

# **Demonstrating Return on Investment for Community Health Worker Services**

## *Translating Science into Practice*

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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

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

# 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

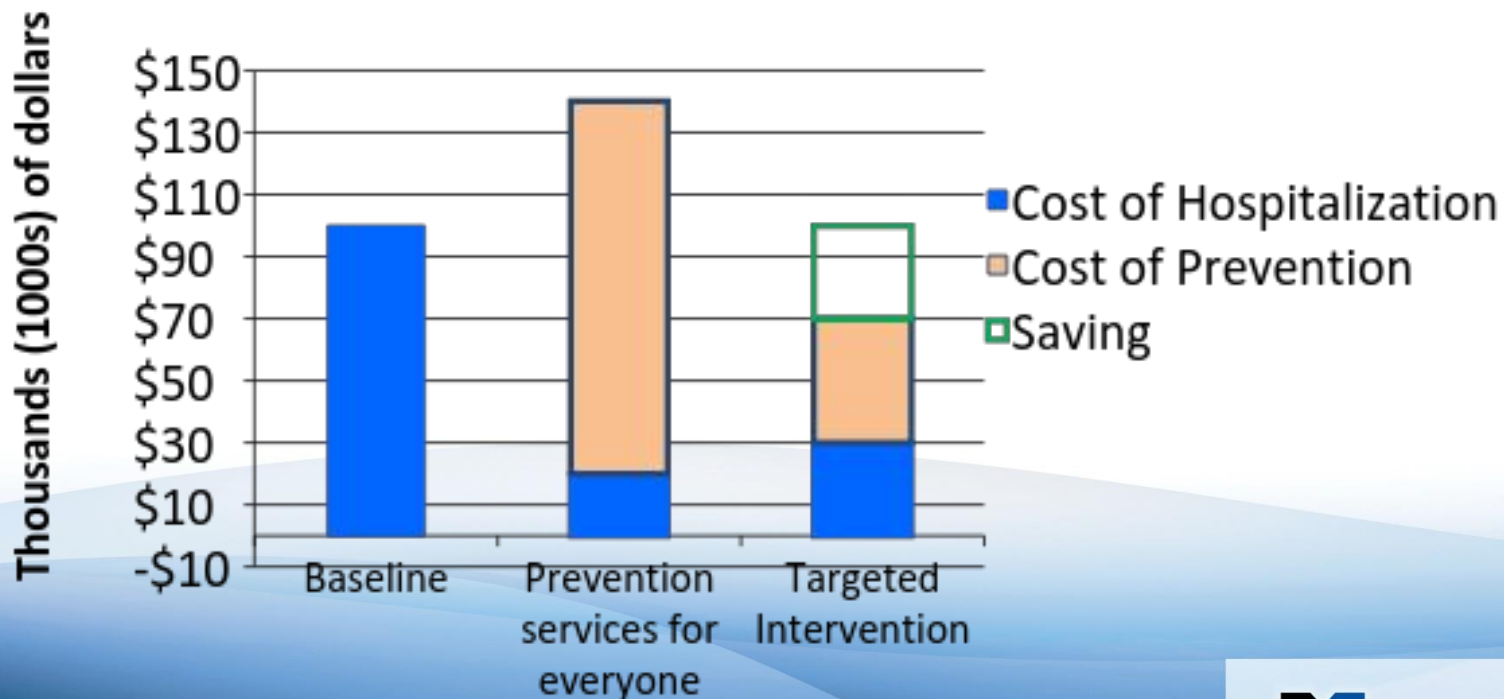
- Identified Maine communities with unmet health needs
- Identified cost-effective CHW interventions in other states from published literature
- Applied results from other states to project outcomes in Maine
- Developed models for evidence-based, cost-effective CHW interventions for Maine

