Partnerships* portfolio, following coverage on ABC nightly news in 2005 and appearances in other national media. Under a contract with Burness Communications provided by RWJF, in March 2007 Health-e-Access staff is receiving media training to develop a series of core messages for a variety of target audiences, such as employers and insurance providers, to enhance the program's sustaining strategies.

Sustainability is also addressed through a related but separate set of collaborative partners that has created the for-profit entity Tel-e-Atrics to provide telemedicine equipment, hosting and support services.

Prepared by: Will Bunch

Reviewed by: James Wood and Molly McKaughan

Program Officer: Jane Isaacs Lowe

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