

# Developing a Multilevel Approach to Improving Population Health



## HEALTHCARE ORGANIZATION

Integrated delivery healthcare system & Pioneer ACO

## PRODUCTS

- Health Catalyst® Analytics Platform built using the Late-Binding™ Data Warehouse architecture

## EXECUTIVE SUMMARY

Heart disease is the leading cause of death for both men and women in the United States, yet heart disease is largely preventable through healthful lifestyle practices. Effective prevention requires more than just educating people on how they can live healthier lifestyles; it's critical for a community to support its citizens in their efforts to do so. Inspired by this, the Minneapolis Heart Institute Foundation (MHIF), Allina Health, New Ulm Medical Center (NUMC), and the rural community of New Ulm, Minnesota, teamed up to create Hearts Beat Back: The Heart of New Ulm Project (HONU). This population-based prevention demonstration project aims to reduce heart attacks and heart disease risk factors over 10 years among the New Ulm population.

Recognizing the complex web of personal, institutional, and societal factors that influence an individual's heart health, HONU leaders implemented a multilevel population health strategy. Key aspects of this strategy included:

- Gathering data to assess cardiovascular health.
- Harnessing the power of community, social support, media messages, and direct-to-resident communications.
- Creating an environment where it's easier to find, identify, and select healthier foods. Making it easier to be physically active by increasing physical activity classes and formal events in the community, and by changing the environment to make walking and biking more accessible, safe, and convenient.
- Offering additional support to the highest risk individuals in the community through a one-on-one professional health coaching program to promote healthier lifestyle choices and taking preventive medications as appropriate.

HONU's multilevel, data-driven approach to improving population health has resulted in substantial changes in the community of New Ulm. Based on five-year outcomes data, people who live or work in New Ulm age 40-79—the age range most likely to experience a heart attack within the project's 10-year timeframe—are making



Community engagement was absolutely essential to our program. We had a very strong communications plan from the outset. Within the first year, 94 percent of the community was aware of our efforts, and we've been able to maintain that.

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impressive strides. The project's mid-point outcomes, as published in 2016 in the American Heart Journal, include:<sup>1</sup>

- Significant improvements in blood pressure and cholesterol at the population level.
  - 86 percent of residents now have blood pressure within the recommended range.
  - 72 percent have LDL cholesterol within the recommended range.
- Improvements are greater than changes seen in the national comparison population.

## TAKING ON THE COUNTRY'S HEART HEALTH PROBLEM

Every 34 seconds, someone in the U.S. has a heart attack, and approximately every minute, 24 seconds, someone dies from one.<sup>2</sup> Heart disease is among the most widespread and costly health problems in the U.S. today. One in three adults has at least one type of heart disease, and heart attacks are the leading cause of death for both men and women.<sup>3</sup> Each year, about one in every six U.S. healthcare dollars is spent on heart disease. The CDC Foundation estimates that by 2030, annual direct medical costs associated with heart disease will rise to more than \$818 billion, while lost productivity will exceed \$275 billion.<sup>4</sup>

What makes these statistics particularly alarming is the fact that heart attacks and heart disease are largely preventable through a combination of healthful lifestyle practices and medical management of risk factors. It's estimated that 90 percent of first heart attacks are attributed to just nine modifiable risk factors: elevated blood lipids, high blood pressure, uncontrolled glucose, obesity, smoking/secondhand smoke exposure, physical inactivity, low fruit/vegetable consumption, and alcohol consumption.<sup>5</sup>

However, changing these statistics requires supporting people in their efforts to improve their heart-healthy lifestyle behaviors—which can seem, at times, to be a Herculean task. It's not enough to simply provide people with education about what they need to do. To effectively help people change their behaviors requires multilevel interventions that take into account the complex interplay between individuals, relationships, community, and institutional and societal factors.<sup>6</sup>

In 2009, New Ulm Medical Center (part of Allina Health), the Minneapolis Heart Institute Foundation, and the rural community of

New Ulm, Minnesota, teamed up to make these changes happen. These groups collaborated to create Hearts Beat Back: The Heart of New Ulm Project (HONU). The 10-year, population-based prevention demonstration project is designed to reduce the number of heart attacks and modifiable heart disease risk factors in the New Ulm community. The project educates and empowers community members to live healthier lives, while at the same time works to change the environment and create a social movement to support healthier lifestyles. The HONU project is unique in that it tracks program activities and positive impact.

