

Community Connections HUB of Northern Michigan

Cost-benefit Analysis Report

For partial fulfillment of
the PCHI Community HUB Certification

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Introduction

The Community Connections HUB of Northern Michigan (CCHUB) is a free program that connects people to valuable community resources to address social determinants of health (SDOH). CCHUB was established as one of the main components of the Northern Michigan Community Health Innovation Region (NMCHIR) during the Michigan Statewide Innovation Model (SIM), funded by CMS and led by the Michigan Department of Health and Human Services (MDHHS). CCHUB, through Community Health Workers, provides Community Connections services, using 20 evidence-based pathways such as connecting to food, housing, transportation, primary care home, physical and mental health services, and provides appropriate Emergency Department use education, to any adult and child with a SDOH need in the 10 counties of the Northern Michigan CHIR.

CCHUB has been granted a provisional certification by the Pathways Community HUB Institute (PCHI) and is working toward becoming a fully certified PCHI Community HUB model. Cost-benefit analysis (CBA) is one of the requirements for the PCHI Community HUB certification.

Michigan Public Health Institute (MPHI) has been contracted by NMCHIR to plan and conduct an initial cost-benefit analysis. With inputs from the CCHUB director, MPHI developed a cost-benefit analysis plan that was accepted by PCHI in December 2021. This report presents the methodology and results of this initial cost-benefit analysis.

Method

This analysis focuses only on a subset of the CCHUB enrolled clients: those who are Medicaid beneficiaries, and their medical costs. The reasons are, 1) about 90% of the CCHUB enrolled clients have Medicaid insurance, 2) all the five Michigan Community Health Innovation Regions (CHIRs) had a data sharing agreement with MDHHS, 3) MDHHS has produced a claims data report on the Medicaid beneficiaries served by the CHIRs that can be utilized in the cost-benefit analysis.

Benefits

As a contractual requirement of SIM, MDHHS conducted a Medicaid claims data analysis reporting on cost and utilizations to demonstrate the CHIRs' ability to lower costs¹. Each CHIR, through the data sharing agreement with MDHHS, securely provided MDHHS with a list of the Medicaid beneficiaries who had received services from the CHIR's community linkage program. The MDHHS analysis reviewed the Medicaid claims data from January 2016 to January 2021 for these Medicaid

¹ Claims data reports by Local Community Health Innovation Regions (CHIRs), June 2021, https://www.michigan.gov/documents/mdhhs/Section_1144_729589_7.pdf

beneficiaries who were on the lists submitted by the CHIRs. The results were reported for each CHIR and each Medicaid health plan in the CHIR.

In evaluating the total medical costs, MDHHS reviewed the claims data for total costs of care for each beneficiary, which included primary care, inpatient, ambulatory care, emergency department, mental health, vision, and dental visits, as well as pharmacy, non-emergency medical transportation, substance use disorder treatment and long-term care. Services delivered under the Program of All-inclusive Care for the Elderly (PACE) were not included.

MDHHS calculated per member per month (PMPM) medical cost, i.e., the total dollar amount of claims paid divided by the total number of member-months, before and after the enrollment in a CHIR community linkage program. Then the estimated total cost saving was calculated by multiplying the PMPM cost change from before enrollment to after enrollment in a CHIR community linkage program, by the total member-months after enrollment.

The total medical cost saving for the Medicaid beneficiaries enrolled in CCHUB was used as the benefit in this cost-benefit analysis.

We believe that the benefits are far beyond the measurable monetary savings in medical cost. The findings of a CCHUB client satisfaction survey, conducted by Child Health Evaluation and Research (CHEAR) Center at University of Michigan, showed that most clients felt that their experience working with Community Connections would have a positive impact in the future, including their future ability to get community services, and their ability to support their own health.

Cost

To estimate the total cost in providing the Community Connections services to the clients on the list that MDHHS used in estimating the total medical cost saving, we estimated:

- 1) the total cost in operating CCHUB, including the CHWs' salary with fringes, coordinator/oversight pay, and all other portions of overhead costs (such as computers, software, transportation reimbursement for CHWs), from January 2017 to December 2020
- 2) the total unique number of clients who received the Community Connections services, from January 2017 to December 2020
- 3) the per client cost: the total cost estimate from 1) divided by the total unique number of clients in 2)

Then, we applied the estimated per client cost obtained in 3) to all the Medicaid clients who were included in the MDHHS claims data report for NMCHIR. The total cost of providing the CCHUB services to the clients in the MDHHS report for NMCHIR was estimated as

Cost of providing CCHUB services to clients in MDHHS report

= Estimated cost per CCHUB client * number of unique clients in MDHHS report

Cost-Benefit Calculation

The Benefit-Cost Ratio (BCR) for CCHUB's overall operation was calculated as

$$BCR = \frac{\textit{Total Saving in Medical Cost for the Clients}}{\textit{Cost of Providing CC Services to MDHHS Clients}}$$

In general, BCR needs to be above one in order for the program to be worth operating. The higher the ratio, the greater the benefit in relation to costs of the program. The BCR in this analysis can be interpreted as the dollar amount in clients medical cost averted for every dollar invested in the Community Connections program.

Results

Medical cost-saving reported by MDHHS

The MDHHS claims data report included 3,745 unique CCHUB clients, covered by ten Medicaid health plans, with over 95% of the clients covered by three health plans: McLaren Health Plan, Meridian Health Plan, and Molina Healthcare. All the three payers demonstrated a decrease in per member per month (PMPM) costs after clients enrolled in CCHUB. Table 1 presents the PMPM cost calculations broken down by Medicaid health plan.

