

HEALTH IT AND HEALTH DISPARITIES

Cherokee Indian Hospital Authority – Leveraging health IT to provide quality care



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Case Study: Cherokee Indian Hospital Authority – Leveraging health IT to provide quality care

“Cherokee Indian Hospital [seeks] to be the health system of choice for members of the Eastern Band of the Cherokee Nation by providing accessible, quality healthcare in a caring, culturally sensitive and healing environment through responsible management of the Tribe’s resources.” —Cherokee Indian Hospital Mission¹

Report Summary	
Intervention and Setting	Cherokee Indian Hospital Authority (CIHA) uses an electronic health record (EHR), population management system (PMS), and health information exchange (HIE) to provide care for members of the Eastern Band of Cherokee Nation. They supplement their base EHR with various interfaces to gain additional functionality, such as access to electronic lab reporting, an electronic oral health record, and a digital imaging system.
Target Population	Over 10,000 members of the Eastern Band of Cherokee Indians
Technology Description	Indian Health Services’ (IHS) Resource and Patient Management System (RPMS), EHR, and iCare population management software. Access to outside health information technology (health IT) systems and registries, including: Western North Carolina (WNC) DataLink, North Carolina Controlled Substance Registry, and North Carolina Immunization Registry. Independent teleretinopathy and telepsychiatry programs.
Funding and Start-up	<ul style="list-style-type: none"> As a tribal facility, the Cherokee Indian Hospital Authority receives federal funding from IHS and funding directly from the Eastern Band of Cherokee Indians \$2.5 million in federal funds; \$1 million from the Duke Endowment funded WNC DataLink IHS funded the telepsychiatry program through the Methamphetamine Suicide Prevention Initiative (MSPI), a suicide prevention program IHS funded the teleophthalmology program through the Joslin Vision Network
Data and Analysis	<p>Content analysis using NVivo for a series of in-person discussions with program administrators, providers, and patients including:</p> <ul style="list-style-type: none"> Executive Director of Clinical Services Director of Quality and Patient Safety Billing Office Manager Outpatient Administrator Multiple CIHA providers including physicians, registered nurses, and case managers Patients who receive services from CIHA and who are also employed by CIHA
Key Take-Aways	<ul style="list-style-type: none"> Dedicated health IT staff and leadership facilitate adoption of health IT. Effective use of EHRs and registries requires ongoing customization and improvement. Panel reports serve as tools for performance improvement and accountability. Utilization of an EHR, coupled with a medical home model, can drive improvements in patient care and outcomes. EHRs can facilitate better documentation of care and subsequently improve third party reimbursement.

Introduction

Located in Cherokee, North Carolina, the Cherokee Indian Hospital Authority (CIHA) serves over 10,000 members of the Eastern Band of the Cherokee Indians, the only tribe in the state recognized by the federal government. The CIHA provides care to the majority of the Eastern Band through their main location in rural Cherokee, NC, but also includes satellite and specialty clinics. CIHA provides oversight, supervision, and direction for the health system serving the Eastern Band of Cherokee Indians.

Similar to other Native American tribes, the Eastern Band of Cherokee Indians experience disparities in health and health care access. With regard to their location, individuals who live in rural areas are more likely to be older, poor, in fair or poor health, and have chronic conditions, compared to their urban counterparts.ⁱⁱ Additionally, American Indians/Native Americans (AI/NA) experience higher rates of diabetes, cardiovascular disease, cancer, obesity, substance abuse and depression, compared to Whites.ⁱⁱⁱ For example, according to the Indian Health Service National Patient Information Reporting System, the age-adjusted prevalence of diabetes for AI/NA's is 16.1% – twice the prevalence of diabetes among non-Hispanic Whites.^{iv}

Potential benefits of using an EHR and population management system. In general, using an electronic health record (EHR) effectively can result in benefits such as improved productivity (for example due to less frequent pulling of charts, and more efficient handling of specific patient needs), financial improvements (such as more efficient billing or more complete documentation for reimbursements), and improvements in quality of care (for example through better chronic disease management or more rapid access to patient information).^v Population management systems (PMS) support patient-specific alerts and reminders, and help track and group patients with similar care needs. CIHA leverages these tools to address requirements of a patient-centered medical home model (e.g., the provision of coordinated care and dedication to quality and safety) to improve quality of care and patient outcomes.^{vi}

Key functionality and uses. CIHA uses the Resource and Patient Management System (RPMS) and iCare, a population health tracking tool developed by IHS, to track their population's health, monitor disease trends, and initiate clinical and administrative activities that improve access and quality of care. Approximately six years ago, CIHA instituted a medical home model where they empanel each patient to a primary care provider. Currently these panels encompass 91% of CIHA's patients. CIHA organizes their staff into teams or 'pods' as another part of the medical home model strategy and uses iCare to track quality measures for each provider panel. This pod system consists of providers, nurses, and support staff each focused in a specialty area such as pediatrics, family practice, and urgent care.

