

Assessing the Impact of The Heart of New Ulm Project: A Population-Based Program to Reduce Cardiovascular Disease

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The Heart of New Ulm Project is a collaborative partnership of Allina Health and its New Ulm Medical Center, Minneapolis Heart Institute Foundation and the community of New Ulm, Minn.

BACKGROUND

- ❑ Limited evidence exists on the most effective strategies to reduce the burden of cardiovascular disease (CVD) in various community populations.
- ❑ Hearts Beat Back: The Heart of New Ulm Project (HONU), launched in 2009, is a population-based CVD prevention program in the rural community of New Ulm, MN.

OBJECTIVE

- ❑ This study assessed whether trends from baseline (2008-2009) through 2015 for CVD risk factors, MI/stroke events, or health care utilization differed for a cohort of residents in the New Ulm community compared to matched controls from a comparison community.

METHODS

- ❑ HONU intervention components are delivered through health care, community and workplace settings addressing multiple levels of the social-ecological model. Interventions range from heart-health screenings and phone coaching to address individual-level risk factors to broader efforts around social marketing, the food environment, worksite wellness programming and large-scale community health challenges.
- ❑ HONU interventions serve the entire community, but are focused on reaching those age 40-79 living in the 56073 zip code.
- ❑ The community is served by one health system, enabling the use of electronic health record (EHR) data for surveillance.
- ❑ Extracts of data from the EHR were conducted for baseline and 3 follow-up time periods.
- ❑ Extracts included adults who lived in the New Ulm or comparison community zip codes, were age 40-79 at baseline, had at least 1 clinic visit with a blood pressure measure during baseline, and had not opted out of consent for use of their health record for research.
- ❑ At baseline there were 5,736 New Ulm and 4,366 comparison community residents who met inclusion criteria and 4,077 New Ulm residents matched (1:1) with a comparison community resident.
- ❑ Matching was done using refined covariate balance techniques to match on baseline demographics, CVD risk factors, and health care utilization.
- ❑ Mixed effects longitudinal models with adjustment for age and gender, and an interaction for time by community, were run.
- ❑ Model-based estimates were constructed for the entire cohort at each time period.

RESULTS

Change from baseline for CVD risk factors, medication use, MI/stroke events, and health care utilization among HONU (n = 4,077) and comparison community (n = 4,077) residents							
CVD Risk Factors and Medication	Community	2008-09	2010-11	2012-13	2014-15	Within p-value ^a	Between p-value ^b
BP at Goal (<140/90 mm Hg)	New Ulm	79.2%	2.2	4.3	6.2	<0.001	<0.001
	Comparison	80.1%	0.7	1.3	2.0	<0.001	
BP Medication	New Ulm	44.2%	5.1	10.8	16.4	<0.001	0.854
	Comparison	43.9%	5.2	10.9	16.5	<0.001	
LDL at Goal (< 130 mg/dL)	New Ulm	76.8%	-0.6	-1.3	-1.9	<0.001	<0.001
	Comparison	77.9%	-1.9	-4.0	-6.1	<0.001	
HDL at Goal (40+mg/dL men, 50+mg/dL women)	New Ulm	59.4%	0.5	0.9	1.4	<0.001	0.009
	Comparison	54.4%	1.7	3.4	4.9	<0.001	
Cholesterol at Goal (< 200 mg/dL)	New Ulm	68.0%	-0.4	-0.7	-1.1	<0.001	<0.001
	Comparison	70.4%	-2.6	-5.2	-8.0	<0.001	
Triglycerides at Goal (<150 mg/dL)	New Ulm	65.2%	1.2	3.3	4.9	<0.001	0.009
	Comparison	67.0%	0.5	1.0	1.4	<0.001	
Fasting Glucose at Goal (<100 mg/dL)	New Ulm	54.9%	-4.4	-8.7	-13.0	<0.001	0.490
	Comparison	56.7%	-4.7	-9.5	-14.3	<0.001	
Lipid Medication	New Ulm	29.2%	4.1	8.3	12.5	<0.001	<0.001
	Comparison	30.5%	3.0	6.0	9.1	<0.001	
Aspirin Medication	New Ulm	37.0%	4.9	9.7	14.7	<0.001	0.001
	Comparison	38.3%	4.0	8.0	12.0	<0.001	
Obese (BMI ≥ 30 kg/m ²)	New Ulm	44.2%	1.2	2.5	3.7	<0.001	0.043
	Comparison	43.8%	0.3	0.7	1.0	<0.001	
Smoking	New Ulm	17.5%	-1.7	-3.5	-5.2	<0.001	0.680
	Comparison	17.4%	-1.9	-3.8	-5.7	<0.001	
Low-risk (< 7.5%) ASCVD 10-year score	New Ulm	57.8%	-5.2	-10.6	-16.0	<0.001	0.018
	Comparison	58.6%	-5.9	-12.1	-18.4	<0.001	
CVD Events							
Myocardial Infarction or Stroke	New Ulm	1.2%	0.0	0.1	0.2	<0.001	0.088
	Comparison	1.0%	0.2	0.5	0.8	<0.001	
Health Care Utilization During Each 2-year Time Period							
Number of Clinic Visits	New Ulm	7.6 ± 0.2	0.7	1.5	2.2	<0.001	0.034
	Comparison	8.4 ± 0.2	0.6	1.2	1.8	<0.001	
Inpatient LOS (days)	New Ulm	0.7 ± 0.1	0.04	0.05	0.07	<0.001	0.212
	Comparison	0.9 ± 0.1	0.09	0.01	0.22	<0.001	

Changes are calculated as the difference between percentages or means from each time period.

^a a p-value for test for trend within community over time

^b p-value for test for interaction of change over time by community

- ❑ Over the first 6 years of HONU, changes in CVD risk factors were significantly different between the New Ulm and comparison community cohorts.
- ❑ Blood pressure, LDL, total cholesterol, and triglycerides were managed better in New Ulm than the matched comparison community cohort.
- ❑ Controlled blood pressure increased by 6.2 percentage points in the New Ulm cohort compared to 2 points in the comparison community cohort.
- ❑ 10-year ASCVD risk scores showed less decline for New Ulm residents than controls (16 vs. 18.4).
- ❑ The intervention and control groups did not differ with regard to inpatient stays, CVD events, smoking or glucose.
- ❑ Obesity increased over time in both communities, but increased more in New Ulm than in the comparison community (3.7 vs 1.0).
- ❑ MI/stroke events increased by 0.2 in New Ulm and by 0.8 in the comparison community over 6 years. The difference (0.6) was not significant.

CONCLUSIONS

- ❑ Relative to the comparison community, the intervention community showed better control of several CVD risk factors over six years.
- ❑ The matched cohort design balanced potentially confounding covariates and provides evidence in support of the comprehensive package of HONU interventions for lowering CVD risk, particularly for blood pressure and lipids.
 - Smoking and BMI did not seem to be influenced by HONU interventions.
 - Additionally, changes in MI/stroke rates were not significantly different between groups, but may require longer follow-up time.
- ❑ The considerably larger differential improvement in blood pressure control in New Ulm may have been driven by lifestyle-oriented HONU programming, as the use of blood pressure medications was similar in both communities.
- ❑ HONU may provide a useful framework for other health care-community partnered interventions, as well as a model for evaluating community-level outcomes with the secondary use of available EHR data.