HEALTH IT AND HEALTH DISPARITIES

Patient Provider Telehealth Network – using telehealth to improve chronic disease management

NORC
at the UNIVERSITY of CHICAGO

Case Study Report: Patient Provider Telehealth Network – using telehealth to manage chronic disease

"This program is different from other programs. We always hear from patients, 'This was the first time anyone has cared enough to help me figure it out.' This health IT program is about longer-term relationship building and working with the patient to give them the encouragement that they can do this and make the associations." – RCCHC Provider

Report Summary

Intervention and Setting	Members of the NC-based Patient Provider Telehealth Network use a telehealth remote monitoring system to monitor key health indicators for rural, high-risk patients throughout the state. Members leverage their electronic health records (EHRs) to share data collected through remote monitoring devices with patients' providers.
Target Population	Uninsured or underinsured high-risk individuals with diabetes, cardiovascular disease, and hypertension
Technology Description	Software-based telehealth remote monitoring systems and corresponding health indicator measure devices.
Funding and Start-up	**Phase 1 (2006 – 2009):** NC Health and Wellness Trust Fund Commission ($360,000) in 2006; additional funding (2007-2009) from Kate B. Reynolds Charitable Trust, the Obici Foundation, Pitt County Foundation, and the Roanoke Chowan Community Benefit to expand RCCHC's remote monitoring program and implement a post discharge remote monitoring and chronic care management for diabetes patients at Roanoke Chowan Hospital. **Phase 2 & 3 (2009 – present):** NC Health and Wellness Trust Fund Commission ($870,000); Funding (amount unknown) from Duke Endowment to continue in-house at Piedmont (2010). **Health Resources and Services Administration (HRSA) Telehealth Network Grant (2010 – present):** $250,000
Data and Analysis	Content analysis using NVivo for a series of in-person discussions with the following individuals from Roanoke Chowan Community Health Center (RCCHC) and Piedmont Health Services, Inc. (Piedmont): • RCCHC and Piedmont Chief Executive Officers and Chief Medical Officers • RCCHC Telehealth Clinical Network Director • Piedmont Director of Care Management (Telehealth Administrator) • Piedmont Director of IT • RCCHC and Piedmont physicians, registered nurses, and care managers • Individuals who obtain services from RCCHC and Piedmont clinics
Key Take-Aways	• Introduction of health information technology (health IT) tools through a trusted source is fundamental to successful adoption. • Remote monitoring can dramatically increase patient engagement and result in improved outcomes for chronic disease self-management and reductions in hospital-related costs. • Interoperability with other IT systems and reimbursement for telehealth care are critical to further adoption and sustainability.

Introduction

A Federally Qualified Health Center (FQHC) located in rural northeastern North Carolina, Roanoke Chowan Community Health Center (RCCHC) operates clinics in Ahoskie, NC, Colerain, NC, and Murfreesboro, NC. As one of the only health care providers in the area, RCCHC currently provides care to approximately 21,000 individuals, more than half of the patients in the service area. The RCCHC serves a primarily Black population (70%) with a high chronic disease burden and very low incomes.[i] Their service area includes four of the poorest counties in the nation. One program administrator estimated 20% of RCCHC patients live 100% below the Federal Poverty Level (FPL)[ii] and the majority of the patients served have no or inadequate insurance.

In 2006, RCCHC received Phase I grant funding from the NC Health and Wellness Trust Fund (HWTF) Health Disparities Initiative to conduct a three-year feasibility study of the center's Patient Provider Telehealth Network (PPTN). The study sought to determine the impact of telehealth monitoring on clinical and financial outcomes for RCCHC's patients with cardiovascular disease, diabetes, and hypertension. In 2008, the PPTN expanded to provide remote monitoring services to patients enrolled in Piedmont Health's (Piedmont) PACE program (Program of All Inclusive Care for the Elderly).

Piedmont, also an FQHC, operates six clinics – two semi-urban and four rural – serving patients across 14 counties. The clinics operate in Carrboro, NC, Moncure, NC, Prospect Hill, NC, Siler City, NC, and two locations in Burlington, NC. Piedmont provides care to largely uninsured or underinsured patients. One provider reported 76% of patients live at or below 100% of the FPL and an additional 20% live at or below 200% of the FPL. Piedmont primarily serves members of racial or ethnic minority groups. Hispanics make up approximately half of their population and Blacks make up an additional 20%. Piedmont administrators also noted a growing Burmese population. In 2010, Piedmont received funding to self-monitor their patients previously monitored by RCCHC.

