

5-11-2017

Demonstrating Return on Investment for Community Health Worker Services: Translating Science into Practice

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Recommended Citation

London, Katharine; Love, Kelly; and Tikkanen, Roosa, "Demonstrating Return on Investment for Community Health Worker Services: Translating Science into Practice" (2017). *Commonwealth Medicine Publications*. 34.

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Demonstrating Return on Investment for Community Health Worker Services

Translating Science into Practice

May 11, 2017

The 8th Annual Community Health Worker/Patient Navigator Conference

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Opportunity

- Research shows CHWs can improve health outcomes and contain costs
- New payment methods make it easier to fund CHW services
 - Pay-for-Performance
 - Bundled Payments
 - Global Payments
- Providers and payers have flexibility to invest in new approaches if they are confident they will achieve:
 - Improved health outcomes
 - Positive ROI
- MassHealth Investment – time-limited!

Potential benefits to a variety of stakeholders

Individuals	Providers
<ul style="list-style-type: none">➤ Better experience➤ Better quality of life➤ Lower out-of-pocket costs➤ Fewer missed work days	<ul style="list-style-type: none">➤ Improved patient communication➤ Better patient outcomes➤ Meet quality targets
Society	Payers
<ul style="list-style-type: none">➤ Lower health care costs➤ Increased work productivity and school attendance➤ CHW jobs created	<ul style="list-style-type: none">➤ Improved quality scores➤ Positive ROI

Project goals

- Demonstrate the business case for CHW services
- Provide the detailed budget, financial and clinical analysis needed to justify funding
- Provide tools that users can adjust to meet their own specific needs
- Promote widespread adoption of CHW services

Overview of Analysis

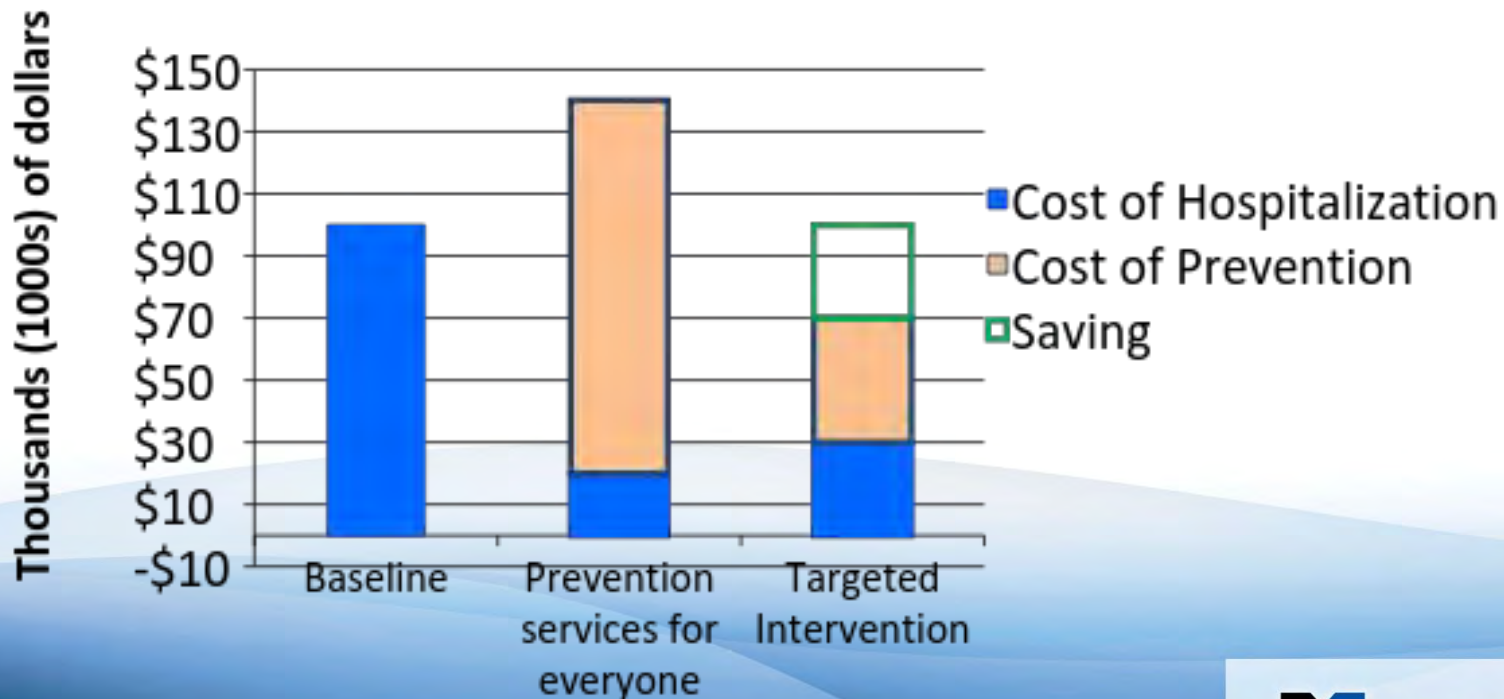
- Identified Maine communities with unmet health needs
- Identified cost-effective CHW interventions in other states from published literature
- Applied results from other states to project outcomes in Maine
- Developed models for evidence-based, cost-effective CHW interventions for Maine