The project is based on the premise that a large number of people making small changes can have a greater impact on the rate of heart attacks than a few people making great changes. With the cost to treat just one heart attack in New Ulm being \$50,000, each heart attack HONU can help prevent has the potential to yield real value in both monetary and human terms.

## CHALLENGES TO IMPROVING THE HEALTH OF AN ENTIRE COMMUNITY

From the start, HONU leaders recognized that they needed to tackle a variety of challenges if they were to truly make an impact on improving the heart health of an entire community.

Although lifestyle changes are one of the primary strategies for reducing people's risk for heart disease, the fact remains that their surroundings often don't support them in their efforts to make and sustain changes. For example, people can't make healthful choices at a restaurant if those choices aren't available, and they won't choose to walk or bicycle in the community if they don't feel it's safe and convenient to do so. HONU leaders knew that if they were truly to make an impact on improving the heart health of an entire community, they would need to help the community modify the physical and food environments to make the healthful choice the easy choice. They would also need to enhance opportunities for social support and implement interventions at multiple levels and in various venues, including healthcare, worksites, and the overall community. The interventions would need to take into account these complex factors in order to halt the expected rising prevalence of heart disease.

One of the challenges to addressing heart disease risk in the community is that many of the risk factors associated with heart disease do not have symptoms, such as high blood pressure or high cholesterol, so they can often go unrecognized. To address



A lot of the success of our program stems from being able to implement interventions in so many different facets of the community. We've worked with restaurants, clinics, policymakers, workplaces, and many other groups. We've built all of these relationships simultaneously, and they're all coming together to promote better heart health.

Rebecca Lindberg  
Director of Population Health,  
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this, HONU would need to find a way to help people to identify and understand their heart disease risk level and receive a medical referral if appropriate.

Challenges also exist nationally (and locally) with implementing evidence-based risk factor management. To provide additional support and education to local medical providers, the project needed to offer some kind of educational solution that could cover a range of best-in-practice primary prevention strategies.

HONU's success would also depend on gaining support and facilitating collaboration across the entire community. As healthcare moves increasingly beyond hospital and clinic walls and out into communities, HONU leaders realized that changing the health of the community would require partnership from the community. Additionally, they realized that in order to truly change behaviors to improve the health of the community over the long term, the community would need to move from partnership in the project to ownership of the project.

## MULTILEVEL INTERVENTIONS TO IMPROVE POPULATION HEALTH

To tackle these complex challenges, HONU developed a multilevel approach for improving population health. The following highlights some of these key approaches.

### Gathering data to assess and impact heart health

From the outset of the program, HONU leaders understood that they needed qualitative and quantitative data about individuals within the community as well as data about the community as a whole. They also understood that they would need analytics and a tracking mechanism for evaluating the effectiveness of their interventions.

HONU's goal was not only to help improve and sustain New Ulm's health, but also to serve as a research project that would take ideas from inspiration to implementation, measure and report outcomes, and replicate and translate successes for other communities. Because Allina Health is a partner in HONU, the research team has access to both an electronic health record (EHR) and an analytics platform with an enterprise data warehouse (EDW) which contains data on more than 80 percent of the community's residents. HONU team members use these technologies to pull data that can help measure population health outcomes across the entire community. They have also used this data to proactively identify and reach out to individuals at highest risk for heart disease to offer them personalized

coaching to reduce their risk factors. Recently, the project started using some EHR data to map heart disease risk factors and are using these maps to guide community engagement work.

In addition, HONU has conducted biannual, free heart-health screenings for the community that track 10 biometric lab measurements such as blood pressure and cholesterol, and also lifestyle behaviors, such as physical activity, fruit and vegetable consumption, alcohol consumption, stress, and medication adherence. More than 5,100 people participated in screenings in 2009, more than 3,100 in 2011, and more than 1,000 in 2014-15. This high level of participation meant that information on blood pressure, lipids, glucose, and BMI were now available in the record on many individuals that would have previously been missing that information.

