

# Patient Literacy and Chronic Disease Management

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ACP/IOM

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# Collaborators

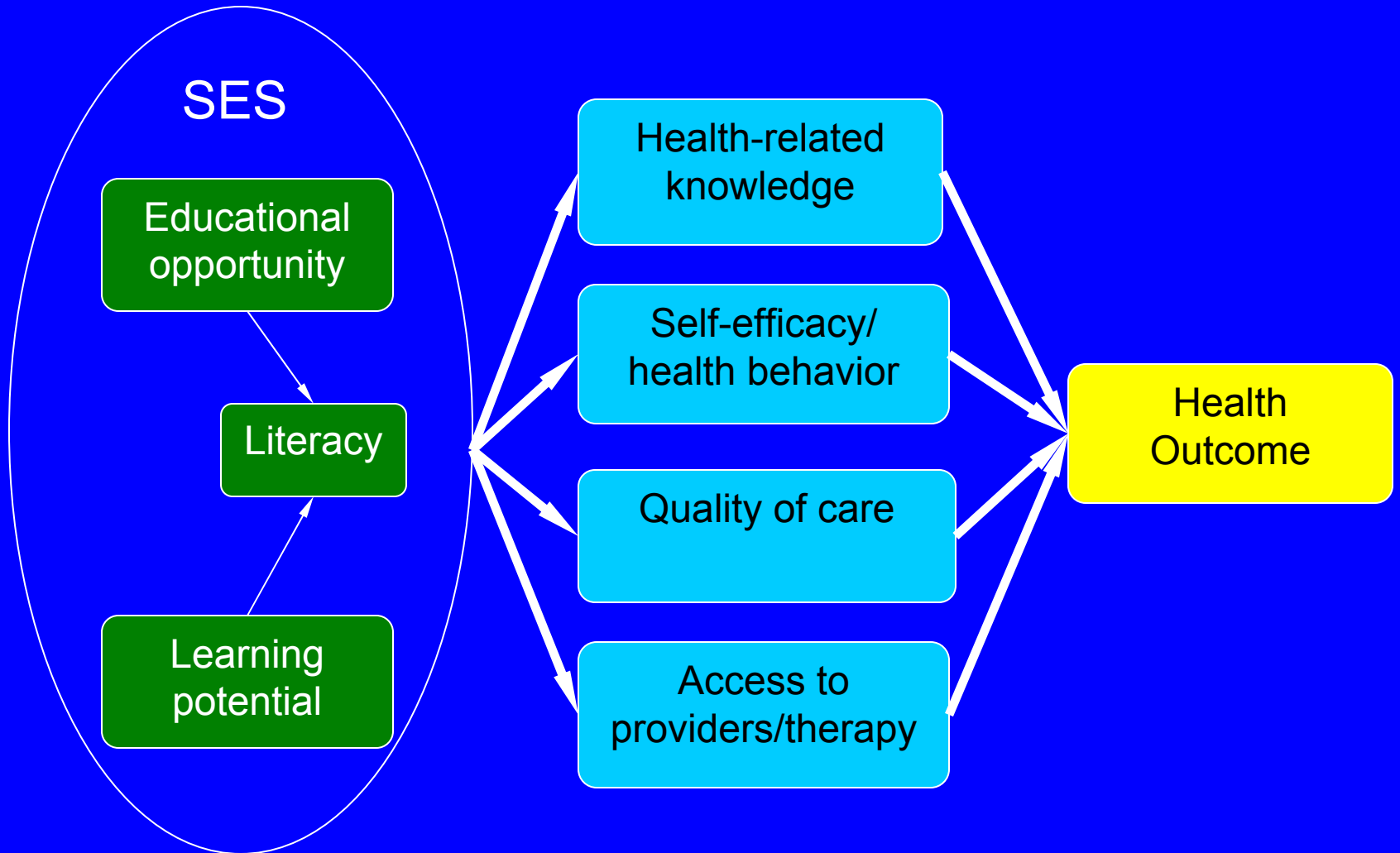
- Michael Pignone, MD, MPH
- Russell Rothman, MD, MPP
- Robb Malone, PharmD
- Betsy Bryant, PharmD
- Morris Weinberger, PhD