Between 2009 and 2010, the PPTN expanded to eight additional health centers and two hospitals as a result of additional funding received from the HWTF Health Disparities Initiative and a telehealth network grant from the Health Resources and Services Administration (HRSA). As of early 2011, RCCHC monitored and managed patients across 28 – primarily rural – counties in North Carolina.[iii]

Rural populations and rural minority populations in particular, experience marked disparities in health and health care access. Compared to providers in strictly urban areas, rural health care providers serve an older and poorer population and a population more likely to experience fair or poor health and chronic conditions. According to the Agency for Healthcare Research and Quality (AHRQ) 2010 National Healthcare Quality and Disparities Report, rural residents do not receive recommended preventive services at the same rate as their urban counterparts and on average report fewer visits to health care providers.[iv]

Potential benefits of using telehealth remote monitoring technology. Use of telehealth remote monitoring technologies can improve clinical management of chronic diseases, increase cost-savings, and expand access to quality health care services. Many telehealth interventions demonstrate utility as a health care delivery tool for underserved populations in rural communities where geographic distance and lack of specialists pose challenges to traditional delivery of health services.[v] The application of telehealth technologies enables earlier detection and quicker assessments using evidence-based health information.[vi] Earlier recognition of health problems promises to improve quality and cost-efficiency of care through decreased emergency department (ED) visits and hospital readmissions. Additionally, as demonstrated at RCCHC and Piedmont, programs using telehealth technology improve

patient engagement and self-management to foster increased adherence to treatment plans through patient education.

Key functionality and uses. RCCHC and Piedmont use several remote monitoring applications as part of the PPTN. Currently in use for Phase 2 is IDEAL LIFE's Body Manager, a software-based telehealth system, which includes a digital body weight scale and blood pressure device. Placed in participating patients' homes, the IDEAL LIFE remote monitoring telehealth system transmits daily readings from patients' blood pressure and scale devices as encrypted data through landline or cellular connection platforms to the IDEAL LIFE secure web server. Telehealth nurse care managers monitor patients' data via the system's dashboard and contact patients with abnormal readings via phone to conduct a nursing assessment and/or provide patient education.

> **Sources of Funding**
> - **Phase 1 (2006 – 2009):** NC Health and Wellness Trust Fund Commission ($360,000) in 2006. Additional funding (2007-2009) from:
>   - Kate B. Reynolds Charitable Trust,
>   - The Obici Foundation,
>   - Pitt County Foundation, and
>   - Roanoke Chowan Community Benefit
> - **Phase 2 & 3 (2009 – present):** NC Health and Wellness Trust Fund Commission ($870,000);
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> - **HRSA Telehealth Network Grant (2010 – present):** $250,000

The monitoring dashboard allows care managers to create summary reports and trend patient data longitudinally. As part of the PPTN, if a telehealth care manager determines there is need for a change in a patient's medical regime during the nursing assessment, they can share the health data collected through remote monitoring technology via the respective center's electronic health record (EHR) to alert the patient's primary care provider of the possible need for further medical intervention. Table 1 below summarizes the telehealth remote monitoring applications and EHRs utilized by RCCHC and Piedmont.

Table 1: Overview of Telehealth Remote Monitoring and EHR IT at RCCHC & Piedmont

	Health IT	Description of Functionality
Core Health IT Technologies	Telehealth Remote Monitoring Applications	**Phase 1 (2006 – 2009)** - *WebVMC's RemoteNurse*, a software-based telehealth remote monitoring system, supported a landline (phone or internet) platform for connectivity. Transmitted vital sign readings from a scale, blood pressure monitor, glucose monitor, and pulse oximeter via a secure server. The system also transmitted data from patients' responses to verbalized and written assessment questions (available in English and Spanish) regarding health status and function to RCCHC's corporate server. - *WebVMC's* telehealth kiosks were installed at three Senior Citizen Wellness Centers, a church with a Spanish-speaking congregation, and a middle school. Users received a magnetic card to uniquely identify them to kiosk software. Kiosks captured vital signs information (blood pressure, pulse, weight, and blood glucose). - *PHILIPS Health Buddy* remote monitoring devices with peripherals for scale, blood pressure meter, glucose meter, and pulse oximeter. **Phase 2 (2009 - present)** - *IDEAL LIFE's Body Manager,* a software-based remote monitoring system, supports land-based and wireless (cellular) platforms for connectivity. The system transmits encrypted vital signs data from a digital body weight scale and blood pressure devices to the IDEAL LIFE secure web server. - *PHILIPS Health Buddy* remote monitoring devices with peripherals for scale, blood pressure meter, glucose meter, and pulse oximeter.
	EHRs	**RCCHC** - *GE Centricity/Logician* EHR (date unknown); *EPIC* EHR implemented in 2005 **Piedmont** - *GE Centricity* EHR implemented in 2007 with registry and quality reporting functionality

Encouraging Adoption & Implementation

We begin by outlining findings related to the implementation and adoption of telehealth at RCCHC and Piedmont, including discussants' assessments on lessons learned from their experience.

