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

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Et al.

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!

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Potential benefits to a variety of stakeholders

Individuals	**Providers**
➢ Better experience	➢ Improved patient communication
➢ Better quality of life	➢ Better patient outcomes
➢ Lower out-of-pocket costs	➢ Meet quality targets
➢ Fewer missed work days	
Society	**Payers**
➢ Lower health care costs	➢ Improved quality scores
➢ Increased work productivity and school attendance	➢ Positive ROI
➢ CHW jobs created	

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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

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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

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Key Terms

- **Financial Return on Investment (ROI):** For every $1 invested in the intervention, how much is returned

  - Calculated as: $\dfrac{\text{Savings}}{\text{Program cost}}$

  - 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

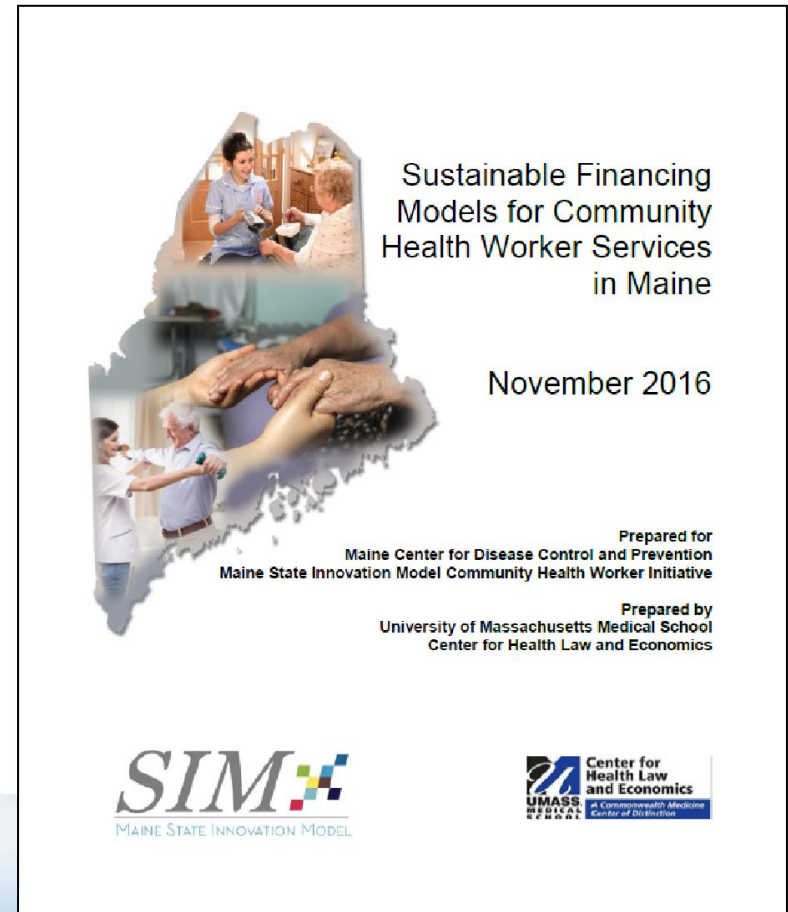University of Massachusetts Medical School
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Target population is key to ROI