# 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

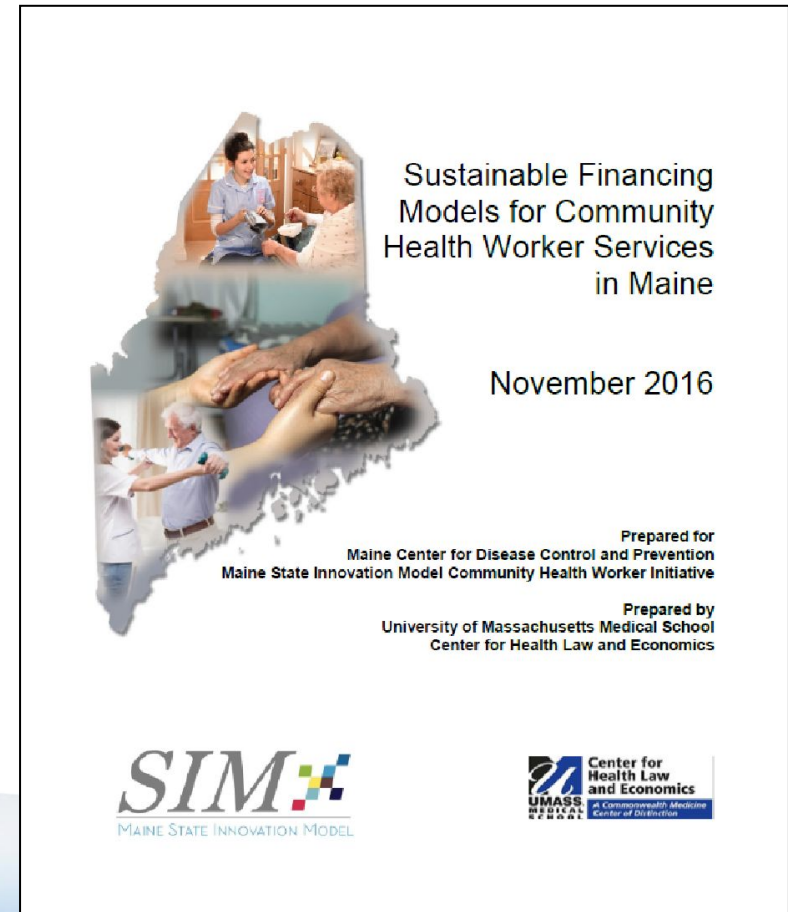
# Target population is key to ROI

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



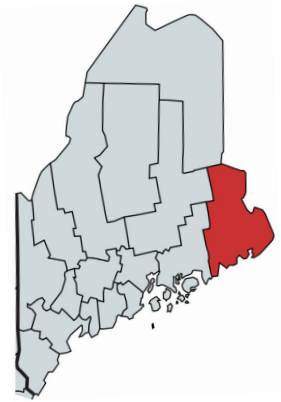
# Developed 4 Models for Maine

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)

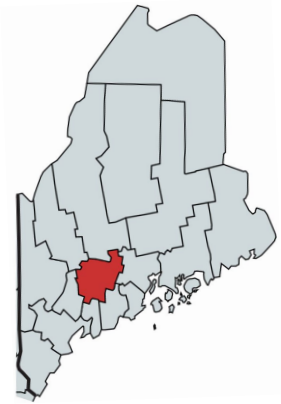
**Model:** University of Texas Community Outreach, Laredo, TX, that included home visits, counseling, group education, exercise classes

**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

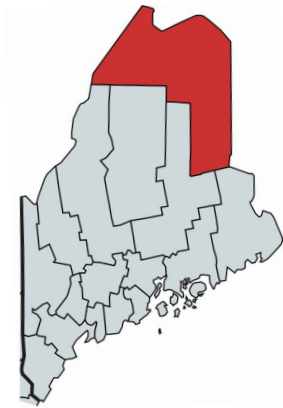
**Program cost of CHW Intervention:** \$220,000 over 3 years

## **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

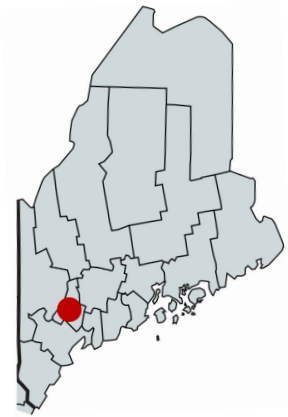
**Model:** Molina Healthcare/CARE NM, NM, 1-6 month intervention to connect patients to primary care providers and reduce ED visits

