

North Dakota Tests Innovative Health IT Approaches to Improve Hypertension Identification and Control in Workplaces

Hypertension, or high blood pressure, is one of North Dakota's leading cardiovascular disease (CVD) risk factors.¹ Nearly one third (30.4%) of adults in North Dakota have hypertension, slightly less than the national average (30.9%).² However, a disparity in hypertension and CVD burden exists between American Indian and white populations. Nationally, American Indian adults are 30 percent more likely than white adults to have hypertension.³ In North Dakota, the CVD mortality rate among American Indians is 80 percent higher than that of white residents.⁴ Additionally, North Dakota is predominantly rural, with many counties designated as medical shortage areas.⁵ These regions tend to have older, lower income, and less insured populations than urban areas, resulting in disparities in access to hypertension care.⁶

Through the ASTHO/CDC Heart Disease and Stroke Prevention Learning Collaborative, funded by CDC's Division for Heart Disease and Stroke Prevention, the North Dakota Department of Health (NDDoH) partnered with a diverse set of stakeholders including local health units, emergency medical services professionals, payers, and health systems. Partners tested health information technology (HIT) approaches to improve blood pressure measurement and referral systems in eight local health units and one tribal jurisdiction. This project focused on improving hypertension identification and control among residents of two local health units.¹ These efforts specifically targeted working adults as more than two-thirds of North Dakotans older than 16 are in the workforce, people with low income who are medically underserved, Native Americans, and adults in rural areas with undiagnosed or untreated hypertension.

Key Partners in the NDDoH Learning Collaborative Team:

Blue Cross Blue Shield of North Dakota (BCBSND)	University of North Dakota
Quality Health Associates of North Dakota	Southwestern District Health Unit (SWDHU)
ND Health Information Network (ND HIN)	Central Valley Health District (CVHD)
NDDoH Emergency Preparedness and Response Section	Altru Health System
ND Emergency Management Services Association	Sanford Health Plan

Activities

The NDDoH team and partners engaged in the following activities between 2014 and 2015.

- **Expanded rural access to blood pressure screenings** by integrating screenings into the [Cardiac Ready Community \(CRC\)](#) program. The CRC program increases communities' capacity to prevent and respond to cardiac events by improving awareness of and connections to resources, such as CPR, AED training, and blood pressure screening.
- **Developed and implemented a [community-based blood pressure measurement protocol](#) within worksites** by training public health nurses, paramedics, and local health units to conduct screenings

¹ Southwestern District Health Unit and Central Valley District Health Unit.

at worksites in low-access, rural communities, including the oil and gas worksites. SWDHU piloted a process in which screened individuals with elevated blood pressure received preferred primary care provider follow-up care.

- **Analyzed public employee claims data to determine healthcare utilization** for hypertension, diabetes, stroke, heart attacks, and associated costs among North Dakota Public Employee Retirement System (through the Sanford Health Plan) members from 2011 to 2015.
- **Improved data sharing between community, clinical, and public health partners** by using the [HC Standard](#)ⁱⁱ database to identify and refer individuals with undiagnosed hypertension. NDDoH developed a HC Standard [user manual](#) as well as community blood pressure screening kits and trained seven local health units and one tribal health entity to use the database to capture community screening data.
- **Incorporated a community-based blood pressure measurement protocol into training** for clinicians, dentists, chiropractors, and optometrists to accurately measure blood pressure and refer patients to services such as ambulatory blood pressure monitoring with a nurse or a medical provider consultation.
- **Tested statewide health information sharing capacity**, via the [NDHIN](#)ⁱⁱⁱ, to identify individuals with uncontrolled hypertension and determine how well providers and systems are providing care.
- **Engaged in a community mapping process** to identify blood pressure measurement and data-sharing processes. This included hosting a community mapping session in which primary care providers, dentists, chiropractors, and other stakeholders discussed existing policies and procedures to systematically measure blood pressure and identified needs to build capacity for blood pressure measurement and data-sharing.

Strategies

NDDoH and partners employed several strategies to test innovative HIT approaches to improve hypertension identification and control. NDDoH used the Heart360 electronic health record (EHR) system to support hypertension self-management, care coordination, and referral by pairing it with American Heart Association's (AHA) [Check. Change. Control.](#) tracker.^{iv}

Although Heart360 allowed providers to directly upload biometric information from HealthVault connectable devices such as smart watches and weight scales, provided targeted health messaging, connected patients to relevant AHA online resources and shared patient information directly with healthcare providers through connected portals, it was seen as duplication to other personal health records. Altru Health System a participant in the North Dakota Health Information Network (NDHIN) was a more effective and efficient tool and database to assist provide support and monitoring.