HONU recognized that the EHR did not contain all the data necessary to assess and track the health of the community over time. To get the full benefit of the data, HONU developed a first-of-its-kind process to integrate screening results with individual patient EHRs at New Ulm Medical Center. Significant advantages on both a population and individual health level have included:

- 1 Key behavioral measures captured at screenings—including many measures not originally accessible in the EHR—are now stored in the EDW and readily available for providers to optimize preventive care.
- 2 Screenings reach individuals who may not have visited a doctor in years, and they receive valuable health status information by mail, which can serve as an impetus for making lifestyle changes.
- 3 After reviewing individual results, the healthcare team can identify those at high risk for disease (or with current disease) and direct them to additional resources in the community that can help them.

HONU's expanded use of data and investment in analytics has provided an ideal opportunity to aggregate and report outcomes, helping the project improve population health in an integrated, systematic way that hasn't been done previously. For the primary outcome of long-term interest—heart attacks—and deaths related to heart disease, the HONU team collaborates with the state health department to monitor trends in heart attacks and heart disease related deaths in New Ulm compared to trends at the state level.

In addition to population health outcomes measured through screenings and EHR/EDW data, the project uses telephone surveys,

“Many public health programs today start with policy systems. But when we started, the community wasn't ready for a policy conversation. That's why we did a lot of programs up front to get people engaged and excited about what was going on in the community. Today, engagement and awareness have transitioned nicely to having policy conversations, and we're seeing those policy changes happening in the community.”

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Director of Population Health,  
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pre- and post-surveys for all programs, data from public health, community needs assessments, and environmental assessments to inform strategies and share progress with the community.

### **Harnessing the power of community, social support and media messages**

Gaining the support of a wide range of stakeholders within the community was an essential aspect of the HONU project. The team began developing community leadership and commitment to changing long-entrenched behaviors by engaging representatives from healthcare, county public health, city government, local chamber of commerce, school district, college, employers, churches, civic groups, media, and the general community in developing and embracing program initiatives.

Team members understood that individual behavior is heavily influenced by relationships with others and by societal messages and norms. They were determined not to underestimate the power of social support. They therefore developed a long-term communications strategy and distributed messages where people live, work, learn and play that reinforce how the entire community wins when people work together to support one another. They leveraged community champions and key influencers, engaging them to help spread the word about the HONU project and community successes. The team spread educational lifestyle messages everywhere—to homes via direct mailings, newspaper, and cable television; on the road using radio and billboards; at worksites and healthcare clinics; online on websites, social media, and email; and in the community at restaurants, stores, schools, chambers, and churches.

Importantly, these communications highlight personal success stories of people in the community. Emphasizing how even small steps lead to success, these personal stories serve as an inspiration for others and increase engagement.

### **Making it easier to eat healthier**

While a heart-healthy diet is key to preventing heart disease, a lack of time and the perception that healthier foods and beverages cost more money stand as barriers to eating well. It is often easier to eat out or to eat boxed or prepared foods that have a higher calorie count and higher sodium level than food prepared at home with fresh fruit and vegetables. Having recognized that the average New Ulm resident ate two meals per week at a restaurant, HONU set out to improve the availability, identification, affordability, and promotion of great tasting,

healthful food. Before HONU, few restaurants had healthy food offerings. Following an assessment and incentive program and early successes, 18 restaurants now participate in the program, increasing the availability of healthier choices like increasing fruits, vegetables, whole grain, and the number of smaller portions available, while improving promotion of the healthier choices.

The HONU team also launched a social marketing campaign aimed at helping New Ulm residents make small changes to what they eat and drink. The team's SWAP IT to DROP IT social marketing campaign focused on swapping out higher-calorie foods for food choices with 100 fewer calories each day to help people lose 10 pounds in a year. The campaign included one-hour education tours led by registered dietitians at grocery stores and experiential food-tasting opportunities, along with traditional advertising, such as billboards and newspaper ads. Partnerships and point-of-decision messages, including suggested SWAPs, were made available at grocery and convenience stores, restaurants, and local worksites, making it easier for New Ulm citizens to make healthier, lower-calorie food choices.

