

Translating Information Into Action:  
Improving Quality of Care Through Interactive Media

**Interactive Media for Diabetes Self-  
Management: Issues in Maximizing  
Public Health Impact**

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Gaithersburg, Maryland

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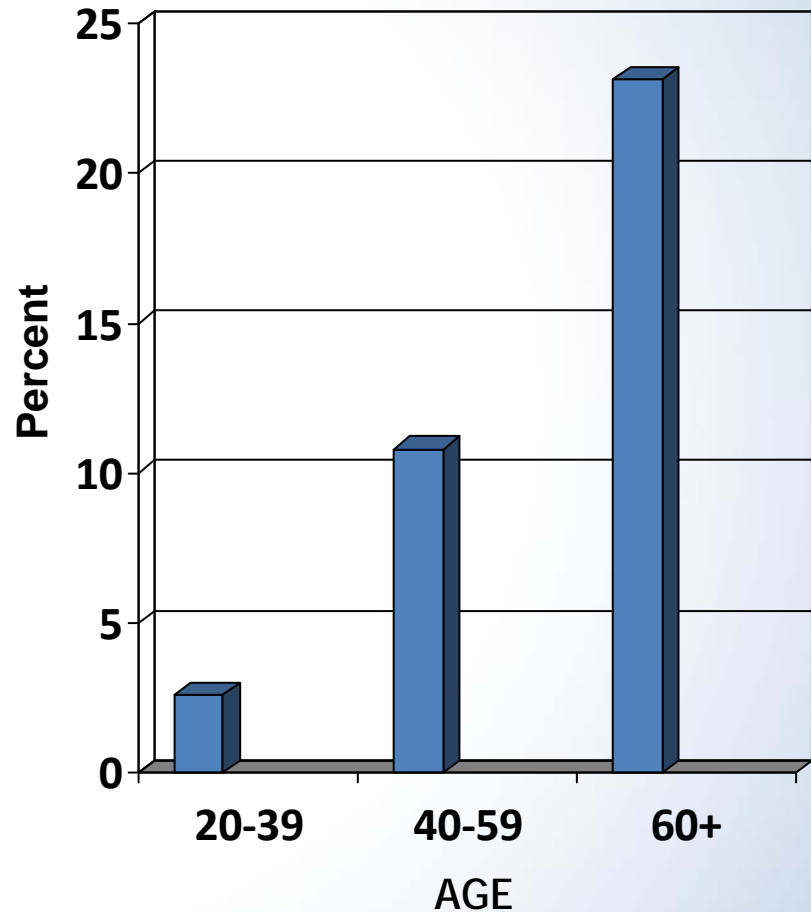
# Translating Information Into Action: Improving Quality of Care Through Interactive Media

