

# Empowering Patients To Take Their Medicine: What Can We Do?

**National Diabetes Education Program Webinar Series**

Thursday, October 15, 2015

2-3 PM ET



**National Diabetes Education Program**

A program of the National Institutes of Health and the Centers for Disease Control and Prevention





## About today's webinar

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# About the Presenters

**John G. Ryan, DrPH**

University of Miami

Miller School of Medicine

Department of Family Medicine and  
Community Health



**Jennifer K. Bussell, MD, FACP**

Northwestern University

Feinberg School of Medicine





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# **MEDICATION ADHERENCE**

**John G. Ryan, DrPH**

University of Miami Miller School of Medicine,  
Department of Family Medicine and Community Health



# Adherence

Adherence has been defined as the “active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result.”

Delamater AM. Improving patient adherence. *Clin Diabetes*. 2006; 24: 71–77.

Meichenbaum D, Turk DC. *Facilitating Treatment Adherence: A Practitioner’s Guidebook*. New York, NY: Plenum Press; 1987.



# Medication Adherence

Medication adherence behavior is typically divided into two main concepts:

- **Adherence:** The intensity of drug use during therapy.
- **Persistence:** The overall duration of drug therapy.

Caetano PA, Lam JM, Morgan SG. Toward a standard definition and measurement of persistence with drug therapy: examples from research on statin and antihypertensive utilization. *Clin Ther* 2006;28:1411-1424.

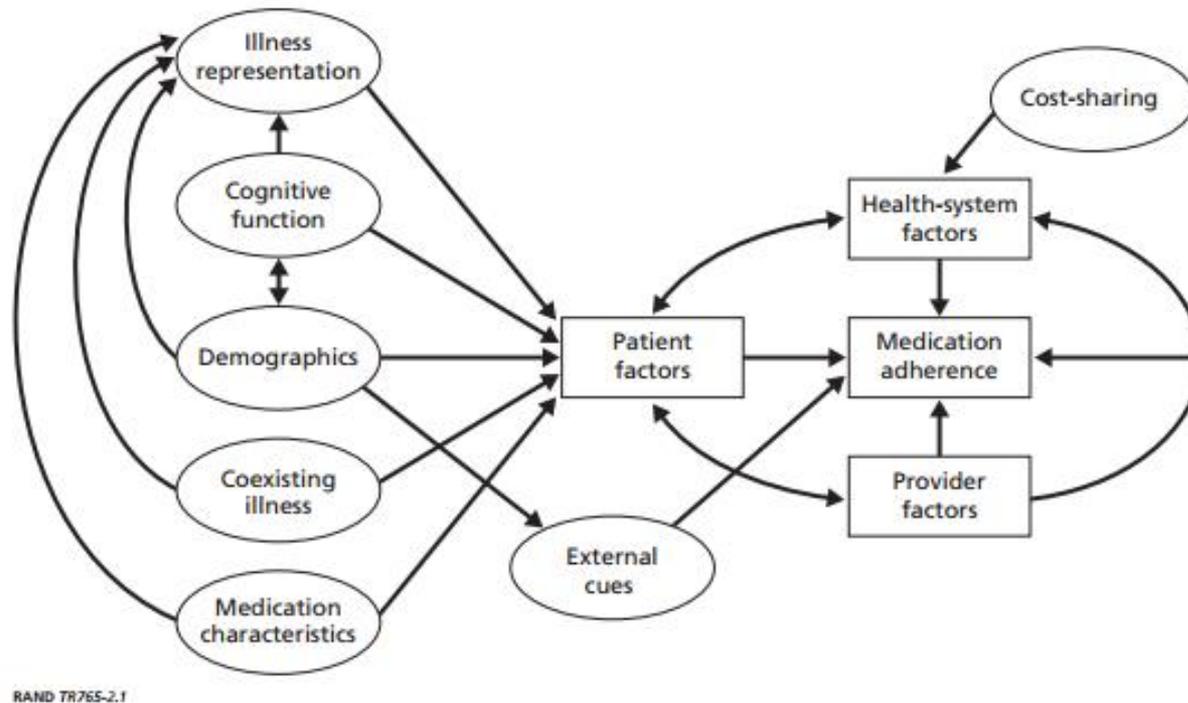
Cramer JA, Roy A, Burrell A, Fairchild CJ, Fuldeore MJ, Ollendorf DA, Wong PK. Medication compliance and persistence: terminology and definitions. *Value Health* 2008;11:44-47.