Sources of Funding

- CIHA receives federal funding from IHS as well as funding directly from the Eastern Band of Cherokee Indians
- WNC DataLink was funded through \$2.5 million in federal funds and \$1 million from the Duke Endowment
- IHS funded the telepsychiatry program through the Methamphetamine Suicide Prevention Initiative (MSPI)
- IHS funded the teleophthalmology program through the Joslin Vision Network

CIHA added additional programs to their EHR system to improve the health of their community. They use telemedicine in their ophthalmology and psychiatry departments. CIHA also relies on Western North Carolina (WNC) DataLink, a health information exchange (HIE) that allows physicians and clinicians in 17 WNC hospitals to share patients’ records. CIHA also has interfaces with two registries, the NC Immunization Registry and the NC Controlled Substance Registry. The unidirectional exchange with these registries allows CIHA to access information about patients’ immunizations records and use of controlled substances outside of the CIHA system.

Encouraging Adoption & Implementation

In the section below, we present findings regarding how CIHA encouraged the adoption and implementation of health IT and EHR systems.

Using an EHR facilitates care delivery and enhances patient engagement. CIHA leadership has integrated RPMS into its care system for many years. RPMS helps providers find information quicker than was possible with paper charts. One provider said, *“The benefits are huge – I love the fact that everything is so all inclusive, there is no chasing down any paper trail.”* Case study respondents felt the notification system and clinical reminder functionality improved care and compliance with practice guidelines. When discussing the notification system, one provider said, *“You don’t always have time to go through – especially with a paper chart – to see when the last time the patient had a tetanus shot or whatever else... I think it helps with the completeness of care.”*

CIHA effectively uses RPMS to enhance provider-patient interactions. Motivated by Meaningful Use, CIHA provides all patients with an RPMS-generated “wellness handout” at each visit. Both patients and providers felt these wellness handouts facilitate patient engagement. One provider noted he uses the handouts to engage with his patients at the start of the visit, asking them what they think of it and whether any information included is incorrect. Another provider discussed her observation of patients looking at the handout: *“I’ve been walking down the hall and [the patients] are like ‘My [hemoglobin] A1c (HbA1c) was this and it was this last time!’ It makes them more engaged.”*

“I like getting feedback pretty fast; they do a health record here that they hand you and you can see what happened from the last time that you visited.” *CIHA Patient*

“If a doctor is talking to a patient about their weight or their blood pressure has changed, they can show them on a computer screen where their weight has come down and how their blood pressure has fluctuated.” *CIHA Administrator*

Though some providers mentioned entering data into the EHR takes more time compared to paper records and may in some cases reduce time with patients, many also noted that utilization of RPMS during patient encounters facilitates their interaction. Specifically, one provider indicated she uses RPMS to show parents a chart of their child’s growth. A CIHA administrator noted providers use the EHR to visually communicate trends in key vital signs during the time of a visit, when discussing the positive impact that providing graphs can have on patient engagement. Patients also appreciated this functionality of the EHR. One patient shared: *“If you are looking at weight and you see the weight going down then you know you’re on the right track – that is motivation.”*

Having dedicated employees on site for addressing EHR issues and creating templates is useful.

The Clinical Application Coordinators (CACs) at CIHA serve as health IT coordinators and play an instrumental role in ensuring meaningful utilization of RPMS. Providers talked about various templates they found particularly useful and noted they could easily work with a CAC to develop, edit, or design any template they wanted. The CACs also play a support role when it comes to ensuring the EHR runs smoothly and efficiently. One provider described this role, stating, *“Our CACs have worked with us to make [the EHR] user friendly. Whatever problems or concerns we have about using the system... the CACs help us work things out.”*

CACs also help navigate and implement the often complex processes associated with making changes to RPMS itself (not changes to templates) that must be vetted and approved by IHS. The CACs submit provider feedback related to RPMS to the Change Control Board, the central body governing any changes to RPMS. One administrator described this process: *“If we submit an enhancement request...the CACs put it on the listserv and they evaluate it on the Change Control Board and decide the priority of it, the urgency of it or the ease of it. They consider it based on those three things and it gets put on the list for consideration...”*

Integration and access to outside data sources and customization are important in the provision of comprehensive care.