Hypothesis: systematically improving  
quality of care can reduce  
literacy-related health disparities

# Planned Primary Care Components

- Multidisciplinary teams
- Defined follow-up procedures
- Treatment algorithms based on best available evidence
- Information systems for tracking patients
- Patient education for self-care

# Why Would Planned Care Work?



# Planned Care Programs for Heart Failure and Diabetes

- Common chronic condition in adults
- Require effective self-care
- Complicated medical regimen
- Potentially serious complications
- Expensive

# Heart Failure

# Living with Heart Failure Program

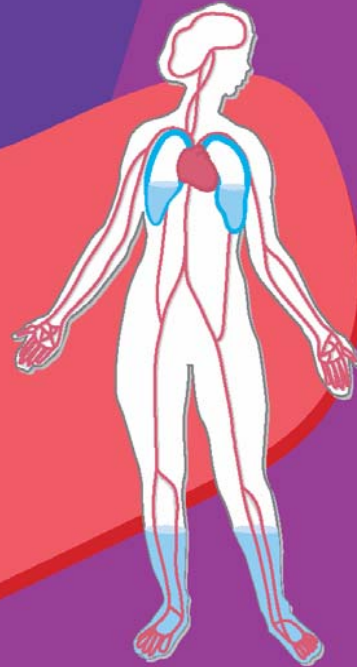
- Focus on self-management training
  - 1-hour individualized education session
  - Education booklet < 6th grade level
  - Scheduled follow-up phone calls
- Digital bathroom scale provided
- Easy access to care team (1-800 number)
- Help with barriers to care
- No efforts to adjust/change medication

# MANAGING YOUR HEALTH WITH HEART FAILURE

1

2

3



UNC School of Medicine and Department of Pharmacy (Working Group on Health Risk Communication) 919-843-6480

<http://www.shareddecisionmaking.org>

# Congestive Heart Failure

With congestive heart failure, the heart cannot pump the blood well. As a result, blood doesn't flow well.

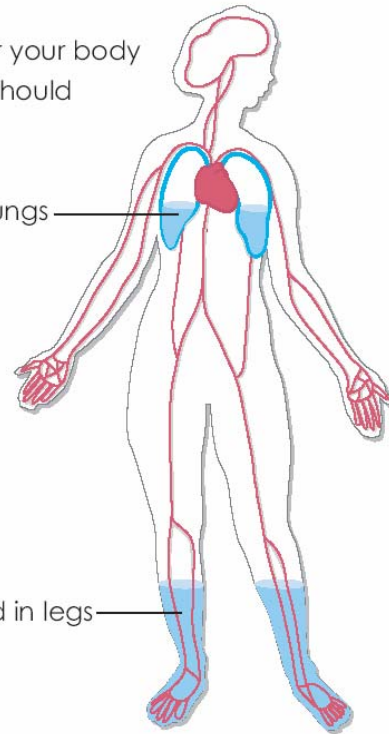
Fluid leaks out of your blood vessels and backs up in the lungs and the legs.



Salt makes it harder for your body to get rid of fluid. You should avoid salt.

Fluid in lungs

Fluid in legs



# How Bad Is Your Congestive Heart Failure?

You can tell how well your heart is doing by how you feel and what you can do.

## SWELLING

Good – No Swelling



OK – Swelling in Ankle or Shin



Bad – Swelling in Knee Area



Call the UNC Clinic / 919-843-6480 ☎

## WALKING

Good – You can walk easily with no shortness of breath



OK – Shortness of breath when walking fast



Bad – Short of breath at rest



Call the UNC Clinic / 919-843-6480 ☎

## SLEEPING

Good – Sleeping flat, no shortness of breath



OK – Needing 2 pillows or more to avoid shortness of breath



Bad – Have to sleep upright to avoid shortness of breath





Call the UNC Clinic / 919-843-6480 ☎<sup>3</sup>

If you weigh

How many fluid pills?