# Scope of the Problem

- Adherence rates for oral anti-diabetes (OAD) medications alone or in conjunction with insulin range from 36-93%. (Krass, 2014; Cramer 2004)
- Less than a tenth of patients who were non-adherent disclosed it to their physicians. (Wabe, 2011)
- A 10% increase in non-adherence to metformin and statins is associated with an increase of 0.14% in HbA1c and 4.9 mg/dl in LDL cholesterol. (Pladeval, 2004)
- For each 10% increment in drug adherence, HbA1c decreases by 0.16% ( $P < 0.0001$ ). (Schechtman, 2002)
- Improved adherence to diabetes medication could avert 699,000 emergency department visits and 341,000 hospitalizations annually, for a saving of \$4.7 billion. (Ashish, 2012)

# Conceptual Model of Factors Associated with Medication-Taking Behaviors



Source: Gellad, Walid F., A. McGlynn. A Review of Barriers to Medication Adherence: A Framework for Driving Policy Options. Santa Monica, CA: RAND Corp. Jerry Grenard and Elizabeth oration, 2009. [http://www.rand.org/pubs/technical\\_reports/TR765](http://www.rand.org/pubs/technical_reports/TR765).



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# **EMPOWERING PATIENTS TO TAKE THEIR MEDICINE: WHAT CAN WE DO?**

**Jennifer K. Bussell, MD, FACP**  
Northwestern University  
Feinberg School of Medicine



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**PATIENTS DON'T TAKE THEIR MEDICINE  
AS PRESCRIBED  
50% OF THE TIME**

**25% OF INITIAL PRESCRIPTIONS  
ARE NEVER FILLED**

*Osterberg L N Engl J Med. 2005;353(5):487-497*

*Fischer MA, Choudhry NK. Am J Med. 2011;124(11):1081.e9-22.*

*Fischer MA, J Gen Intern Med. 2010;25(4):284-290*



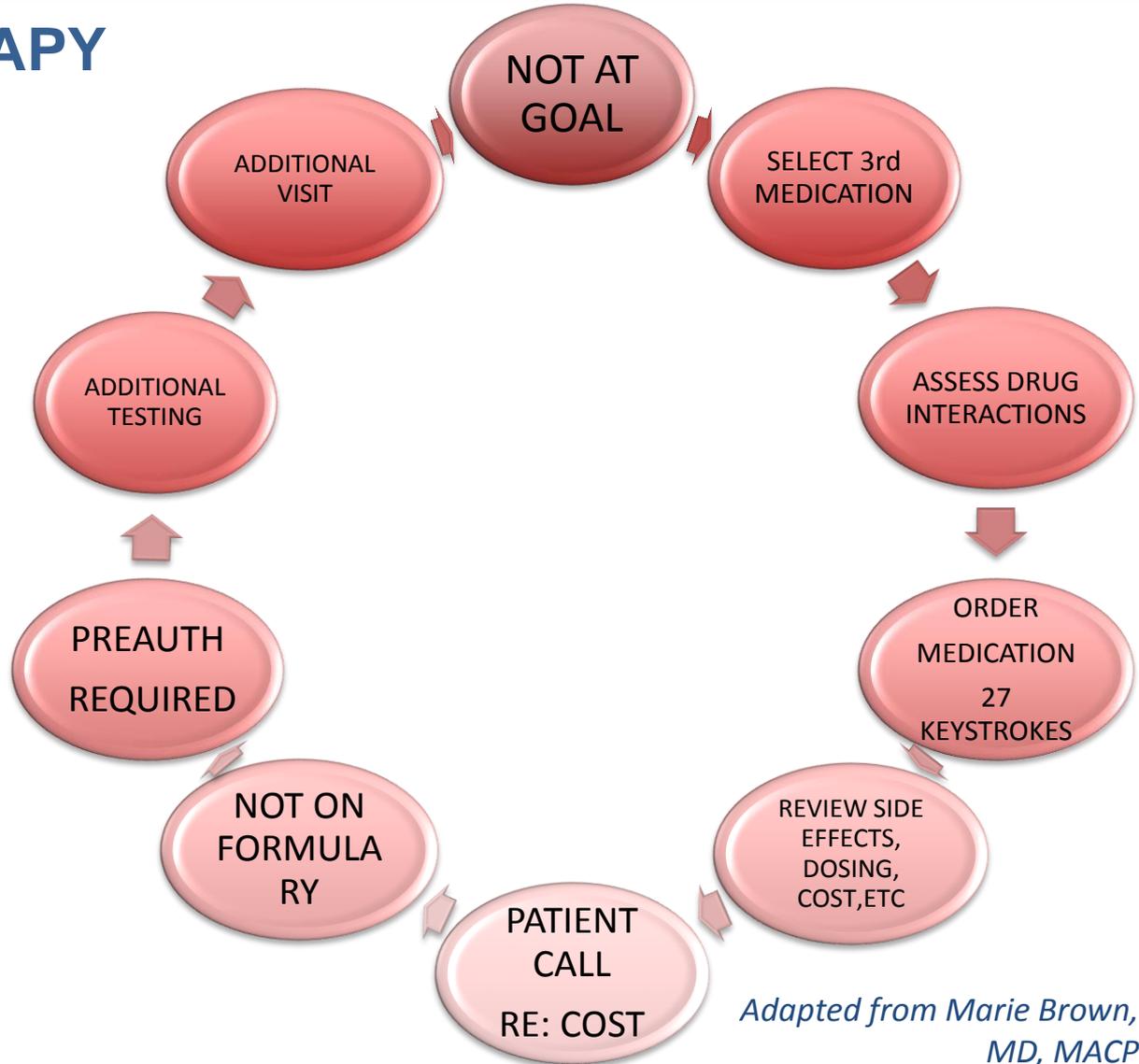
85% of physicians believe the majority of their patients are adherent