Effective provider adoption requires feedback and customization. RCCHC leadership reported provider input during the design stage of the telehealth project paved the way for broader provider acceptance during program rollout. RCCHC administrators closely involved in the project development explained care managers constantly sought providers' feedback during the design phase in order to ensure the program met providers' clinical needs and

> **"I think that there is big problem with implementing out of a box – there are a lot of barriers. Fortunately, we were able to alter and shape [the software] to a form we wanted."** *RCCHC Administrator*

expectations. RCCHC respondents noted input from providers greatly contributed to the development of the care plan and summary report templates. Ultimately, RCCHC designed the program to align with provider workflow and to leverage EHRs in both clinics to send providers summary clinical indicator reports on their patients. Some Piedmont stakeholders thought including trend data as part of the summary reports would improve usefulness. Additionally, to allow enhancements over time, both RCCHC and Piedmont administrators stressed the importance of selecting a vendor that permits ongoing customization as providers learn more about how to address the needs of their population.

Patients and providers adopt technology more readily when a trusted source introduces and encourages its use. Piedmont and RCCHC stakeholders noted the importance of using a trusted source to facilitate both patient and provider adoption of telehealth. With regard to provider adoption, administrators from RCCHC emphasized the importance of using a physician champion to introduce the program to Phase 2 partner clinics. As described by a RCCHC administrator: *"One of the doctors is our champion and when we go out to talk to other health centers… it is doctor to doctor, which we learned makes a difference."* Likewise, Piedmont providers indicated the RCCHC physician who introduced the program eased some of their concerns related to adoption and implementation.

> **"It's the initial hesitation toward technology in that they've never had anyone empower them to do it on their own before. Here is the doctor empowering them and saying, 'Here is a good program for you and something you can do on your own to help you own health.'"** *Piedmont Stakeholder*

Having a trusted human component to introduce and facilitate the use of telehealth technology provided important support for patient acceptance and adoption of telehealth. One RCCHC provider attributed the program's success to the role of the trusted surrogate. Reflecting on the program's rollout, a RCCHC patient said, *"I like that [the telehealth care managers] are warm people when they enter your home. They don't talk down to me like I'm not taking care of myself... and I like that."* Similarly, Piedmont staff felt that incorporating case management monitoring responsibilities "in-house" at their primary clinic rather than remotely through RCCHC increased the program's effectiveness allowing them to build upon local relationships between patients and case managers that develop during patients' medical visits at the clinic. Reflecting on this belief, one RCCHC administrator said, *"It didn't work as well [when RCCHC monitored from Ahoskie] because the [RCCHC] nurses didn't have the same type of relationship with the patients and providers; it was much chunkier."*

In addition to case management outreach, provider driven outreach encouraged patient use of the telehealth technology. Multiple RCCHC and Piedmont patients cited encouragement from their primary care provider as their reason for agreeing and continuing to participate in telehealth. RCCHC administrators noted provider commitment to adoption reinforced the importance to patients, subsequently increasing their acceptance of the technology.

Case demonstrates acceptance of remote monitoring technology among users who are not regular computer users. Case study respondents agreed that despite their overall limited use of computers and mobile devices in their everyday lives, patients willingly embraced the telehealth technology. Expecting greater resistance from patients, care managers expressed surprise at patients' acceptance of the program. Both clinics reported very few patients declined to participate in the program despite limited use of computer technology; RCCHC and Piedmont patients did not express privacy concerns related to the electronic transfer of personal health information because of the benefits and peace of mind afforded by the monitoring program.

> **"Our population never thought of technology as a barrier. You teach it as a tool for you and your doctor. Making sure they understood you aren't an equipment agency and that this is what your doctor wants you to do."** *RCCHC Administrator*

Impact and Consequences

Having explored strategies used by RCCHC and Piedmont to implement telehealth, we next describe how they employed the tool to address the needs of its target population.