## Overview

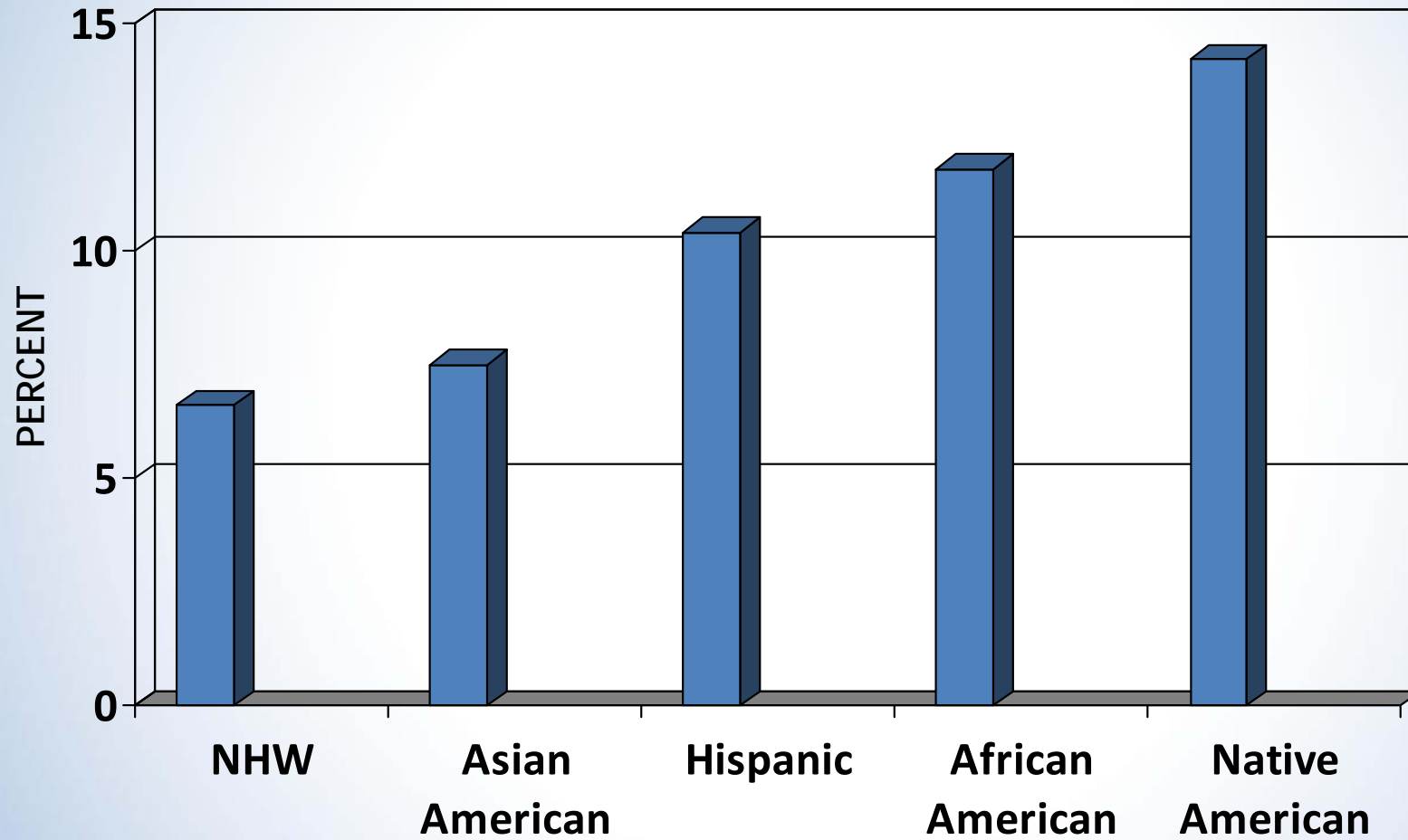
- Context and Potential for Multi-media
- Enhancing Effectiveness of Patient-Centered Care: Engagement, Action Planning, Follow-up Support
- Enhancing Public Health Impact: Reach, Adoption, Robustness
- Summary: Current Status and Key Opportunities

## Context for diabetes Self-management (NIDDK)

- 23 million Americans age 20 and over have diabetes
- Costs estimated at \$174 billion/year
- Cases of diabetes in U.S. have doubled since 1990



# Context for Diabetes Self-management (CDC)



Prevalence of Diabetes Age 20+ by Race/Ethnicity

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## Context for Diabetes Self-management

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### Patient

Multiple, complex demands  
Information overload  
Emotional stress  
Social environment not supportive  
Comorbid medical conditions  
Limited literacy and numeracy