**178**  **UNC Clinic 919-843-6480**

<b>177</b>		
<b>176</b>		
<b>175</b>	<u>2</u>	<u>2</u>
<b>174</b>		









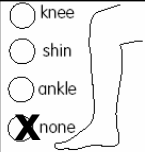


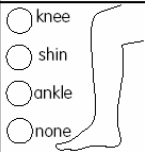





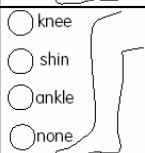


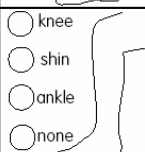
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<b>164</b>	<u>1</u>	<u>0</u>
<b>163</b>		

**162**  **919-843-6480**

Good Weight 

	<b>1</b> Swelling	<b>2</b> Weight	<b>3</b> Number of Fluid Pills	
<b>Sunday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input checked="" type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date		<b>172</b>	<b>1</b>	<b>1</b>
<b>Monday</b>	<input type="radio"/> knee <input type="radio"/> shin <input checked="" type="radio"/> ankle <input type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date		<b>174</b>	<b>2</b>	<b>2</b>
<b>Tuesday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input checked="" type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date		<b>171</b>	<b>1</b>	<b>1</b>
<b>Wednesday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date				
<b>Thursday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date				
<b>Friday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date				
<b>Saturday</b>	<input type="radio"/> knee <input type="radio"/> shin <input type="radio"/> ankle <input type="radio"/> none	 <b>Morning</b>	 <b>Morning</b>	<input checked="" type="radio"/> <b>Evening</b>
Date				

# Baseline Characteristics

<b>Variable</b>	<b>Control (n=64)</b>	<b>Intervention (n=59)</b>
Mean Age, years (SD)	62 (11)	63 (9)
African American	55%	54%
Male	41%	58%
Inadequate Literacy	39%	42%
Education, years (SD)	9.9 (2.6)	9.1 (3.2)
Income <15,000/yr	67%	69%
Medicaid	33%	34%
Medicare	72%	71%

# Improved HF Knowledge, Self-Efficacy, and Self-Care Behavior

6 Month Outcome	Control	Intervention	Difference (CI)	P value
Knowledge change	-2	10	12 (4, 19)	<0.01
Self-efficacy change	-0.5	1.3	2 (0.5, 3.1)	<0.01
Daily weight measurement, %	29	79	50	<0.01

# Reduced Rates of Hospital Admission

- Overall results:  
40% fewer hospitalizations
- Inadequate literacy results:  
50% fewer hospitalizations

# Diabetes

# Diabetes Planned Care

- Access database
- Mid-level providers
- Patient education
- Use of treatment and monitoring algorithms
- Care coordination
- Phone follow-up

# Educational Strategies

- Ongoing patient-centered learning
- Therapeutic alliance
- Teach-back method
- Repetition/reinforcement



# Care Coordination

- Call patient at least once a month
- Review self-care skills
- Help to navigate health care system
- Address barriers of transportation