Reported increased access to information for providers and improved decision-making. Providers found telehealth offered increased access to information that helps inform their decisions, leading to improvements in provider efficiency and overall quality of care. Both Piedmont and RCCHC providers indicated they use the telehealth summary reports available through their EHRs during patient encounters. Commenting on improvements in efficiency, a RCCHC provider said, *"It makes the visit more focused. Instead of going in and saying, 'Tell me about your blood sugars,' it's more like, 'I see your blood sugars are here, let's talk about these days.' It helps me to be more focused because the data is there."*

> **"It's given me a little more confidence about whether I ought to change something on the basis of what I'm seeing in the office only. It's another tool with more data to help make informed decisions. It's set up so that it doesn't give me data overload."** *RCCHC Provider*

Telehealth allowed providers and care managers to better understand the full spectrum of challenges faced by their patients and helped them assist patients in more ways. Care managers recalled a number of instances when they quickly connected with individual patients to address the cause of fluctuations detected by the telehealth remote monitoring applications and subsequently identified solutions to practical factors affecting the patient's ability to maintain good health. Providers also indicated the telehealth summary reports allowed them to make better clinical decisions related to patient medication. One RCCHC provider explained, *"[The telehealth summary reports] certainly help me figure out medications more quickly. We allow ourselves to be less aggressive when we only get a blood pressure in the clinic* (which may be artificially elevated due to white-coat effects)*, so it has helped me to get a clearer sense of what is going on."*

Telehealth remote monitoring facilitates patient engagement and access to care, and results in improved self-management of chronic disease. All RCCHC and Piedmont stakeholders strongly agreed telehealth remote monitoring dramatically improved patient engagement, resulting in improvements in patients' access to care and self-management of chronic conditions. Remote monitoring motivated patients to take an active role in improving their health and further developed their relationship with their care managers and providers. A number of patients indicated they felt empowered to make healthier decisions because their providers

> **"I thought…how was this big 'ol machine sitting on the kitchen table that [the care manager] brought in gonna help? With everything I do, now I gotta get up every morning and get on that scale… and you gonna know how much I weigh? What if I want a hamburger or donut or something like that? But… like I said before, it really helped me. I knew [the case manager] was watching my weight… so what am I gonna do? I'm gonna curb my eating of donuts, cheeseburgers, honeybuns, Pepsi-colas and all that good stuff."** *RCCHC Patient*

were "watching them" and "paying attention." As described by one Piedmont patient, *"It has changed my relationship with the doctor. It is nice to know that he has the readings so it doesn't feel like we're starting with zero. If the readings alter… I talk to him."*

Related to improved relationships with providers, patients frequently mentioned that their participation in remote monitoring and relationship with the care managers increased their access to their respective providers at RCCHC and Piedmont, as well as with other providers and health care services in their communities. One patient explained, *"Because of [the care managers'] access to different services that I might need, they can tell me where I can access it or what places might have it. If I have a problem with something I can call and my questions are always answered within a day… They communicate with my other doctors and helped me when I couldn't afford my medication."*

> **"One of the main components is teaching the patients to self-manage their disease process. With the low literacy and low income population we work with, we went into the process thinking there were going to be a lot of barriers in educating. But the reality is that educating and communicating with them about weight [using remote monitoring telehealth] – they are getting it. Before they didn't realize that they were eating all this pork and it wasn't good [for their blood pressure]. "** *RCCHC Administrator*

Telehealth also led to improvements in health literacy and education, which coupled with improved patient engagement, facilitated better patient self-management. One case manager provided the following anecdote to describe observed improvements in patient management of their health: *"Patients come to the clinic and say, 'Man, I had Campbells [soup] and my blood pressure was horrible.' They have started to notice the trend in their diet and the effects the next morning… I have seen a huge difference in their behavior because of this."*

Significant improvements in health outcomes and reductions in hospital-related costs. The evaluation of Phase 1 of the telehealth project, conducted by Wake Forest University (Wake) and East Carolina University (ECU) revealed significant improvements in blood pressure and cost savings related to hospital bed days and (ED) visits.[vii,viii,ix] The evaluation of Phase 2 is currently underway. Researchers observed statistically significant improvements in blood pressure at five points in time (from baseline – six months prior to telehealth – through three years post-intervention).[x] The analysis did not show significant changes in weight gain or hemoglobin A1c (HbA1c), however, patients and providers generally felt that the health of patients who received telehealth remote monitoring had improved compared to the baseline. As described by one patient, *"I'm walking 30 minutes on the treadmill now. At*

first I did 10 minutes and I was out of breath. I had asthma attack in 2007 and I couldn't walk to my mailbox without losing breath, but now I'm walking 30 minutes on the treadmill!"