### Physician

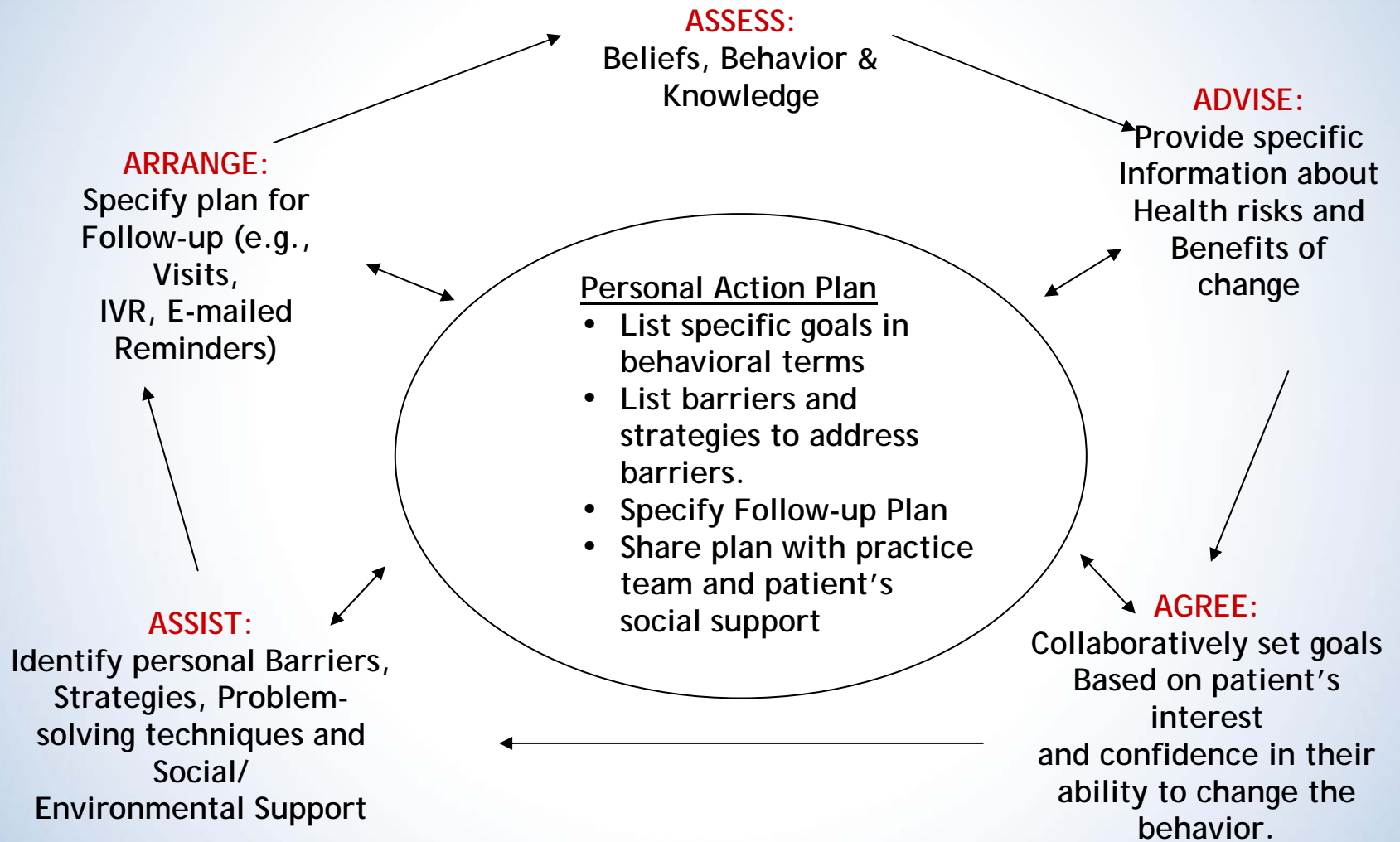
Multiple competing demands  
Same, limited time  
Often no resources or training  
15-minute visit not supportive  
Other conditions demand attention  
Diagnostic and resource limits

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## 5 A's Approach to Patient-Centered Care

<b>"5 A" Activity</b>	<b>Multi-media Example</b>
<b>Assess</b>	<b>Pre-visit on-line survey or kiosk</b>
<b>Advise</b>	<b>Tailored feedback on multiple behaviors</b>
<b>Agree (SDM)</b>	<b>Present choices among alternatives</b>
<b>Assist</b>	<b>Set goals, ID barriers, action planning</b>
<b>Arrange (Follow-up)</b>	<b>Web, e-mail, text messages, IVR</b>

Figure 1. 5 A's Self-Management Model:  
A Guide for Making Decisions about Self-management Plans



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### Enhancing Multi-media Effectiveness: **ENGAGEMENT**

- CHOICE:**
- Behavior(s)
  - Timing
  - Voice Over or Not; Language
  - Feedback Displays
  - Entry Modality (Web or IVR)

Autonomy support key mediator of outcomes\*

Williams, Lynch, & Glasgow. *Health Psychology* 2007;26:728-734

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### Enhancing Multi-media Effectiveness: **ENGAGEMENT**

- STRUCTURE:**
- Simple targets at first
  - Initial success is critical
  - Add complexity later
  - Self-monitoring of goal achievement
  - Repeat expectations
  - Prompts if not engaged
  - Quotes, motivational tips
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**Enhancing Multi-media Effectiveness: ACTION PLAN**

- ACTION PLANS:**
- On-screen and print
  - Easily modifiable
  - Shared with healthcare team

**Problem-solving skill independent key predictor of  
successful self-management**

Glasgow et al. *J Behav Med* 2004;27:477-490

My Path To Healthy Life - Microsoft Internet Explorer

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# My Path To Healthy Life

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Home Ask an Expert Exercise Your Brain

## Your Exercise Action Plan

Here is your personal Action Plan for Exercise.