Integration with outside data sources and customization of IT systems allows CIHA to better address the multi-faceted needs of their patients. As noted above, CIHA customizes the RPMS system on an ongoing basis to ensure templates and reporting capabilities fit the needs of their population. For instance, they customized their EHR to monitor suicide risk and substance use. Additionally, CIHA providers can access data available through the NC Controlled Substance Registry, a particularly helpful tool given the prevalence of substance use and abuse throughout the state, as well as specifically for the Cherokee population. Access to this statewide registry allows CIHA providers to identify narcotic control and opiate use in their community.

“We have a very specific suicide tab. That was developed because IHS has a higher rate of suicide so this is for tracking specific to whether it is substance related. That is something most EMRs probably don’t have.” *CIHA Administrator*

As noted above, CIHA providers have access to DataLink – hospital discharge data from 17 Western NC hospitals. CIHA leadership noted access to these data help providers avoid unnecessary duplicative tests and procedures, and ensure more accurate, effective, and comprehensive patient care. One provider described how easy it is to use DataLink to ensure CIHA providers follow discharge information from outside providers. CIHA developed a template for RPMS that allows users to manually record data from DataLink and incorporate these data into the patient record.

Finally, CIHA uses a unidirectional interface with the NC Immunization Registry where data from RPMS populates the registry; however, CIHA providers currently manually enter data from the immunization registry into RPMS. As described by one provider, *“They hope to eventually develop a bi-directional interface [with the NC Immunization Registry] to eliminate duplicative data entry. A bi-directional interface could further assist providers in developing a comprehensive understanding of our patients.”* CIHA providers noted active interfaces between RPMS and outside data sources will help them efficiently develop a comprehensive understanding of their patients.

Impact and Consequences

In this section, we review the impact of adoption and implementation of health IT at CIHA.

“We noticed our colorectal cancer screenings were down in the 20-25% range and we look at what was possible, what the literature showed, and what it should be. We said we are not where we want to be so we made a focused effort on that and we are now up to 53%, which is really good.”
 CIHA Administrator

Health IT such as RPMS and iCare facilitates systematic reporting and improvements in health outcomes. Staff members at CIHA leverage their health IT systems to produce a variety of reports. Through RPMS, providers illustrate patient trends on specific outcomes variables (e.g., weight, HbA1C, blood pressure). One administrator described CIHA’s success on monthly report results surrounding these outcome variables: *“Currently CIHA is at 67% for blood pressure control and low-density lipoprotein (LDL cholesterol) control is at 45.4% and the target is 37%; our new goal this year is 42% and we already exceeded that. HbA1c control, our baseline for last year was 28% and we are at 31% this year.”*

CIHA provider leaders and administrators also use the Clinical Reporting System (CRS) function within the iCare system for systematic reporting, both for internal performance appraisals and to illustrate CIHA’s progress related to specific health indicators – set internally and by outside organizations, such as the Joint Commission and National Committee on Quality Assurance (NCQA). The local CIHA governing board determines 45 different measures for CIHA to track, including those around safety, quality, service, and people in stewardship (e.g., employee satisfaction, weighted turnover, etc.). Providers receive scorecards each month, which include clinical indicators and quality review scores, as well as information on their productivity and patient concerns. CIHA relies on routine reporting to ensure compliance with internal quality assurance policies.

Coding patient encounters using an EHR and HIE can improve the third party billing. As a provider of health care to American Indians, CIHA does not rely on third party payers (e.g., Medicaid, Medicare, private insurance) as extensively as other providers do. However, they may collect reimbursement from these payers as a supplement to other forms of payment. In the past six years, CIHA approximately doubled their monthly collections from third party payers. They have done so by adding a Coding Queue to their EHR. The Coding Queue functions as a flag for coders every time a patient’s paperwork enters the system, allowing for active management of billing codes. Prior to the Coding Queue, when physicians entered information regarding a patient encounter, the information was automatically assigned a billing code and passed to the claims system without thorough verification. The Coding Queue ensures that the claims system will not populate with billing codes until a dedicated coder checks and reviews each code. This comprehensive review system, along with more consistent coding, resulted in fewer billing errors and rejected claims, and consequently a higher return on investment for patient encounters at CIHA.