Key Terms

- **Financial Return on Investment (ROI):** For every \$1 invested in the intervention, how much is returned
 - Calculated as: $\frac{\text{Savings}}{\text{Program cost}}$
 - Positive ROI: For \$1 invested, return is greater than \$1
 - Negative ROI: For \$1 invested, return is less than \$1
- **Social return:** Benefit to society: Healthy days and wages recovered
- **Target population:** People we most want to reach

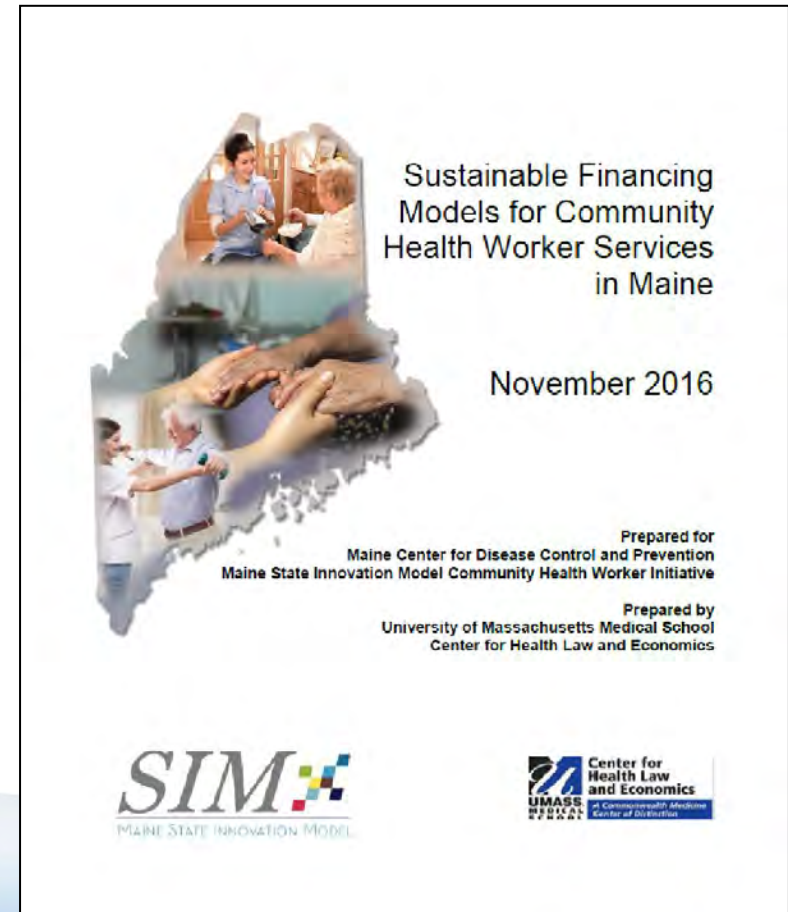
Target population is key to ROI

- To produce a positive ROI, intervention must target people who otherwise would use more services or more expensive services - **a hypothetical example:**