ⁱⁱThe HC Standard is a web-based database typically used for emergency preparedness and response. Public health nurses and EMS personnel in six communities used HC Standard to track community blood pressure screening measurements and facilitate referral for individuals with elevated blood pressure.

ⁱⁱⁱThe North Dakota Health Information Network (ND HIN) connects participating providers to other providers through a secure online network to share health record information. Through the Million Hearts initiative, NDHIN tested its capability to identify the number of individuals with uncontrolled hypertension and determine how well providers and systems are performing in the care and treatment of those individuals.

^{iv}As of July 10, 2017, Heart360 is no longer available. Consumers can access their Heart360 data through Microsoft HealthVault and can continue tracking and monitoring their blood pressure with an AHA platform by establishing a [Check. Change. Control.](#) tracker account at www.ccctracker.com/aha.

Results

Presented below are key outcomes from the initial strategies deployed during the learning collaborative.

- Using the community-based blood pressure measurement protocol, 5,017 individuals from eight local health units and one tribal jurisdiction were screened.
- Eleven communities developed systems to support CVD control and rapid cardiac event response and as a result established sustainable linkages between primary care, public health, and community-based healthcare partners such as paramedics, dentists, and others. Each system involves a unique set of stakeholders and program processes. For example, the use of community paramedics and retired or volunteer nurses to help the local health districts address barriers in reaching individuals who may be outside of the healthcare system.
- The CRC program expanded from three communities (400 residents) to 20 communities (more than 20,000 residents).
- NDDoH continues to partner with various partners, including the Sanford Health Plan, to collect and analyze data from various sources, such as employer screening events. Local health units gave positive feedback about partnering with employers to reach community members at their worksites to encourage them to track their blood pressure.

There were also several outcomes from North Dakota's work through an innovation award from the learning collaborative. Read more about these activities below.

- NDDoH and partners developed a [dental clinic blood pressure screening protocol](#) and [referral form](#). The NDDoH Oral Health Program and a dental clinic located within a federally qualified health center in Grand Forks, North Dakota implemented the protocol and screened 1,492 individuals. Five were referred to care; four of those reduced their blood pressure; one brought their blood pressure under control. The remaining 1,482 patients were not identified as having a blood pressure reading that needed a referral.
- Heart360® was not an efficient tool to implement statewide and self-reported blood pressure data could not be uploaded into the NDHIN. However, CVHD was able to successfully connect its EHR system to the NDHIN, allowing electronic health information on its clients to be accessible by other medical providers. The NDHIN created a business plan for a health information exchange, as well as a process to receive and graphically present EHR blood pressure data in the clinical portal. Central Valley Health District also connected their electronic health record system to the NDHIN and tested connectivity and capabilities. They implemented Heart 360 and served as mentors for individuals using Heart 360.
- Southwestern District Health Unit piloted the use of HC Standard for blood pressure data collection and reporting and shared information with primary care providers. The Southwestern District Health Unit partnered with community paramedics in blood pressure screenings and created a community paramedic referral system.
- NDDoH used [CDC 1305 grant](#) funding to support patient's self-measured blood pressure data collection using an [online portal system](#), allowing providers to monitor and utilize data through their own [portal view](#).
- Since 2017, NDDoH partnered with BCBSND to provide blood pressure measurement training for 450 providers. Partly due to the work of community paramedics and the CRC program, 2015 state legislation recognized community paramedics as providers eligible for Medicaid reimbursement for certain preventive services. In 2017, legislation allowed NDDoH to accept donations for the CRC

program. The CRC program is focused on heart disease and preparing the community to respond to cardiac events and prevent cardiac event deaths. Their home visits include blood pressure measurements and other vitals.

Next Steps

NDDoH is using the success of this work as a catalyst for further innovation. In one example, NDDoH is collaborating with various partners to collect and analyze the prevalence data for hypertension and other chronic diseases based on public employees' health insurance claims data. This data will allow for a better understanding of the prevalence of hypertension, heart attack, stroke, and diabetes among health plan members and the impact of worksite wellness initiatives. Additionally, NDDoH is developing a toolkit to promote the CRC program model and expand training for emergency medical services (EMS) personnel. NDDoH will spread the dental clinic protocol and partnership model and will continue to partner with BCBSND to offer blood pressure protocol trainings. BCBSND continues to identify payment models (e.g. [Blue Alliance](#)) that incentivize hypertension management through medical home models and care coordination. NDHIN's provider work group meets monthly to discuss HIT processes for hypertension referrals and care management.