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

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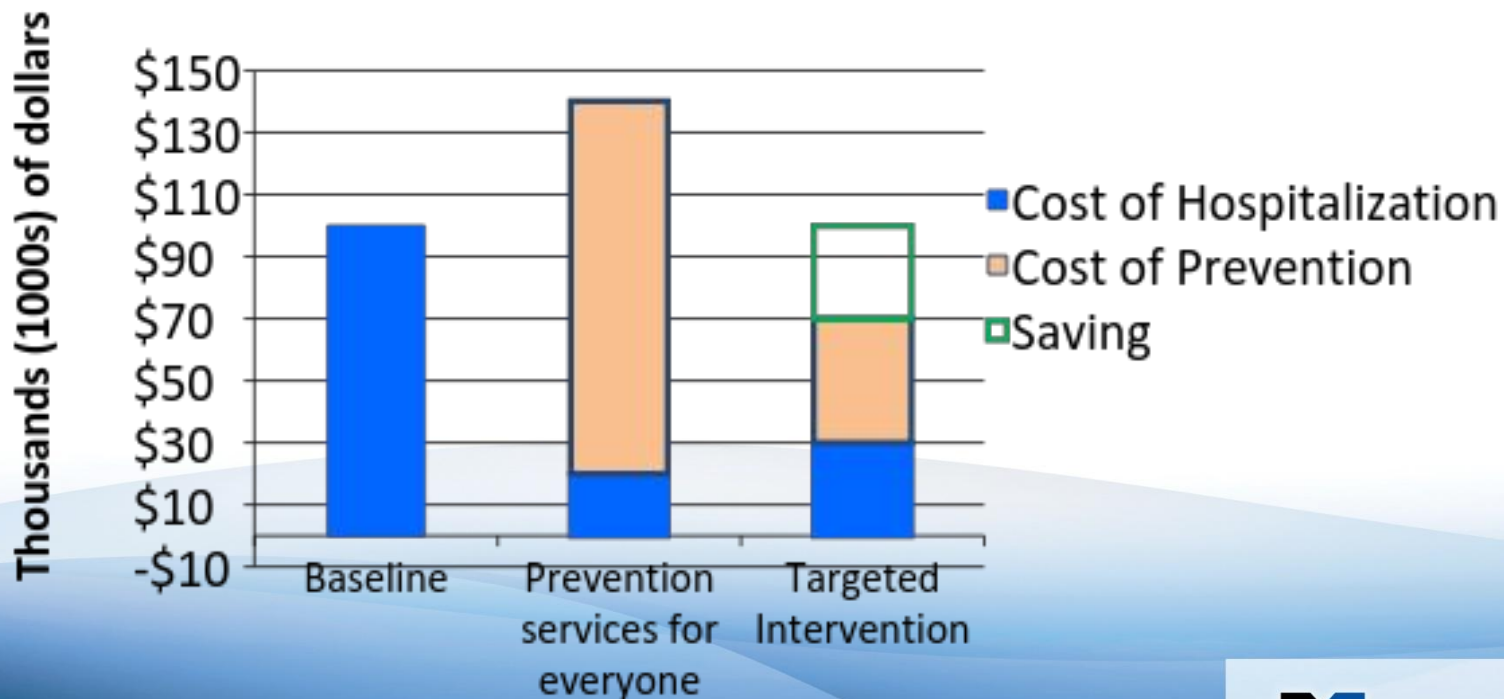
Developed 4 Models for Maine

1. Diabetes, Washington County

2. Asthma, children in Kennebec County

3. High utilizers, Aroostook County

4. Underserved individuals, Lewiston

Sustainable Financing Models for Community Health Worker Services in Maine

November 2016

Prepared for
Maine Center for Disease Control and Prevention
Maine State Innovation Model Community Health Worker Initiative

Prepared by
University of Massachusetts Medical School
Center for Health Law and Economics

SIM
MAINE STATE INNOVATION MODEL

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Proposed Model 1:
Diabetes in Washington County
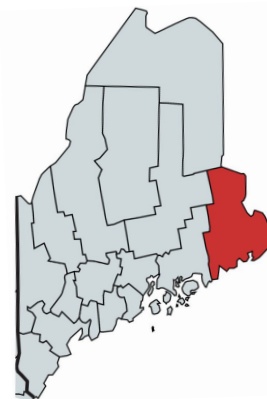
Target population: 82 individuals with poorly controlled diabetes, all ages