# Use of Treatment Algorithms

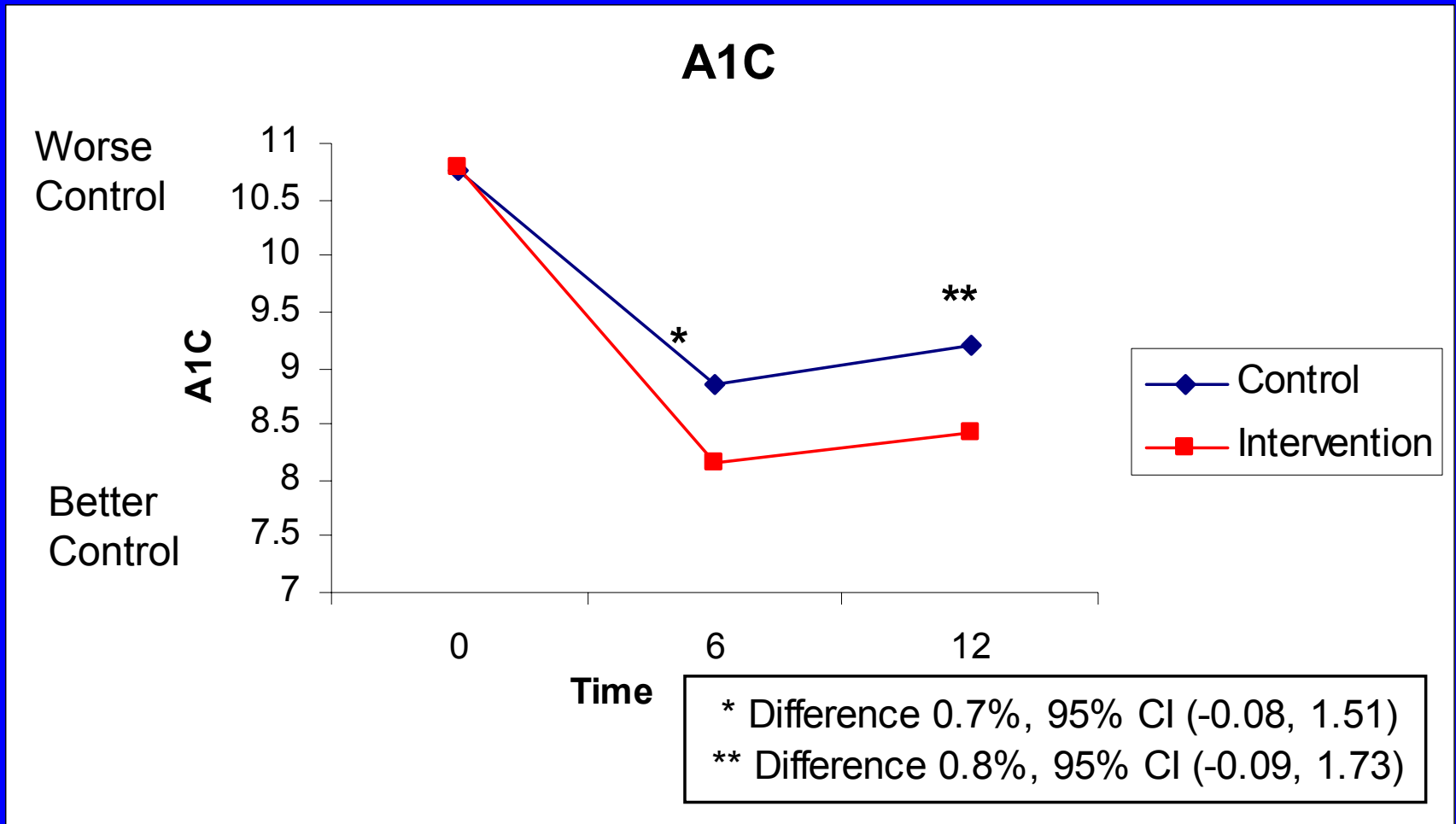
- Clinical pharmacist practitioners used algorithms to titrate medications for glycemic control, blood pressure, and cholesterol
- Automatic ordering of laboratory tests
- Earlier follow-up if not reaching goal

# Diabetes Planned Care Randomized Controlled Trial

Rothman et al. *Am J Med.* 2005;118:276-284.