“We get better claim information to work with therefore it is easier for us to submit a good claim the first time.” CIHA Administrator

CIHA case study respondents said they saved millions of dollars resulting from improved reporting via their EHR and through HIE. One CIHA administrator attributed these savings to a number of different changes facilitated by health IT. For example, this administrator noted a significant reduction of ordering of duplicative tests resulting from the ability to retrieve information from DataLink.

“I think there is some security in...the firewalls...they have here to protect those records. I feel pretty safe with that.” *CIHA Patient*

Patients believe the EHR enhances the security of their information.

CIHA case study patient respondents valued privacy and confidentiality with respect to their health and health care. Interestingly, the CIHA patients we interviewed felt the EHR system offered more security for their health records compared to paper charts. One patient noted her impression that

fewer people touch and view her health record chart now that it is electronic. Patients also indicated concern about paper files being lost, misplaced, or even damaged in a fire. The patients felt having less paper and subsequently less opportunity for individuals to handle and view patient data reduced the risk that sensitive information would leak, particularly given the small size of their community. As described by one patient, *“In times past, someone could show up positive for a pregnancy test and before they even left the hospital, the whole community would know that they were pregnant when it was on paper.”* Patients expressed confidence that electronic systems enable better protection of their personal health information and ensure this information only is accessed by appropriate care providers.

Barriers to Use of Health IT Tools

While this case study illustrates the potential for use of health IT technologies among underserved populations, respondents discussed a number of barriers to adoption and Meaningful Use.

Geography and lack of IT infrastructure can limit effective use of health IT. The lack of widespread connectivity for patients in this community limits CIHA’s ability to engage patients through some types of health IT, such as a patient portal. To address the patient engagement component of Meaningful Use, CIHA currently provides their patients with paper-based detailed health summaries since connectivity problems would limit the usefulness of a portal. One patient estimated only 50% of the population can access the Internet from their home. They also cited patient age and limited computer literacy as potential barriers to use of a patient portal, noting many older patients simply do not understand how the technology works.

Geography also limits use of health IT by providers themselves. Several of the more rural clinic sites face connectivity issues. In fact, one provider described this problem, *“We have a clinic about an hour from here and you can’t get cell service or anything. It is like a third world country over there. Sometimes all they have is their fax machine and their computers are super slow, it takes a long, long time to pull up an EHR.”* Even with an EHR system in place and interoperability through DataLink, rural clinics face significant challenges with internet access.

Lastly, CIHA encounters challenges recruiting specialty providers to Cherokee, NC. Many specialty providers only come to Cherokee Indian Hospital periodically, thereby severely limiting patient access to specialist services. CIHA implemented two telemedicine initiatives - teleretinopathy and telepsychiatry - to increase patient access to these specialty services. As described by one provider, *“We do not have a retina specialist on site. There is one 60 miles away in Asheville. In the past, we had that doctor come out here for periodic clinics. Now we can take a picture any day of the week and send it; that is really improving our care.”*

Using Health IT is time intensive. Providers noted documenting patient encounters using RPMS takes more time than using paper charts because it requires detailed notes, more specific diagnoses, and additional “clicks.” Providers also noted difficulties with removing redundancies from their data entry processes. One provider explained this process, saying, *“One of the downsides of [the EHR] is what I would call “click fatigue.” There are times when you are just clicking on boxes over and over again. Someone needs to get a hold of the programmers to streamline this.”* Providers specified x-rays and lab tests as particularly time intensive, with one provider noting the need to put in two separate orders for both sides of the body because they did not have the option to select “bilateral.” Providers indicated that although documentation via the EHR often requires more time than if completed on paper charts, it results in more thorough documentation, which can save time in subsequent patient encounters.

“I am documenting more and I spend more time, but I think my notes are probably more complete than my written notes were. In general though, I find it is more time intensive.” CIHA Provider

Additionally, providers pointed to time as a large barrier related to the effective implementation of a patient portal. They felt that a patient portal would require additional effort from providers to answer secure messages and supply context for lab results. One provider specifically said, *“It seems like it could be extremely resource intensive as far as time and being able to have a provider responding to a lot of questions... particularly questions that may just be a result of them misunderstanding what they are reading.”* Providers felt extra steps and processes related to secure messages would significantly detract from their already limited face-to-face time with the patient.

Policy and Organizational Factors for Replicability

Finally, we present key findings related to organizational factors that played an important role in the implementation of health IT at CIHA, particularly as they relate to replicability.