Developed 4 Models for Maine

1. Diabetes, Washington County
2. Asthma, children in Kennebec County
3. High utilizers, Aroostook County
4. Underserved individuals, Lewiston



Proposed Model 1: Diabetes in Washington County



Target population: 82 individuals with poorly controlled diabetes, all ages

CHW employer: Federally qualified health center (FQHC)

Model: University of Texas Community Outreach, Laredo, TX, that included home visits, counseling, group education, exercise classes

Program cost of CHW Intervention: \$390,000 over 3 years

Projected outcomes (at Year 1):

- 60 percent will achieve good glycemic control
- Savings in direct medical costs: \$520,000 over 3 years
- Financial ROI: \$1.37 for every \$1 invested over 3 years
- Social return: 11 recovered work days/worker, valued at \$1,500/worker/year

Proposed Model 2: Asthma, children in Kennebec County



Target population: 112 children with poorly controlled asthma

CHW employer: Private group practice eligible for bonus payments for meeting asthma improvement targets

Model: Seattle-King County Healthy Homes, WA, 4-month intervention incl. home visits, environmental assessment, asthma supplies

Program cost of CHW Intervention: \$220,000 over 3 years

Projected outcomes (at Year 1):

- 46% achieve well-controlled asthma, 53% reduction in hospitalizations
- Savings in direct medical costs: \$47,000 over 3 years
- Financial ROI: \$1.03 for every \$1 invested over 3 years
- Social return: 3 school days & 1 workday/family/year, valued at \$170/family

Note: ROI only positive if practice earns bonus payments for meeting quality targets. However, Seattle-King County's recent model produced positive ROI

Proposed Model 3: High utilizers, Aroostook County



Target population: 150 individuals with chronic conditions and high medical spending

CHW employer: 3 rural health centers

Model: Molina Healthcare/CARE NM, NM, 1-6 month intervention to connect patients to primary care providers and reduce ED visits

Program cost of CHW Intervention: \$550,000 over 3 years

Projected outcomes (at Year 1):

- 83% reduction in hospitalizations; 23% increase in diabetes eye exams
- Savings in direct medical costs: \$1,275,000 over 3 years
- Financial ROI: \$2.31 for every \$1 invested over 3 years
- Social return: 11 work days recovered/person/year, valued at \$2,000/worker

Proposed Model 4: Underserved individuals, Lewiston area



Target population: 260 “New Mainers” in the Somali community with language and cultural barriers to accessing health care

CHW employer: CBO working with several health care providers

Model: Cancer screening (cervical, MN; breast, MA; colorectal, TX) to Somali populations, patient navigator (TX), and community outreach (CO) interventions

Program cost of CHW Intervention: \$178,000 over 3 years

Projected outcomes (at Year 1):

- Increases in: Mammograms (3x); colonoscopies (2x); primary care (+86%); 46% reduction in ED visits
- Savings in direct medical costs: \$274,000 over 3 years
- Financial ROI: \$1.54 for every \$1 invested over 3 years
- Social return: Not modeled (insufficient data)

Model Development: Methods

Identified interventions from published literature that improve health and lower costs

- **Similar population** with similar needs: condition, insurance status, disease control, age group, ethnicity
- **Similar settings**: FQHC, CBO, hospital
- **Published recently**
- **Strong scientific evidence**
 - Statistically significant effect
 - Ideally: Outcomes vs. individuals who did not receive intervention
 - Reported effects on health care outcomes and cost (or utilization)

Disclaimer

- We made assumptions based on the best available evidence, however there is a risk of introducing error when combining results from different studies
- If these models are implemented, actual results may differ from projections
- There are many other sustainable models. The models presented here are merely examples

Model Development: Diabetes, Washington County

Source of Model

University of Texas developed this Community Outreach model with Mercy Clinic in Laredo, Texas.