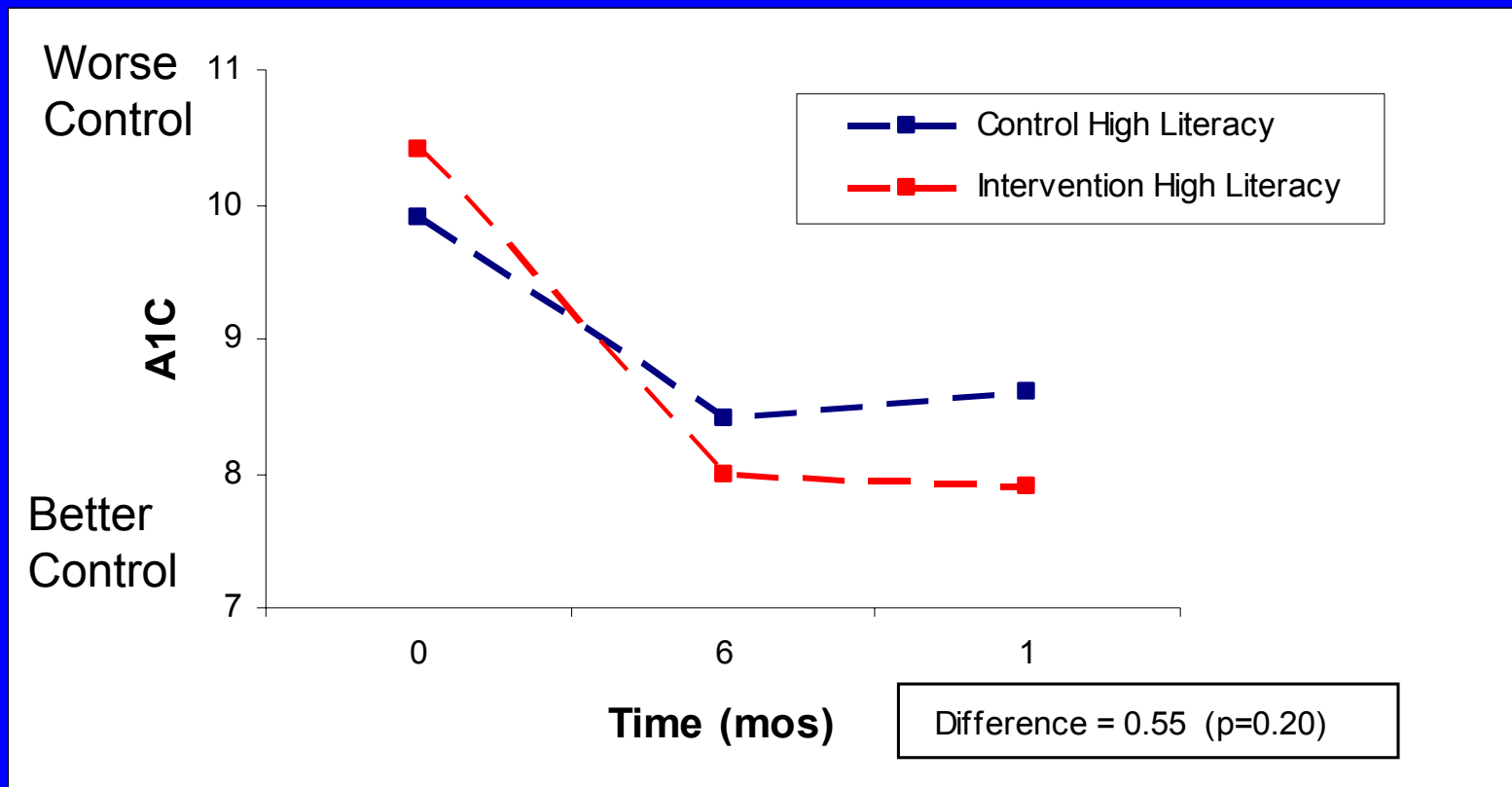
Rothman et al. *JAMA.* 2004; 292(14): 1711-1716.