### **Making it easier to be physically active**

Because being active has a positive impact on many heart disease risk factors, the HONU team wanted to make it easier for people to be more physically active in the community. The team therefore helped create more opportunities for people to safely walk, bike, and be active in the community. Seventeen community leaders from many sectors engaged in a new Coalition for Active, Safe, and Healthy Streets (CASHS), prioritizing the results on an assessment completed by national planning and transportation experts who had toured the community. As part of this effort, the coalition created three teams to work on the built environment: Safe Routes to School, Revitalize Downtown, and Bike Trail Connects. In addition, outdoor fitness equipment was added to three local parks.

### **Supporting individual behavior change**

At times, people may not know how to change their behaviors to obtain the desired result, or they may feel that it is too difficult and overwhelming for them to do so. Some individuals need guidance and support to be successful in changing entrenched behaviors. From 2010-2014, HONU's HeartBeat Connections phone-coaching program focused on primary prevention of heart disease in New Ulm by helping those at highest risk for heart disease improve their risk factors. Once a month, participants talked via phone for 15-



The Heart of New Ulm project has been diligent in collecting sound data using validated tools. We assessed and collected data for risk factors for workplaces and restaurants just as we collected data about individual risk factors. This approach to data and analysis was established at the start of the program and has resulted in our being able to help not only individuals, but also workplaces and restaurants. We can now identify where they had opportunities for improvement and how they could develop healthier work sites and restaurants.

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20 minutes with a professional health coach who had specialized training in behavior change and medication management. The coaches focused on lifestyle issues in-between the patients' usual clinic visits, documenting progress in the EHR, and providing seamless communication with providers. If appropriate, individuals were also started on a preventive medication (such as aspirin, statin or blood pressure medication) to reduce their risk. This was done following a medical protocol, coordinated and supported by the local medical team.

## SERVING AS AN EXAMPLE TO THE NATION FOR EFFECTIVE POPULATION HEALTH STRATEGIES

HONU has been pioneering a healthcare industry change to bring support for health and well-being out into the community, and help people consider their health every day—not just at their annual check-up. The project's multilevel, data-driven approach to improving population health has resulted in substantial changes in the community of New Ulm.

### Health outcomes

Based on data, people age 40-79 who live or work in New Ulm are making impressive strides. The project's five-year outcomes, as published in 2016 in the American Heart Journal, and as shown in Figure 1 include:

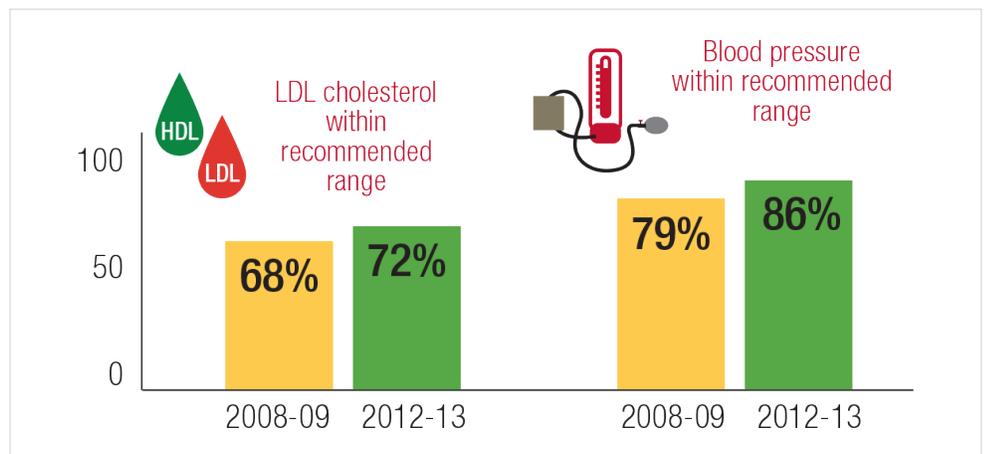


Figure 1: Improved health outcomes among New Ulm residents aged 40-79

- ▶ The percentage of people with blood pressure within the recommended range increased from 79 percent to 86 percent.
- ▶ The percentage of people with LDL cholesterol within the recommended range increased from 68 percent to 72 percent.