Click on one of the areas you want to change. After you make this change, you'll be able to review your action plan again and make more changes if you want.

**My Top Reasons to Increase My Physical Activity:** [Change](#)

- To lose or maintain my weight
- To feel less stressed

**My Exercise Goal:** [Change](#)

- To increase my exercise I will do:
  - Aerobic exercises or aerobic dance 3 days per week 30 minutes per day.
  - Weights 3 days per week 30 minutes per day.

**My Road Blocks:** [Change](#)

- I don't have time.

**Tips:** [Change](#)

  - I will schedule my physical activity sessions and make them an important part of my day, like an important meeting.
  - I will look for activities that can be done as a family, or with co-workers.
- I'm too tired.

**Tips:** [Change](#)

  - I will walk or exercise with a buddy to help keep me going when I am tired.
  - I will drink enough of water.

Look it over.  
Do you like your plan as it is OR do you want to make some changes?

I like my action plan as it is.

I want to make some changes to my Action Plan.

[Continue>>](#)

**My ABC's**

**My DEF's**

- Doctor's Advice
- Exercise
- Food Choices

**Track My Progress**

**My Resources**

**Tips**

Fitness can be performance-related or health-related... [more!](#)

**Quotable Quotes**

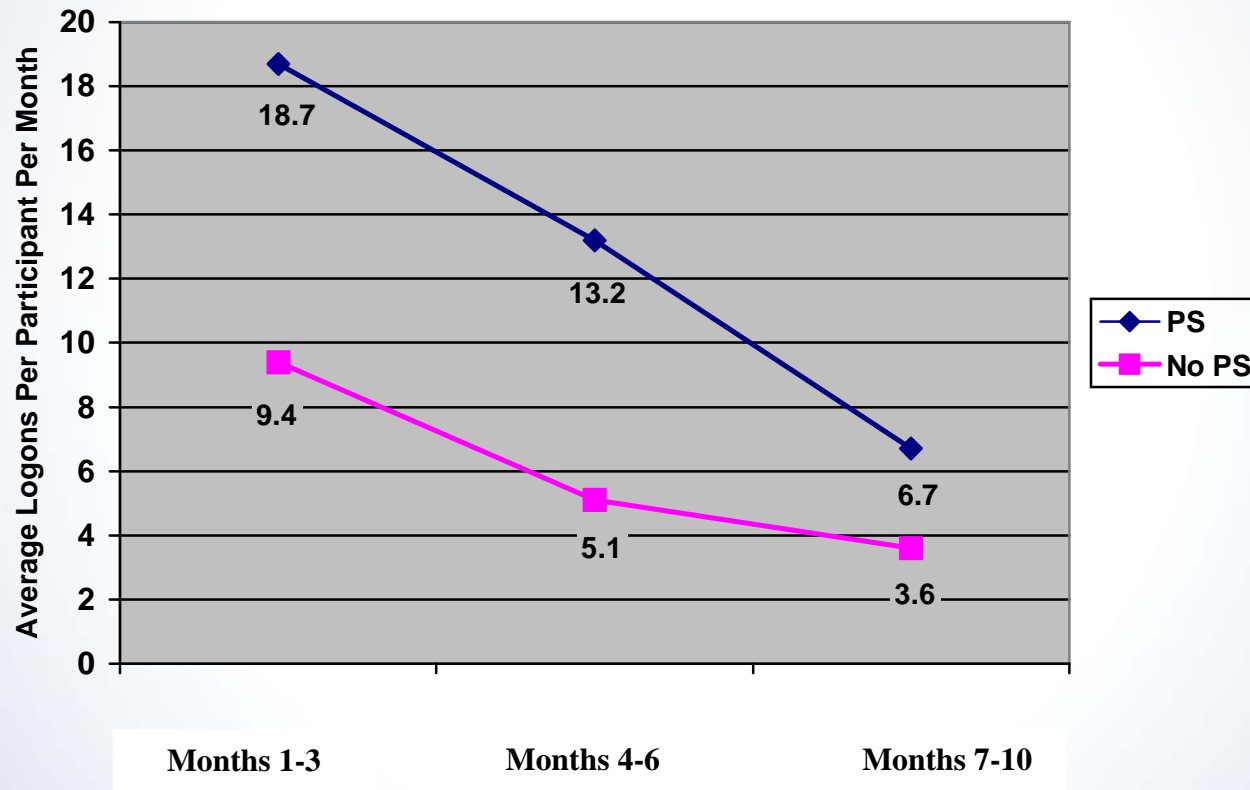
We should be taught not to wait for inspiration to start a thing. Action always generates inspiration. Inspiration seldom generates action.