Target population:

- Individuals with **poorly controlled** Type 2 Diabetes
- Primarily low-income adults, many in rural areas

Intervention:

- CHW home visits
- Classes co-taught by CHW and nurse, dietician or Zumba instructor
 - Diabetes self-management
 - Health education
 - Diet
 - Exercise

Reference: Brown HS et al., *Prev Chronic Dis* 2012.

Model Development: Choice of model

Source of Model

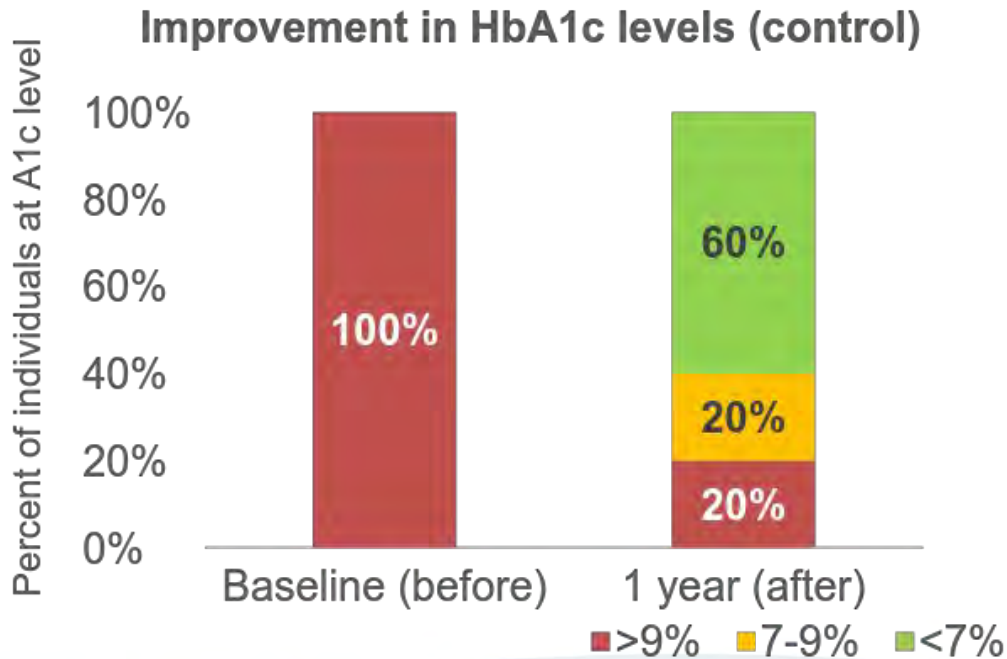
Why did we choose the 'University of Texas' model?

- Dual Intervention focus: Individual goal-setting (home visits, counseling) + group classes
 - Social setting (classes) reinforces individual goals
 - Individual attention reinforces learnings in class
- Estimated the percent (%) of individuals reaching HbA1c levels
 - Allowed us to estimate medical cost savings
 - Based on per-person costs at different HbA1c levels

Reference: Brown HS et al., *Prev Chronic Dis* 2012.

Model Development: Choice of model

Why did we choose the 'University of Texas' model?



Direct medical costs attributable to diabetes / person / year (CT)

<7% Good: \$10,805

7-9% Moderate: \$11,346 (+16%)

>9% Poor: \$13,507 (+20%)

HbA1c control level

(National Committee for Quality Assurance, NCQA)

CT costs estimated based on Oglesby AK et al., *Cost Effectiveness and Resource Allocation* 2006, and Juarez, D, et al., *Am J Pharm Benefits* 2013

Reference: Brown HS et al., *Prev Chronic Dis* 2012.