These improvements in cholesterol and blood pressure are particularly noteworthy because they represent larger improvements than trends being seen in the rest of the country.<sup>7</sup>

## Behavior changes

Measurable changes in individual healthy behaviors have also been significant. Consider the following achieved by people in New Ulm:

- Among those receiving phone coaching, the number of individuals eating five or more daily servings of fruits and vegetables increased by 200 percent.<sup>8</sup>

Data from three heart health screenings held in the community over a six-year period show that among adults age 40-79 who participated in the screenings<sup>9</sup>:

- The percentage of people getting the recommended 150 minutes a week of physical activity increased from 64 to 72 percent.
- The percentage of people eating the recommended five or more servings of vegetables increased from 16 to 30 percent.
- The number of people who smoke declined from 8 percent to 6 percent.

## Interventions and social support

The project has also taken a look at whether HONU's interventions and efforts to increase social support are making a difference.

- Research data from HONU's heart health screenings shows that residents with uncontrolled blood pressure in 2009 who participated in a Heart of New Ulm educational program of any kind (in the community, at work, through the clinic) were at least two times more likely to have their blood pressure under control by 2011 as those who did not participate in any HONU activities.<sup>10</sup>
- HONU research on an eight-week weight management program showed that people who participated in the program through their worksite achieved more weight loss than people from the community who participated individually, suggesting that social support makes a difference when it comes to making healthful changes.<sup>7</sup>

## Improvements to the built environment and food environment

The New Ulm community has embraced changes to the environment to make walking and bicycling easier and safer. For example, the

City of New Ulm, along with the CASHS group, worked to redesign a street near the school that included elimination of parking on the residential side of the street, addition of bike lanes on each side of the street, a mid-block crosswalk, as well as an island and angled crosswalk. On-street bike lanes have increased from 0 to 1.5 miles, and 165 blocks are currently being marked as shared lanes for bikes.

As one example of improvements to the food environment, the proportion of restaurants offering non-fried vegetables increased from 63 percent in 2011 to 84 percent in 2015. The percentage offering fruit increased from 41 percent to 53 percent, smaller portions 31 percent to 72 percent, and whole grain bread from 25 percent to 38 percent, all in the same four-year time period.<sup>11</sup>

### Cultural changes

Throughout the community—from restaurants and grocery stores to worksites, schools, and homes—people who live or work in New Ulm pride themselves on how their culture has transformed. Just a few examples<sup>12</sup>:

- New Ulm Recreation Center memberships increased from 1,500 to 5,000 since the project started.
- Community Supported Agriculture programs have seen increased interest, and a new food co-op, community garden, and aquaponics business have opened in the community.
- Prior to the project, only two annual walk/run events were held in New Ulm. With the support of the project, there are now eight races each year, planned and implemented solely by the community.
- A restaurant and fitness center cited the health-conscious attitude of the community as factors in their decision to locate their new business ventures in New Ulm.

### WHAT'S NEXT

Eight years into the project, the HONU team still has big plans for improving health and sustaining the positive progress in New Ulm. After all, team members recognize that changing the health behaviors of an entire population takes years, not months. It's about improvement—and the process is a marathon, not a sprint. The team will therefore continue its partnership with the local health department, business owners, and residents of New Ulm to develop and implement multilevel population health strategies to reduce heart disease within New Ulm. It will also continue to work within New Ulm

and other communities to build individual and community capacity to shift values and cultures to support healthy choices and to improve and sustain population health.

Over time, New Ulm and other communities throughout the country can use strong collaboration along with policy, systems, and environmental change to successfully improve the health of their citizens, and use analytics to help measure results and reach those most at risk for disease. To share its successes with communities throughout the nation, team members will continue to disseminate results through presentations and publications. HONU will leverage the EHR and EDW to complete and publish a comparative study of heart disease risk factors in New Ulm (the intervention group), with another community (a comparative group) receiving care within the Allina Health system. 🌀

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