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

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Proposed Model 2:
Asthma, children in Kennebec County
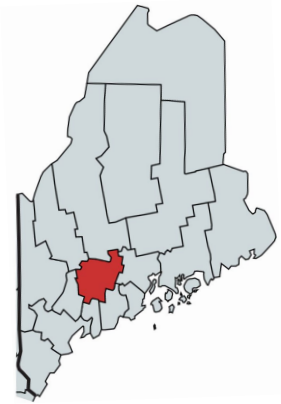
Target population: 112 children with poorly controlled asthma

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

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Proposed Model 3:
High utilizers, Aroostook County
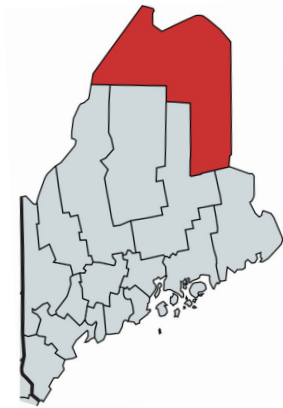
Target population: 150 individuals with chronic conditions and high medical spending

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

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Proposed Model 4:
Underserved individuals, Lewiston area
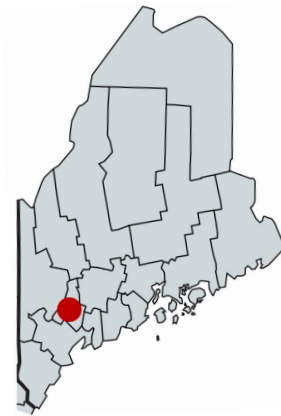
Target population: 260 "New Mainers" in the Somali community with language and cultural barriers to accessing health care

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)

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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)

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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

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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.

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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.

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Model Development: Choice of model

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

Improvement in HbA1c levels (control)

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.

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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

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Model Development - Example

Identified public health need in community Diabetes in Washington County
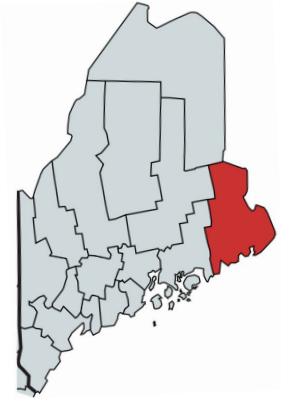
Washington has a:

- 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.

Pyramid (top to bottom):
- 11 Deaths
- 13 Foot amputations
- 30 Hospitalizations
- 90 Emergency department visits
- 610 individuals with poorly controlled diabetes
- 3,300 individuals with current Type 2 diabetes
- 32,000 county total population

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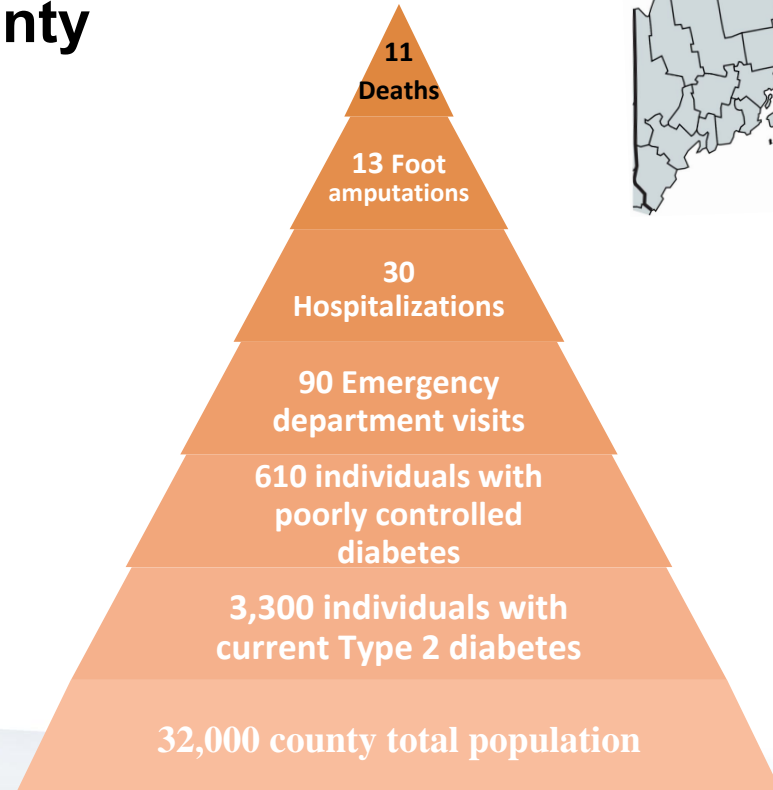
Model Development: Diabetes, Washington County