Comparing baseline (six months prior to telehealth) to the intervention period (six months during telehealth) researchers observed a 50% reduction in hospital bed days and an 81% reduction in ED visits. These reductions continued after telehealth as subsequent analyses showed a 65% reduction in hospital bed days and a 15% reduction in ED visits when comparing baseline to post-intervention (six to thirty months post telehealth). These significant reductions in hospital-related outcomes resulted in significant hospital cost reductions during telehealth (72% cost reduction) and post-telehealth intervention (64% cost reduction.)[xi] Anecdotal evidence provided by a Piedmont patient supports these findings: *"I've been to the hospital a couple of times because of body fluid. I think [telehealth] kept me out of the hospital."*

Barriers to Use of Technology

While the case study presented several positive findings relative to telehealth implementation, we identified some notable barriers of relevance to similar projects. We discuss some of these barriers below.

Liability concerns challenge provider adoption. Provider concerns surrounding liability initially presented a barrier to provider adoption and use of the program. RCCHC and Piedmont largely addressed this concern with comprehensive protocols and strict standards of care; however, some providers expressed initial hesitation towards the program. They worried about an expectation to incorporate a huge volume of new information from telehealth into their day-to-day decision-making – an expectation that they may not have the resources to meet. One program administrator summarized this concern, explaining, *"Once you have the information and you're not doing something with it, then there is a problem."*

> **"In the contract we say we will monitor Monday through Friday… well, people get sick Saturday and Sunday too. During the week when the clinic is open, if they're not feeling well they can call the telehealth nurse directly and reach her. But on Saturday and Sunday, the days we're not typically monitoring, we say that if you aren't feeling well – call us – but that puts the telehealth nurse in limbo. She's not obligated to answer on Saturday and Sunday so we feel a little liable... This isn't 24-hour monitoring…"**
> *Piedmont Administrator*

RCCHC staff also expressed concerns surrounding Phase 2 because they could not guarantee review or use of the telehealth data for clinical decisions by partner providers. Providers generally appreciated having data collected through telehealth monitoring, but acknowledged liability concerns could arise if they did not have the resources to respond appropriately.

> **"As the patient information comes back to the website, it needs to be moved into the EHR. At this phase, we're still doing that manually. We looked at doing a bidirectional interface between IDEAL LIFE and [GE] Centricity but it turned out to be a tremendous amount of work for a – at this point – very small number of patients. I couldn't justify using our resources for the interface."**
> *Piedmont Administrator*

Interoperability would improve usefulness. Lack of interoperability with other electronic record systems at both RCCHC and Piedmont limited the utility of the IDEAL LIFE software. Due to high cost, an interface between IDEAL LIFE and both Piedmont's and RCCHC's EHRs does not currently exist, thus staff manually copy all alert-related information from the IDEAL LIFE software into patients' electronic records. One Piedmont administrator explained, *"We worked with IDEAL LIFE to integrate it into our EHR. At first we thought it would be easy and wouldn't cost a lot but now it's looking like it's not going to happen*

due to technical and financial barriers… Right now we have a poor man's way of integrating… the telehealth nurse is copying and pasting the reporting [data] into the EHR, which is time intensive." Staff noted the usefulness of patient alerts and summary reports but indicated the need to filter the information to remove "dumb data," which creates a burden for all care providers. While stakeholders at both sites want to pursue an interface between IDEAL LIFE and their respective EHRs, they lack the necessary funding to do so.

Infrastructure and financial constraints limit access. Stakeholders identified financial and infrastructure constraints, specifically in access to a phone jack, internet connection or cellular service, as barriers to patient participation in telehealth. Many patients found it challenging to consistently participate in the program due to limited resources. Care managers at both sites explained patients do not always have the financial means to pay for telephone or internet bills. While the IDEAL LIFE software enables communication via cellular technology, care managers noted patients frequently purchase prepaid phones with plans that limit minutes of airtime and data use. The use of prepaid phones also makes it difficult for telehealth staff to track patients since phone numbers frequently change.