Model Development: Methods

- Identify target population
- Estimate Caseload: Patients / CHW
- Develop budget: Program costs
- Project health outcomes
- Project savings
- Calculate Financial ROI: Savings / Program costs
- Project social return: Healthy days gained

Model Development - Example

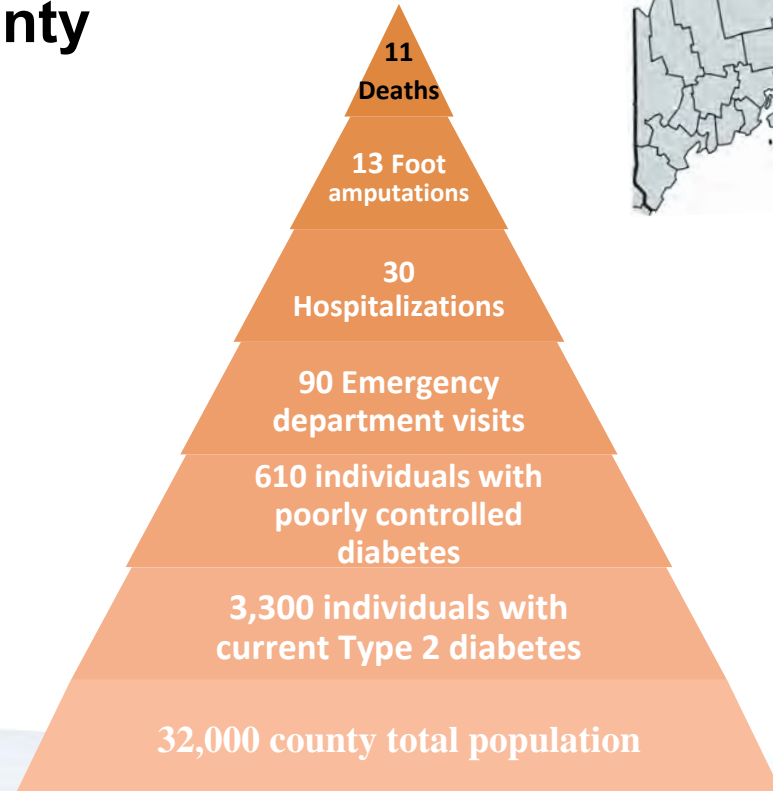
Identified public health need in community Diabetes in Washington County



Washington has a:

- Higher rate of diabetes (prevalence)
- Higher rate of ED visits related to diabetes
- Higher rate of hospitalizations from diabetes long-term complications
- Higher rate of deaths related to diabetes

Compared to state-wide.



Model Development: Diabetes, Washington County

Caseload

Population	Estimate
Billable hours per year (minus admin, holidays, but incl. travel time)	1,696
CHW hours per total participant (persisting and drop-outs)	35
Participants per CHW (persisting and drop-outs)	48
Total participants (2 CHWs)	96
Persisting participants (2 CHWs)	82
Caseload / CHW / 1 Year (persisting participants)	41

Budget based on actual costs in Maine

Interviewed CHWs & Employers:

- Maine Migrant Health Program (FQHC)
- Maine General (Hospital)
- Portland Public Health (municipality)
- Maine Access for Immigrant Network (CBO)
- New Mainers Public Health Initiative (CBO)
- DFD Russell (FQHC)
- Spectrum Generation (CBO - Area Agency on Aging)

Budget parameters	Median
Hours worked by full time CHWs (per week)	36.75
CHW benefits (% of income)	28%
CHW salary (hourly)	\$19.00
CHW supervisor salary (hourly)	\$24.50
CHW supervisor % time spent supervising	10%