-Unknown

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# D-Net Website Usage: Peer Support (PS)



## Enhancing Multi-media Effectiveness: FOLLOW-UP

### Mediterranean Lifestyle Program RCT:

- Women with type 2 diabetes
- Initial 6 months weekly group meetings
- Multiple behavior change study

Two-session computer interaction on “Selecting Community Resources” narrated trip through “My Community” as effective as ongoing group meetings.

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## ENHANCING PUBLIC HEALTH IMPACT

- REACH
- ADOPTION
- GENERALIZABILITY

## RE-AIM Model Elements, Definitions, and Multimedia Intervention Example

RE-AIM Element	Multimedia Intervention Example
Reach	From the pool of eligible patients, 40% of those invited to an Internet self-management intervention participated. Those declining were more likely to be Latino and male.
Effectiveness	Seventy percent of those randomized to an automated eye exam reminder phone call program had their eyes examined compared to 42% in the control condition. There were no differences between conditions on other preventive services, adverse events, or quality of life.
Adoption	Forty-six percent of medical offices approached to participate in an Internet DSME program evaluation took part. Participating clinics were larger, had more diabetes patients, and offered more wellness activities.

## RE-AIM Model Elements, Definitions, and Multimedia Intervention Example

RE-AIM Element	Multimedia Intervention Example
Implementation	The average number of log-ins in an Internet physical activity intervention was 25.2. Usage decreased over the 24-week intervention, and number of overall log-ins and use of the social support forum were associated with greater improvement.
Maintenance (Individual Level)	At a 6-month follow-up, there was 60% attrition in a touchscreen computer DSME. Those responding lost an average of 9 pounds. A mail follow-up of initial non-respondents revealed an average weight loss of 4 pounds among this group.
Maintenance (Setting Level)	Of 24 clinics participating in an in-office, computer-assisted DSME, six continued the program unchanged, 10 requested substantial changes or added their own components, and eight discontinued the program.

# Ultimate Impact of Magic Diet Pill: Law of Halves

<u>Dissemination Step</u>	<u>Concept</u>	<u>% Impacted</u>
50% of Clinics Use	Adoption	50%
50% of Clinicians Prescribe	Adoption	25%
50% of Patients Accept Medication	Reach	12.5%
50% Follow Regimen Correctly	Implementation	6.2%
50% of Those Taking Correctly Benefit	Effectiveness	3.2%
50% Continue to Benefit After 6 Months	Maintenance	1.6%

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### Enhancing Public Health Impact: REACH