# Improvement in HbA1c



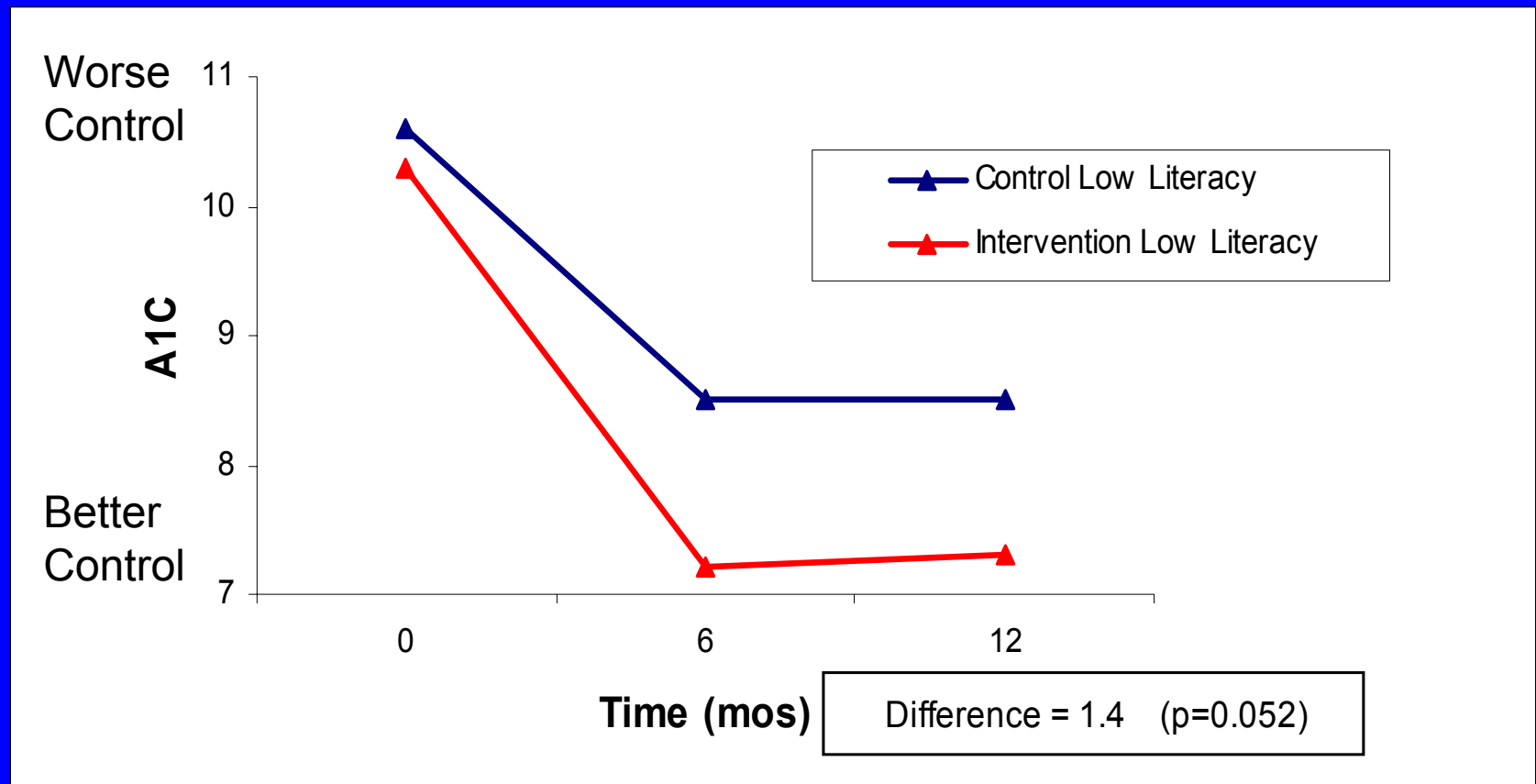
# Results According to Literacy Status

# Diabetes Control: Results for Patients with Literacy Above 6th Grade Level



Rothman RL et al. *JAMA* 2004, 292(14):1711-1716.

# Diabetes Control: Results for Patients with Literacy at or Below 6<sup>th</sup> Grade Level



Rothman RL et al. *JAMA* 2004, 292(14):1711-1716.

# Significant Clinical Improvements at 12 months

<b>Variable</b>	<b>Difference Intervention vs Control (95% CI)</b>
A1C (%)	0.9% (0.8,1.0)
SBP (mmHg)	9.2 (2.3,16.1)
ASA use (%)	41% (25,55)
T. Chol. (mg/dL)	15 (-4, 35)

# Labor Inputs and Costs

- For program costs of ~37\$ per patient per month, we:
  - Improved A1C by almost 1% point
  - Improved systolic BP by almost 10mmHg
  - Improved aspirin use by over 40%
  - Did not see any significant change in use of clinic services or adverse events

# How do you pay for planned care?

- Current financing systems not designed well for chronic care / prevention
- Possible to bill for many, but not all, program activities under fee-for-service
- Payers interested, but identifying optimal incentive programs is challenging

# Summary and Implications

- Planned care is an effective tool for improving health outcomes and can reduce literacy-related disparities
- Planned care interventions require a team approach
- Current reimbursement strategies do not adequately incent for such models of care