85% of patients surveyed state that they would not tell their doctor that they were not planning on buying a medicine





# MEDICATION THERAPY ADHERENCE NOT ADDRESSED

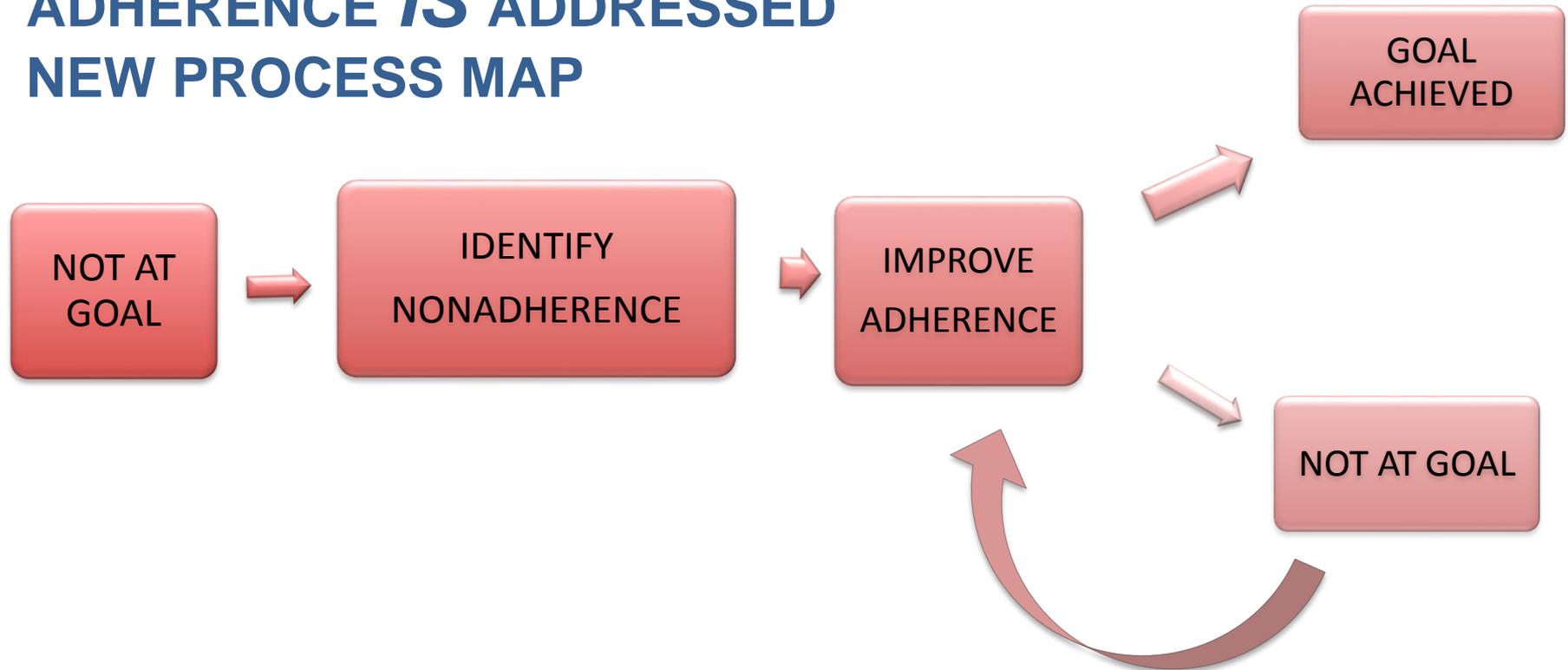


Adapted from Marie Brown, MD, MACP





# MEDICATION THERAPY ADHERENCE *IS* ADDRESSED NEW PROCESS MAP





# Assessment of Medication Adherence

- Subjective:
  - Ask patient/family
  - Self-reported surveys
- Objective:
  - Counting pills, electronic medication monitoring (MEMS)
  - Physiologic (HR with beta blockers)
  - Pharmacy refill records (MPR, PDC, CMG)
  - Medication ordering in Electronic Health Records
- Biochemical:
  - Drug levels



# Interviewing in a Blame-Free Environment

- These are difficult to take every day. How often do you skip one?
- There are quite a few-how many of these do you take?
- Most people don't take all their meds everyday. How about you?
- When was the last time you took drug A? B?