#### Rationale for mailed DVD intervention:

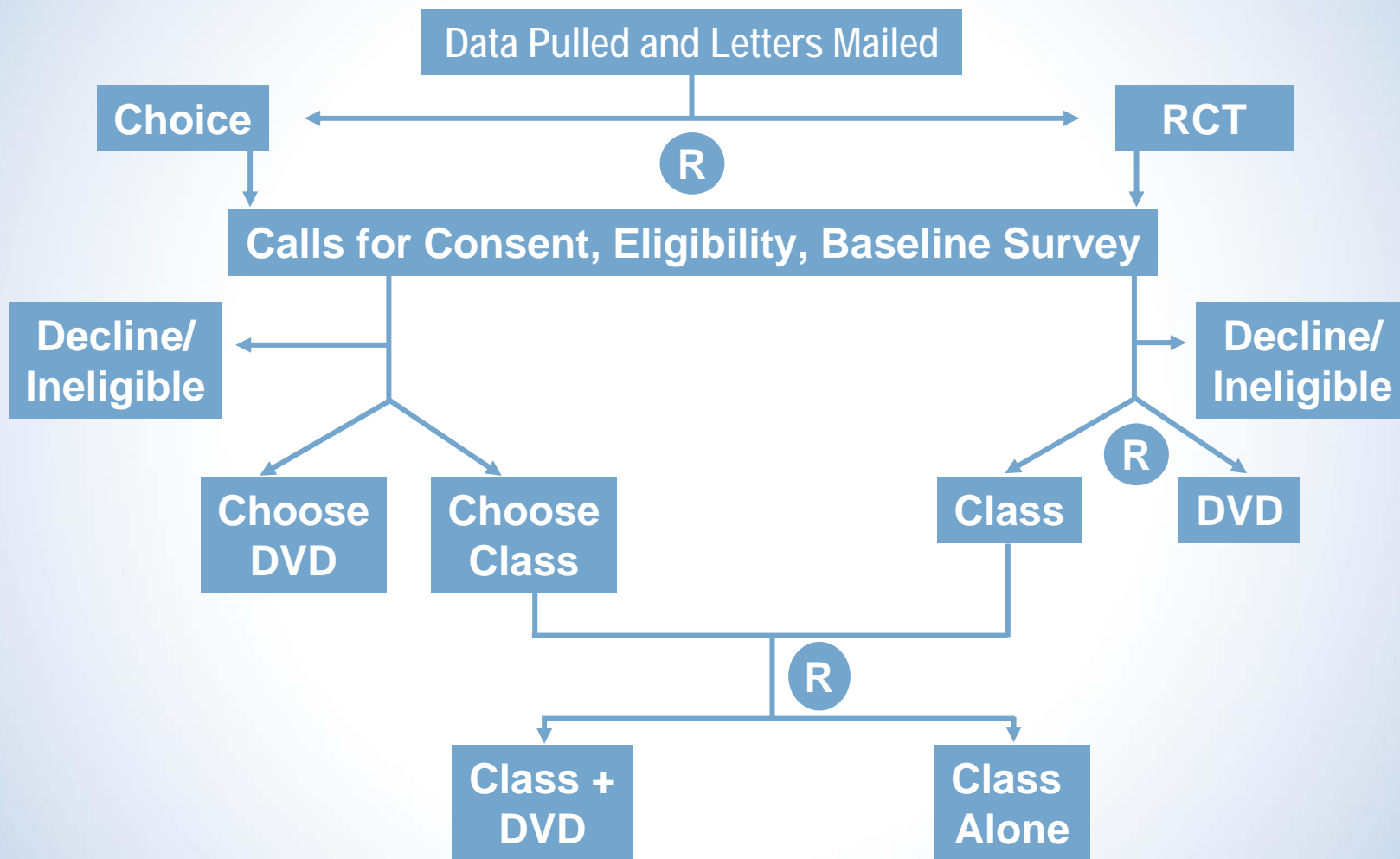
- Vast majority of U.S. homes have DVD players
- Education can be individualized
- DVD available for repeated viewing, as needed
- Family can watch together

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### Preference Design Features

- Potential participants randomized to Choice (mailed DVD or class) or RCT condition
- Allows more realistic evaluation of intervention Reach
- Can evaluate impact of Choice on outcomes

# STUDY DESIGN



# Participation Rates

Among Those Confirmed Eligible (n=310)

Choice	70.5%
RCT	55.8%

Among Choice Condition Confirmed Eligible

DVD	55.8%
Class	14.7%

DVD equally effective as Class on changes in self-management and clinical indicators.

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## RE-AIM Metrics

### A Tale of Two Interventions:

### What is the Bottom Line?



# Multi-media Behavior Change

## Two Approaches to Self-Management (SMS)

### In-Office SMS

In-office, PCP staff delivered (CA) program - 3/year

Patient arrives 30 minutes prior to regular visit, completes CA assessment with feedback