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

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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%

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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.

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Model Development: Choice of model

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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.

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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)

Model Development: Diabetes, Washington County

Projected Return on Investment (ROI): Calculation

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

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

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Model Development: Diabetes, Washington County

Projected Return on Investment (ROI)

Expected ROI of CHW Intervention over 3 years

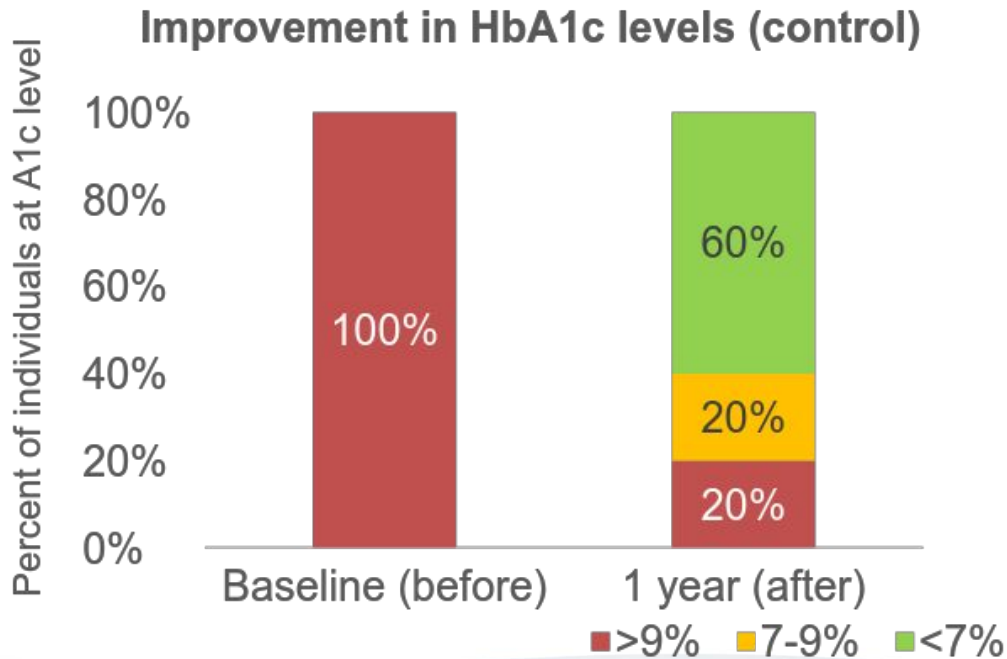| Return on Investment	Year 1	Year 2	Year 3	Total Years 1-3
Savings from direct medical costs	$168,000	$173,000	$178,000	$520,000
Expected costs of CHW intervention	($119,000)	($128,000)	($131,000)	($379,000)
Projected financial ROI	**$1.41**	**$1.35**	**$1.36**	**$1.37**

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)

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Model Development: Diabetes, Washington County

Social Return

Improvement in HbA1c levels (control)

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.

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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**
➢ Better experience	➢ Improved patient communication
➢ Better quality of life	➢ Better patient outcomes
➢ Lower out-of-pocket costs	➢ Meet quality targets
➢ Fewer missed work days	
Society	**Payers**
➢ Lower health care costs	➢ Improved quality scores
➢ Increased work productivity and school attendance	➢ Positive ROI
➢ CHW jobs created	

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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

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