Provider scorecards drive performance improvement and provider accountability. CIHA uses RPMS and iCare to generate detailed reports, including monthly provider scorecards and reports for performance appraisals. CIHA scorecards include RVUs (Relative Value Units – a measure of intensity of service and productivity), outcomes measures, and clinical and quality improvement indicators, such as those set forth by NCQA. The scorecards allow providers to assess their performance across different types of indicators, such as a specific health outcome (e.g., control of HbA1c), productivity, and customer concerns, and can be individualized to either a specific provider or team, which allows for direct comparisons. Case study respondents noted these scorecards encourage friendly competition between providers, and drive overall performance improvement and accountability. One staff member described this observation: *“When you begin to measure and show how this provider is scoring, they are going to say ‘I want to be as good as somebody else.’”*

“We do the monthly scorecards not just for the providers but... it is really a team score card; we all have it on our performance management plans. Then you are also held accountable...”
CIHA Administrator

By closely monitoring and reporting on various measures, CIHA leadership can target specific areas for improvement and share best practices. For instance, when routine reporting revealed mammogram rates were below the target rate, staff ran additional reports to identify patients due for a mammogram and then sent letters to these patients, encouraging them to make an appointment. Another provider described how access to provider performance on key indicators allowed her to identify high performing providers and

seek their advice on how to improve specific health indicators. She asked another provider how she was able to help her patient’s control their blood pressure and learned that her “high performing” colleague actively monitored patients at risk for hypertension and made sure they visited the clinic regularly. The original provider then used her colleague’s example to change her own practices.

Leadership buy-in can drive effective use of health IT systems. Much of the technology adopted at CIHA gained traction through strong leadership. CIHA leadership recognized the importance of using data to inform their decision-making and have utilized reports generated using RPMS and iCare to inform the CIHA governing board. One CIHA administrator noted their use of health IT ultimately helps them organize the data needed to make decisions.

One administrator provided an example of how reports generated by health IT applications at CIHA led to improved access for their pediatric population. CIHA presented data to their governing board, which revealed a growing pediatric population in their community that did not match the level of pediatric care provided by CIHA. This finding informed CIHA’s decision to hire more pediatricians and employ outreach strategies targeting parents. Within six months of these efforts, the number of children empanelled jumped from 600 to 1400. The administrator described the benefit of making this adjustment: *“If we didn’t have that data, we couldn’t inform governance and even though it is aligning yourself with local governance and focus, it is also informing them of what things are there that need to be attacked.”* Leadership buy-in and effective utilization of health IT encouraged effective adoption of health IT at CIHA.

Summary of Findings

The CIHA case study demonstrates how use of an EHR and registry software facilitate improvements in quality of care, health outcomes, and third party reimbursements. CIHA goes beyond simply using RPMS for primary care and employs registries and telemedicine to track and provide comprehensive care to their patients. CIHA shows that extensive use of various forms of health IT, coupled with a medical home

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, case managers, and patients from the CIHA.

model and quality reporting, can drive improvements in patient engagement and outcomes for American Indians. The case also demonstrates that despite patients’ acceptance and praise of the use of electronic systems to store their health information, important barriers such as IT infrastructure may limit patient use of certain health information technologies (i.e., a patient portal). Finally, the case emphasizes the importance of leadership and dedicated IT staff to facilitate successful adoption and effective utilization of health IT.

ⁱ Cherokee Indian Hospital. 2011. Presentation by Dr. Michael Toedt. Available at <http://www.nchica.org/Activities/2011/presentations/Toedt.pdf>.

ⁱⁱ Agency for Healthcare Research and Quality (AHRQ). National healthcare disparities report. 2010. AHRQ Publication No. 11-0005. Available at: <http://www.ahrq.gov/qual/nhdr10/nhdr10.pdf>.

ⁱⁱⁱ Indian Health Services Fact Sheets: Indian Health Disparities. (January 2011). Indian Health Services. Available at <http://www.ihs.gov/PublicAffairs/IHSBrochure/Disparities.asp>.

^{iv} Ibid.

^v Center for Health IT at the American Academy of Family Physicians. “Potential Benefits of an EHR.” Available at <http://www.centerforhit.org/online/chit/home/cme-learn/tutorials/ehrcourses/ehr101/benefits.html>.

^{vi} Agency for Healthcare Research and Quality. *Patient Centered Medical Home Resource Center – Defining the PCMH*. Available at http://pcmh.ahrq.gov/portal/server.pt/community/pcmh_home/1483/pcmh_defining_the_pcmh_v2.