Model Development: Diabetes, Washington County

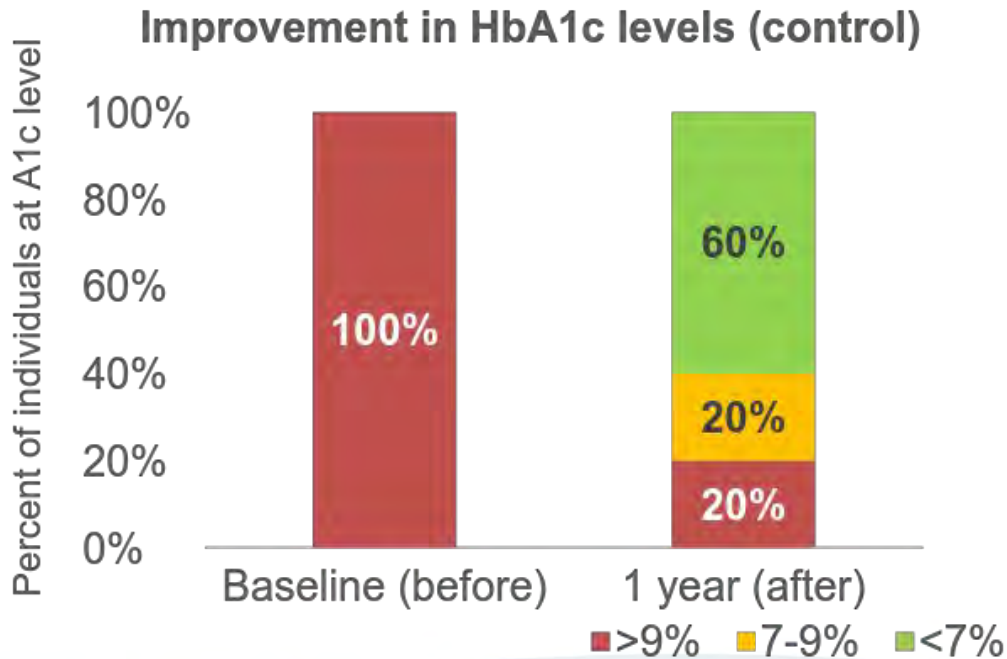
Budget for 1-year intervention

Budget for 1-year intervention (82 individuals retained, 2 FTE CHWs)	Estimate
CHW Costs:	
CHW Salary (2 FTEs @ ME median)	\$77,800
CHW Fringe (28% for 2 FTEs)	\$21,800
Travel, supplies, training	\$4,200
Total cost for 2 CHWs for 1 year	\$107,300
Supervision costs (ME median + fringe)	\$13,000
Nurse/dietitian educator costs	\$6,000
Total Cost – Year 1	\$126,300
TOTAL COST - YEARS 1–3	\$385,600

See Report Chapter 6 and Technical Appendix for further details on methods and model development.

Model Development: Choice of model

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Reference: Brown HS et al., *Prev Chronic Dis* 2012.

Model Development: Diabetes, Washington County

Projected savings

Projected savings in medical costs for 82 enrollees over 1 year:

Assuming all participants have poor control at baseline (HbA1c >9%),* 60% achieve good control (<7%), 20% remain with poor control.**

Cost savings	Baseline	Year 1	Cost vs. Baseline
Medical cost without CHW intervention (Assuming no change in HbA1c)	\$1,079,000	\$1,108,000	+ \$29,000
Medical cost with CHW intervention	\$1,079,000	\$939,000	- \$140,000
Total savings			- \$168,000