Receives feedback on care recommendations, issues to discuss with PCP

### Linked, Separate SMS

Separate 2-hour CA visits with health counselor - 3/year

Detailed CA feedback, goal setting, action planning, and relapse prevention

Patient and counselor have print-out

PCP receives e-mail/fax summary

## Two Approaches to Self-Management Support (SMS)

### In-Office SMS

Care Manager reviews plan in office; answers questions

Follow-up includes repeat PCP diabetes visit as recommended at 6 and 12 months

Care manager makes follow-up calls

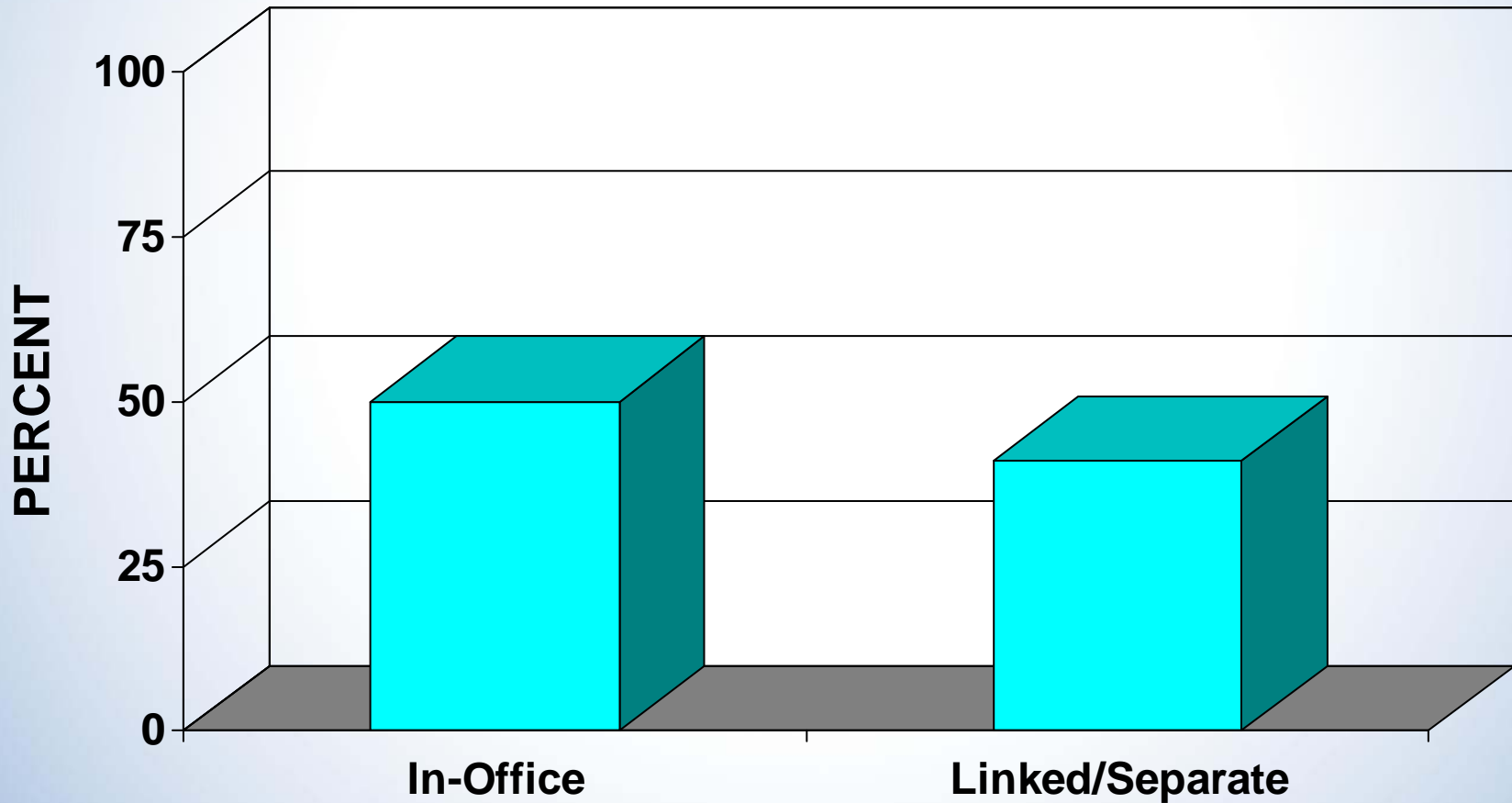
### Linked, Separate SMS

Health counselor provides lengthy feedback, detailed action planning on dietary and physical activity targets