**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?

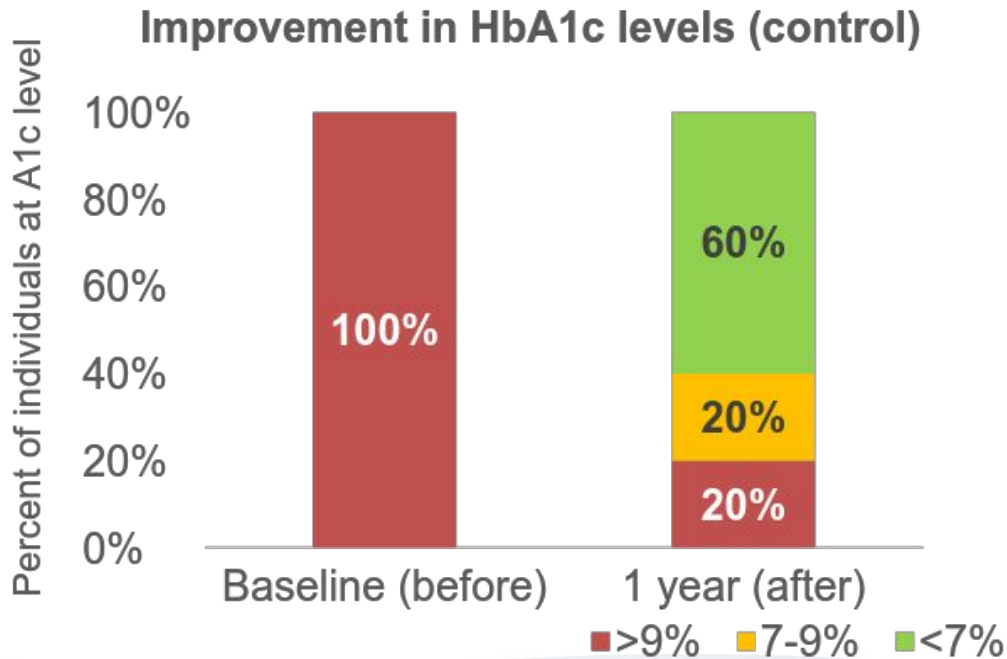
- Dual Intervention focus: Individual goal-setting (home visits, counseling) + group classes
  - Social setting (classes) reinforces individual goals
  - Individual attention reinforces learnings in class
- Estimated the percent (%) of individuals reaching HbA1c levels
  - Allowed us to estimate medical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

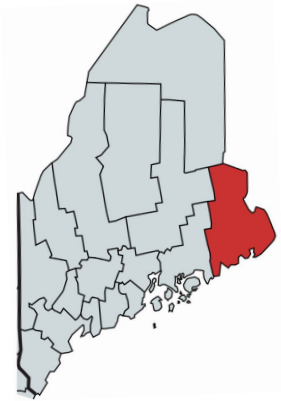
Reference: Brown HS et al., *Prev Chronic Dis* 2012.

# 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

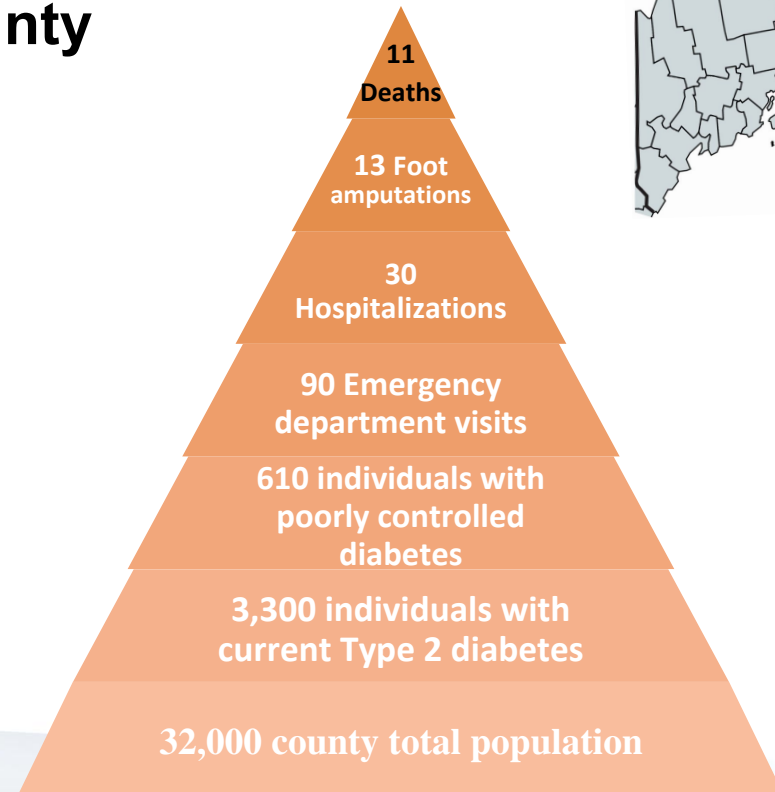
## Identified public health need in community Diabetes in Washington County



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
<b>Billable hours per year</b> (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
<b>Total participants (2 CHWs)</b>	96
<b>Persisting participants (2 CHWs)</b>	<b>82</b>
<b>Caseload / CHW / 1 Year</b> (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