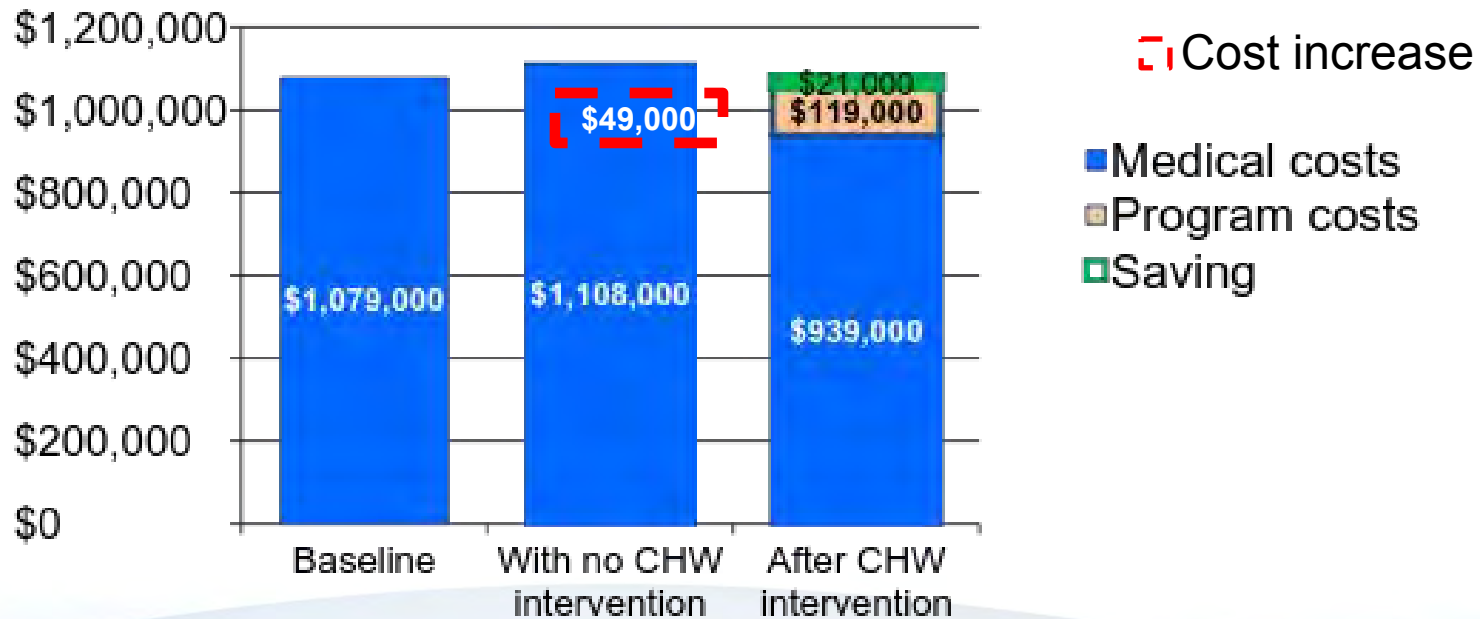
Group costs are rounded to the nearest thousand; costs have been adjusted for medical inflation using Medicare Economic Indices published by CMS.

* Poor control (HbA1c > 9%), definition by the National Committee for Quality Assurance (NCQA).

** Based on results from model study (Brown HS et al., *Prev Chronic Dis* 2012).

Model Development: Diabetes, Washington County

Projected Return on Investment (Year 1)



Year 1

Model Development: Diabetes, Washington County

Projected Return on Investment (ROI): Calculation

ROI = Savings from direct medical costs
divided by program costs of CHW
intervention

$$\frac{\textit{savings}}{\textit{program costs}} = \frac{\$520,000}{\$379,000} = 1.37$$

Model Development: Diabetes, Washington County

Projected Return on Investment (ROI)

Expected ROI of CHW Intervention over 3 years

Return on Investment	Year 1	Year 2	Year 3	Total Years 1-3
Savings from direct medical costs	\$168,000	\$173,000	\$178,000	\$520,000
Expected costs of CHW intervention	(\$119,000)	(\$128,000)	(\$131,000)	(\$379,000)
Projected financial ROI	\$1.41	\$1.35	\$1.36	\$1.37