> **"A lot of these people don't have home phones… we've switched from an era of all people having home lines to one where most people have a cell phone most of the time… that is a challenge for follow-up monitoring, especially within our population. That is still a gap we're missing based on socioeconomic status."**
> *Piedmont Telehealth Care Manager*

Respondents noted the lack of cellular coverage in many of the rural communities also constrains patient access, especially because many homes in rural areas do not come equipped even with landline phone jacks or electricity. As one Piedmont telehealth nurse explained, *"I've got one patient who, like most of my patients, lives out in the country… [phone] service is a problem… his house only has one power outlet and doesn't have a phone jack. There were issues with getting a phone jack installed... I tried with the cellular device but it doesn't work. [Cellular carrier] doesn't work out there… I tried everything. This guy really wants [telehealth] and needs it but I can't get the cellular device to work at his house."*

Policy and Organizational Factors for Replicability

Finally, we present key findings related to organizational and policy factors that played an important role in the implementation and adoption of telehealth, particularly as they relate to replicability.

The reimbursement environment in a state can drive sustainability. Although RCCHC received funding to successfully implement and expand the PPTN into a third phase, major financial barriers limit sustainability and further project development. Both RCCHC and Piedmont staff identified the realignment of reimbursement policies for telehealth as critical for sustainability. Staff emphasized a need for reimbursement policies that recognize the value of investments in telehealth equipment and expertise as a way to spread the use of telehealth by reducing out-of-pocket costs and encouraging buy-in among care providers.

> **"Being an FQHC… it would be great if we could begin to bill for in-home telehealth monitoring just because it requires several FTEs (full time equivalent units) – care management, a nurse, and in so many other arenas to supervise. Providers are making decisions based on telehealth outcomes data …"**
> *Piedmont Administrator*

Partnerships can provide functional support. RCCHC's and Piedmont's strong community partnerships demonstrate the importance of mutually beneficial collaborations in enabling program success. Partnerships with regional medical centers allowed both health centers to obtain data from community hospitals on PPTN program participants. Access to these data enabled clinics to document the impact of the program on hospital-related outcomes and costs. Additionally, program administrators indicated partnerships with numerous academic institutions, namely Wake and ECU, gave critical credibility to the data evaluation piece of the project. Lastly, the centers' partnership with IDEAL LIFE illustrates the importance of a solid relationship with technology developers and vendors as instrumental to effective use of health IT in underserved communities.

Integration of IT into a broader clinic and health system function is critical for sustainability. Respondents emphasized the importance of incorporating health IT applications into the broader clinic and health system function for sustainability. One telehealth case manager explained, *"Thank goodness our program is set up on a system. Even though [the telehealth nurse] was out sick for a period of time, anyone can pick up the system and keep it going. That's where it comes into play to have more legislative support on safety measures and really tight protocols for telemonitoring"*

> **"The drive for policy change was that it [remote monitoring] get reimbursed and that it get recognized as a tool… and that providers use it as a tool… Now I think we're moving in that direction with the patient-centered medical home. People are recognizing you can't just look at what is happening in the exam room, you have to look at the whole picture."** *RCCHC Administrator*

Because reductions in hospitalization represent an important financial benefit from clinic-based telehealth programs, respondents suggested this intervention offers an opportunity for the Accountable Care Organization (ACO) model where a consortium of providers share financial benefits for reducing costs, noting that under the model everyone that is an ACO partner is going to benefit.

Summary of Findings

This case study illustrates how the use of telehealth for monitoring of patients with chronic conditions results in increased patient engagement and self-management, and improvements in decision-making and the delivery of quality care for predominately rural minority populations. Stakeholders emphasized the importance of introducing telehealth technology to both patients and providers through a trusted source. They also noted the importance of customizing technology and programming it to meet the needs of providers and the patients they care for.

The case demonstrates the importance of interoperability with other IT systems with respect to acceptance, utilization, and sustainability, and that limited telephone infrastructure limits access to telehealth. Finally, the case study reinforces the importance of partnerships in enabling and documenting program success, and the potential importance of exploring use of telehealth reimbursement policies to support

> **Project Background and Data Sources**
> The Office of the National Coordinator for Health Information Technology (ONC) and the Health Resources and Services Administration (HRSA) awarded NORC at the University of Chicago a project to conduct case studies examining lessons learned from community organizations using health IT to serve the needs of underserved groups or to address health disparities. The final report from this project will inform the Secretary of the Department of Health and Human Services' (HHS) work under these topics per Section 3001 of the Health Information Technology for Economic and Clinical Health (HITECH) Act passed as part of the American Recovery and Reinvestment Act of 2009 (ARRA). Findings are based on analysis of notes taken during a series of discussions with administrators, providers, and patients at RCCHC and Piedmont.

clinic-based telehealth initiatives that can result in significant reductions in hospital-related costs.

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