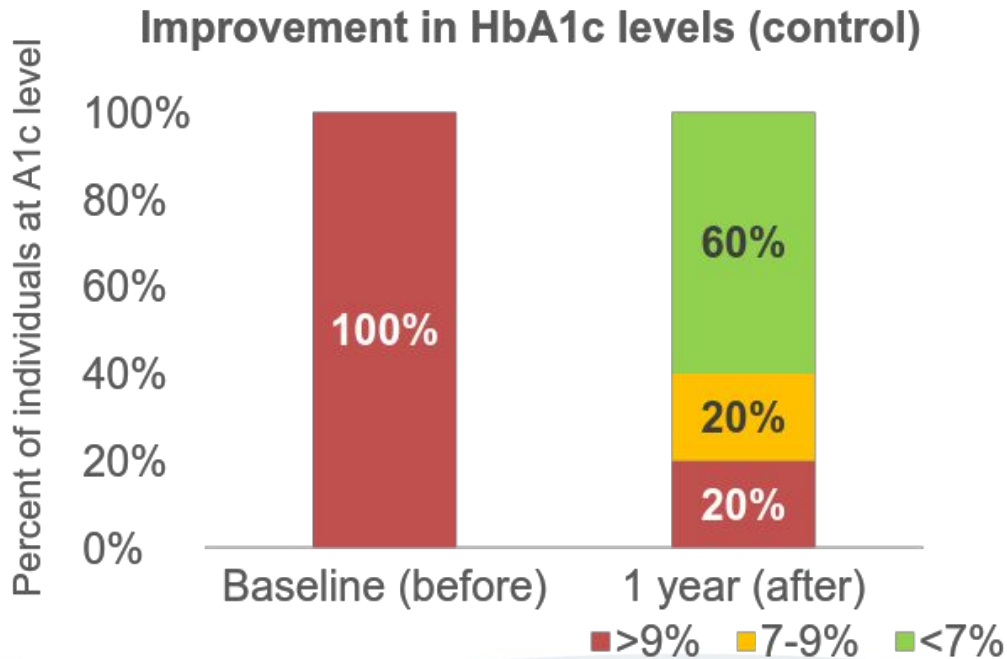
## Budget for 1-year intervention

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

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
<b>Total savings</b>			<b>- \$168,000</b>

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)
<b>Projected financial ROI</b>	<b>\$1.41</b>	<b>\$1.35</b>	<b>\$1.36</b>	<b>\$1.37</b>

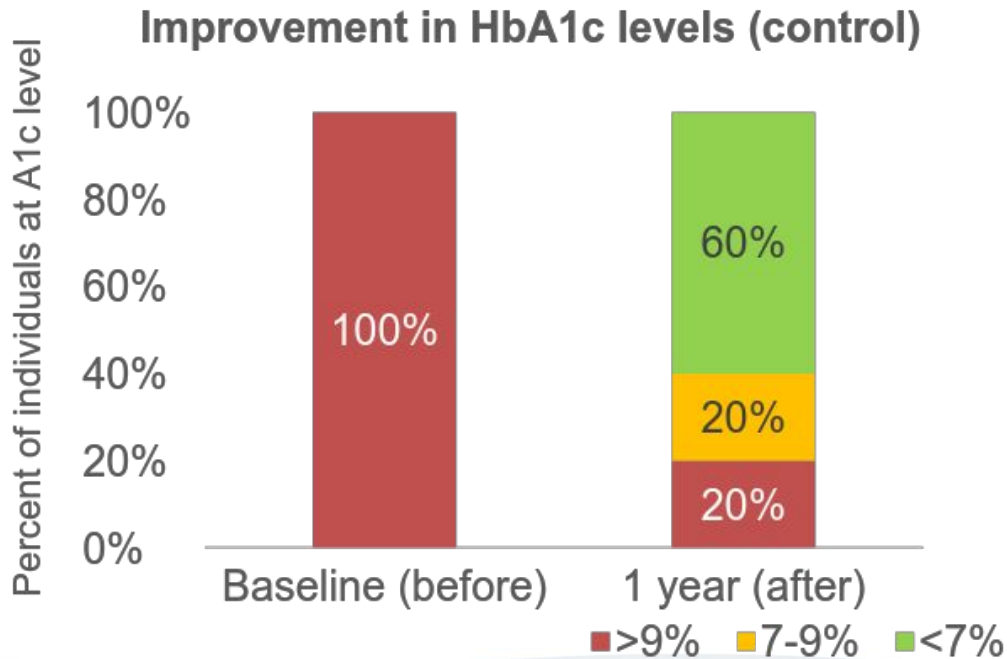
Costs are rounded to the nearest thousand. Costs in years 2 and 3 increase relative to year 1 because they have been adjusted for inflation.

**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
<b>Total recovered value of workdays</b>			<b>+ \$1,500</b>

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

<b>Individuals</b>	<b>Providers</b>
<ul style="list-style-type: none"><li>➤ Better experience</li><li>➤ Better quality of life</li><li>➤ Lower out-of-pocket costs</li><li>➤ Fewer missed work days</li></ul>	<ul style="list-style-type: none"><li>➤ Improved patient communication</li><li>➤ Better patient outcomes</li><li>➤ Meet quality targets</li></ul>
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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](http://bit.ly/2o0yC5W)

# Discussion & Feedback