During January 1, 2016 - January 1, 2021, the 3,745 clients had a total of 63,330 and 90,814 Medicaid eligible member-months before and after their enrollment in CCHUB, respectively. The PMPM medical cost was \$491.82 before and \$459.38 after enrollment in CCHUB. The after-enrollment PMPM cost was reduced by \$32.44. Multiplying this by the total after-enrollment member-months, the estimated saving in medical cost after enrollment in CCHUB was \$2,945,885.06.

Table 1. Northern Michigan CHIR Total Cost Prior to and Post Enrollment in Community Connections

Health Plan	Member-months Prior	Member-month Post	Claim Counts Prior	Claim Counts Post	Amount Paid Prior	Amount Paid Post	PMPM Prior	PMPM Post	PMPM Change
Aetna	36	8	119	45	\$18,093	\$2,194	\$502.59	\$274.27	-\$228.33
Blue Cross Complete	244	85	696	340	\$34,011	\$46,249	\$139.39	\$544.11	\$404.72
Health Alliance Plan		9		3		\$137		\$15.20	
McLaren Health Plan	25,931	41,471	93,022	147,440	\$9,044,346	\$14,260,937	\$348.79	\$343.88	-\$4.91
Meridian Health Plan	28,611	37,311	110,873	119,355	\$9,927,790	\$10,644,929	\$346.99	\$285.30	-\$61.69
Molina Healthcare	6,652	7,667	24,234	22,619	\$2,083,084	\$2,269,366	\$313.15	\$295.99	-\$17.16
Priority Health	251	243	1,162	937	\$109,591	\$73,867	\$436.62	\$303.98	-\$132.64
Total Health Care	30	25	49	62	\$2,567	\$21,987	\$85.58	\$879.50	\$793.91
United Healthcare	1,324	3,611	3,754	8,432	\$447,301	\$786,661	\$337.84	\$217.85	-\$119.99
Upper Peninsula Health Plan	251	384	657	1,490	\$61,376	\$123,131	\$244.53	\$320.65	\$76.13
Other Payer ID			16,530	23,204	\$563,569	\$713,018			
Fee for Service			96,186	110,342	\$8,855,448	\$12,776,088			
Total	63,330	90,814	347,282	434,269	\$31,147,177	\$41,718,566	\$491.82	\$459.38	-\$32.44
Estimated Savings								\$2,945, 885.06	

Cost of providing CCHUB services

The cost of providing the CCHUB services were provided by each of the three hubs providing the CCHUB services (Table 2). In total, the CCHUB program provided services to 3,793 clients from January 2017 to December 2020, costed \$2,461,564.05. The per client cost was \$648.98.

Table 2. Per CCHUB client cost estimate based on Jan 2017-Dec 2020 data

Health Department (Hubs)	Cost of CCHUB Program	Unique Clients Served	Cost Per Client
Health Department of Northwest Michigan	\$797,460.16	1,351	\$590.27
Benzie-Leelanau District Health Department	\$850,894.12	1,384	\$614.81
District Health Department #10	\$813,209.77	1,058	\$768.63
Total	\$2,461,564.05	3,793	\$648.98

Using the per client cost, we estimated that the total cost of providing the CCHUB services to all the clients who were included in the MDHHS claims data report was,

$$\begin{aligned} &\text{Cost of providing CCHUB services to clients in MDHHS report} \\ &= \$648.98 * 3,745 = \$2,430,413.23 \end{aligned}$$

Benefit-Cost Ratio (BCR)

The benefit-cost ratio in this analysis is

$$\begin{aligned} BCR &= \frac{\text{Total Saving in Medical Cost for the Clients}}{\text{Cost of Providing CC Services to MDHHS Clients}} \\ &= \frac{\$2,945,885.06}{\$2,430,413.23} \\ &= 1.21 \end{aligned}$$

Conclusion

The benefit-cost ratio greater than 1 (BCR = 1.21) demonstrated that the *partial* benefit alone, measured in savings in Medicaid clients' medical cost, outweighed the cost of providing the CCHUB services to these clients, and we expected \$1.21 in averted medical cost for each dollar of the service costs in providing the CCHUB services to the Medicaid clients.

The result provided evidence that the CCHUB program was saving Medicaid money in their Medicaid clients' medical costs, and even stronger evidence that CCHUB was a cost-saving program when including other health outcomes and social benefits in the calculations.

Limitations

This initial cost-benefit analysis focused on the Medicaid clients and only included partial benefit that could be easily measured in monetary terms. Other non-monetary and/or long-term benefits to the clients are no less or perhaps more important, including but not limited to, health outcomes, housing and food security, confidence and happiness, potential earnings, educational attainment, equity gains, etc. For future cost-benefit analysis of CCHUB, we plan to measure some of these benefits in monetary terms and include them in the benefit calculations.

CBA for improving quality, efficiency, and funding

Conducting the cost-benefit analysis has helped CCHUB to improve its operation by

- standardizing the process to track the operating cost, including direct costs (such as CHWs and coordinators/administrators' salaries and benefits) and indirect costs (such as tablets/computers/phones, software, internet, transportation reimbursements, office costs)
- developing more efficient data management system to track the referrals to, enrollments and pathways in CCHUB

CCHUB plans to communicate the positive CBA result to the Medicaid Health Plans (MHPs) and MDHHS to seek new or strengthen the existing collaborations. The CBA result could be leveraged to gain the MHPs and MDHHS' commitment to

- help CCHUB to better target beneficiaries who would benefit most from the CCHUB services
- provide CCHUB with demographic data so that CCHUB could bring racial /ethnic equity to their services, and also help MHPs to reach their racial/ethnic equity goals monitored by MDHHS
- share cost-savings with CCHUB, and/or reimburse for the CHW services.