Follow-up includes repeat visit at 2 and 12 months, and follow-up phone calls

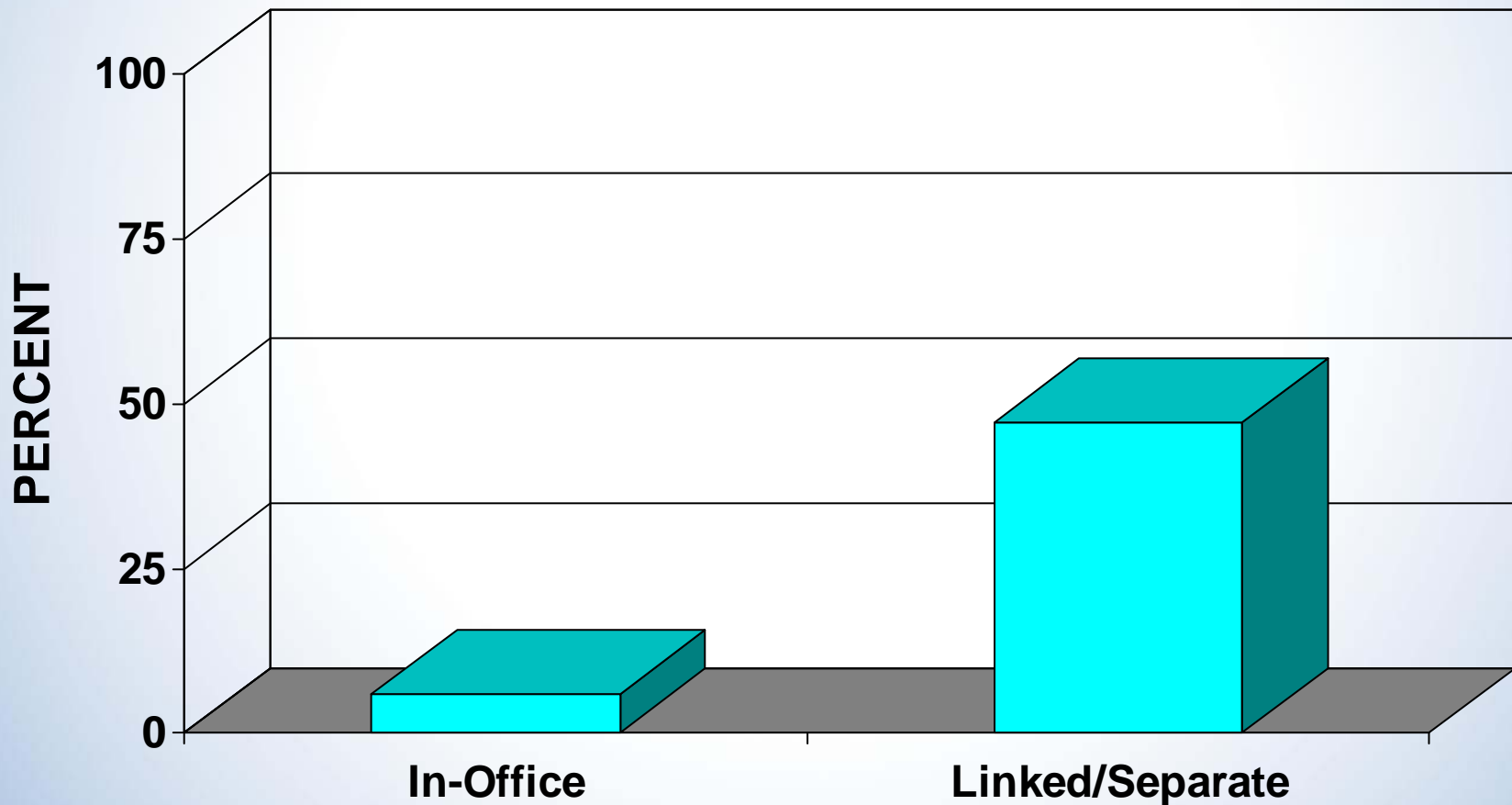
REACH: Which is better?

In-office attracted 50% (vs. 41%) of eligible participants



## ADOPTION: Which is better?

**Linked, separate approach recruited 47% of PCPs;  
in-office PCP team delivery approach recruited 6% of PCPs**



## Enhancing Public Health Impact: Generalizability across Levels

*Levels:* Health care setting (HMO vs. non); health counselor (4); patient characteristics

*HMO vs. non:* Lower participation in HMO (38% vs. 54%,  $p < .001$ )  
No differences in outcomes

*Health Counselors:*

2 meetings and follow-up calls—no difference  
No differences in implementation or outcomes across counselors

*Patient Characteristics:*

No main or moderator effects on outcomes by demographics, income, comorbid conditions, BMI, or baseline self-efficacy

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## Summary of Multimedia (MM) Results

MM can reach large numbers of diabetes patients and enhance patient-centered care and self-management.

Judicious use of personal contact with health coach (can be electronic) seems beneficial supplement to MM.

Future research indicated on integration with primary care and use of multiple social media

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## Translating Information Into Action: Improving Quality of Care Through Interactive Media

### Key Question for Future Research

What Multi-media Programs are most widely applicable and cost-effective for:

- producing which (RE-AIM) outcomes,
- for what types of patients,
- under what conditions,
- and, how generalizable are results?