Lessons Learned and Recommendations

State and territorial health agencies (S/THAs) can leverage the following to inform similar efforts:

Community-level systems change benefits greatly from standardized tools and training. Standardized protocols and trainings allowed stakeholders to synergize efforts and providers to understand and adopt evidence-based blood pressure measurement techniques.

- **Recommendation:** Develop resources such as data collection tools, protocol and communication templates, and factsheets in collaboration with stakeholders to aid in coordinating efforts. Revisit the tools and protocols over time to refine as needed and identify any needs for training stakeholders on the protocols. Explore ASTHO's [Tools for Change](#) resource library for examples.

S/THAs play a critical role in convening, providing essential leadership, and sustaining systems change. NDDoH health officials identified opportunities to integrate public health and primary care, encouraged participation of health system leadership by facilitating meetings and project implementation, and championed the initiative as a business model to boost employee health and productivity.

- **Recommendation:** Leverage S/THA leadership to build and sustain relationships across sectors (e.g. third-party payers, industry, healthcare) and encourage active stakeholder participation.

Engaging a broad stakeholder group across sectors is foundational to systems change. NDDoH convened a diverse group of stakeholders (i.e., local health units, health systems, payers, EMS, and employers). Partners worked to reduce duplication and efficiently shared resources for greater impact by exploring different methods for accessing and aggregating population-level blood pressure data, such as linking blood pressure data across systems and the state health information network. This made it easy for public health nurses and community paramedics to enter data that would later be accessed by providers in their own EMR systems.

- **Recommendation:** Engage stakeholders who can effect synergistic change in multiple settings. For example, through facilitated dialogue with Sanford Health System, public health and clinical linkages can be piloted in worksite through hypertension prevention efforts. The NDDoH’s Division of Chronic Disease also plans to facilitate additional hypertension community mapping processes across the state, a community mapping process has already taken place in Jamestown, ND.

Using HIT to improve hypertension identification and management holds both challenges and promise. NDDoH’s efforts to use a range of HIT platforms presented challenges. These included issues registering individuals for Heart360 accounts and computer program compatibilities, which is time and resource intensive. Additionally, worksite health mentors who would be using the application to support blood pressure self-management had concerns about confidentiality and liability. Partners decided instead to collaborate with Altru Health System to develop the aforementioned [electronic portal](#), allowing patients to self-report blood pressure data through Altru’s EHR.

- **Recommendations:** Ensure appropriate staffing and technology infrastructure is in place when registering individuals for EHR systems such as Heart360. Confirm safeguards are in place to protect patient information and privacy when monitoring and submitting self-reported blood pressure data.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.

¹ North Dakota Department of Health. “The Burden of Chronic Disease in North Dakota: A Status Report for 2016.” Available at http://ndhealth.gov/chronicdisease/Publications/2016_CD_Report.pdf. Accessed 7-20-2018.

² CDC. “Behavioral Risk Factor Surveillance System.” 2015. Available at <http://www.cdc.gov/brfss/index.html>. Accessed 7-19-2018.

³ U.S. DHHS Office of Minority Health. “Heart Disease and American Indians/Alaska Natives.” Available at <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=34>. Accessed 7-20-2018.

⁴ CDC. “Interactive Atlas of Heart Disease and Stroke: North Dakota.” Available at <https://nccd.cdc.gov/DHDSPAtlas/Default.aspx?state=ND>. Accessed 7-20-2018.

⁵ North Dakota Department of Health. “North Dakota Health Professional Shortage Areas: Rural Hospitals, Clinics, Community Health Clinics (CHCs), and Rural Health Clinics (RHCs).” Available at <https://ruralhealth.und.edu/assets/287-2825/nd-hpsa-rhc.pdf>. Accessed 7-20-2018.

⁶ North Dakota Rural Health Association. “Primary Issues Impacting Rural Health in North Dakota and Contributing Factors.” Available at https://www.ndrha.org/pdf/rural_health_issues.pdf. Accessed 7-20-2018.