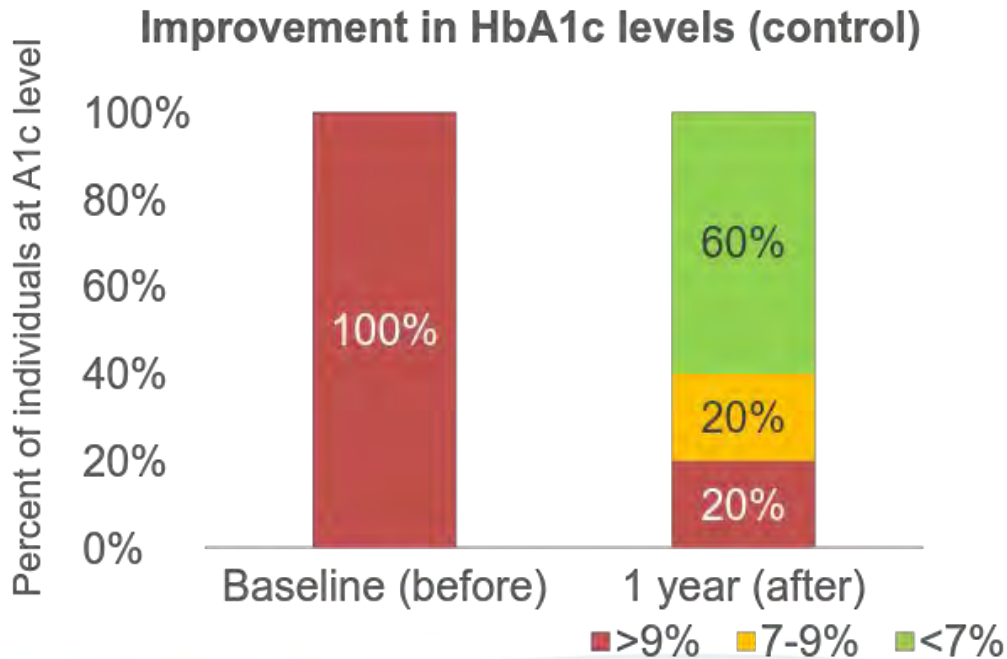
Costs are rounded to the nearest thousand. Costs in years 2 and 3 increase relative to year 1 because they have been adjusted for inflation.

For \$1 invested, CHW intervention is expected to return \$1.37

(does not include Social Return)

Model Development: Diabetes, Washington County

Social Return



Days absent from work, per person per year:

<7%: 6.9 days

7-9%: 10.0 days

>9%: 21.7 days

HbA1c control level

Reference: Brown HS et al., *Prev Chronic Dis* 2012.

Estimated from: Tunceli K, et al., *Diabetes Care* 2007.

Model Development: Diabetes, Washington County

Projected social return

Based on number of days lost from work by patient A1c control level,* valued at average wages in Washington County (BLS data).

	Baseline (per person)	Year 1 (per person)	Saving vs. Baseline
Estimated number of working adults	48	48	
Recovered work days: No CHW intervention (Assuming no change in HbA1c)	\$2,900	\$3,000	- \$100
Recovered work days: With CHW intervention	\$2,900	\$1,400	+ \$1,500
Total recovered value of workdays			+ \$1,500

Costs and days have been rounded; costs have been adjusted for inflation.

* Based on glycemic control results (HbA1c) obtained in model CHW study (Brown HS et al., *Prev Chronic Dis* 2012) and average work days lost at each level of glycemic control (Tunceli K et al., *Diabetes Care*, 2007).

Potential benefits to a variety of stakeholders

Individuals	Providers
<ul style="list-style-type: none">➤ Better experience➤ Better quality of life➤ Lower out-of-pocket costs➤ Fewer missed work days	<ul style="list-style-type: none">➤ Improved patient communication➤ Better patient outcomes➤ Meet quality targets
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Full report available at:

Full URL:

<https://commed.umassmed.edu/our-work/2016/11/01/sustainable-financing-models-community-health-worker-services-maine>

Tiny URL: bit.ly/2o0yC5W

Discussion & Feedback