Self-Reported Medication Measures	Adherence Scale/Score	Reference
Morisky Medication Adherence Scale (MMAS-4)	0* - 4	<i>Morisky DE, Med Care. 1986; 24(1):67-74</i>
Morisky Medication Adherence Scale (MMAS-8)	0* - 8	<i>Morisky, et al. J Clin Hypertens. 2008, 10(5):348-354</i>
Adherence to Refills and Medication Scale to Diabetes Medicine (ARMS – D)	0 – 7*	<i>Mayberry, LS. Diabetes Res Clin Pract 2013 Nov</i>
Summary of Diabetes Self-Care Activities Medications Subscale (SDSCA-MS)	12* - 48	<i>Mayberry, LS. Diabetes Res Clin Pract 2013.Nov:102(2): 96-104</i> <i>Gonzalez, JS. Diabetes Care.2013.36:831-837</i>
Adherence Estimator	0* - 36	<i>McHorney, CA.Clinical Therapeutics.Vol 31(11):2584-2607</i> <i>McHorney,C Current Medical Research and Opinion 2009 25:1; 215-238</i>

\* Higher Adherence



- Documentation of inquiry is not sufficient
- Identification of nonadherence is key
- The next step is critical
- Develop a differential diagnosis



# Obstacles

## Unintentional

- Forgetting
- Shift Work
- Cost
- Work Restrictions
- Confusion
- Lack of knowledge

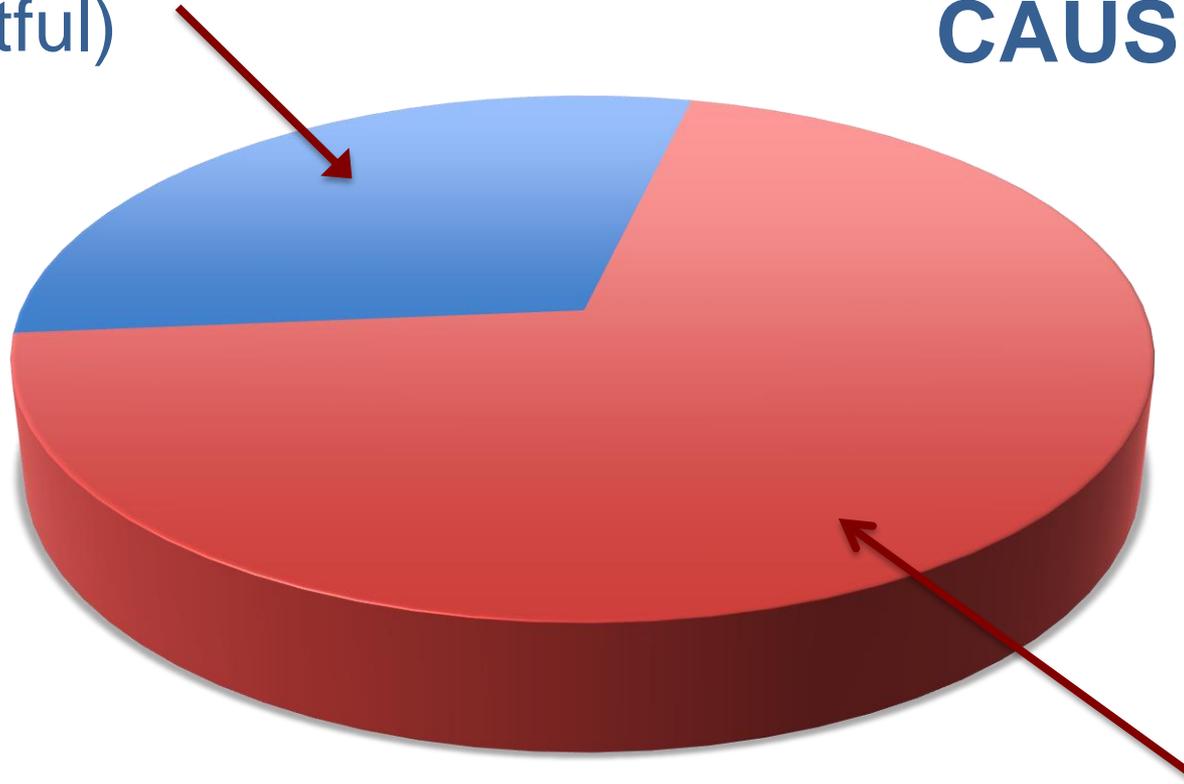
## Intentional

- Mistrust
- Fear of Side Effects
- Mental Illness
- Lack of Belief In Benefit
- Fear Of Dependency
- Fear It Is Dangerous
- Lack of Desire
- No Apparent Benefit
- Altruism



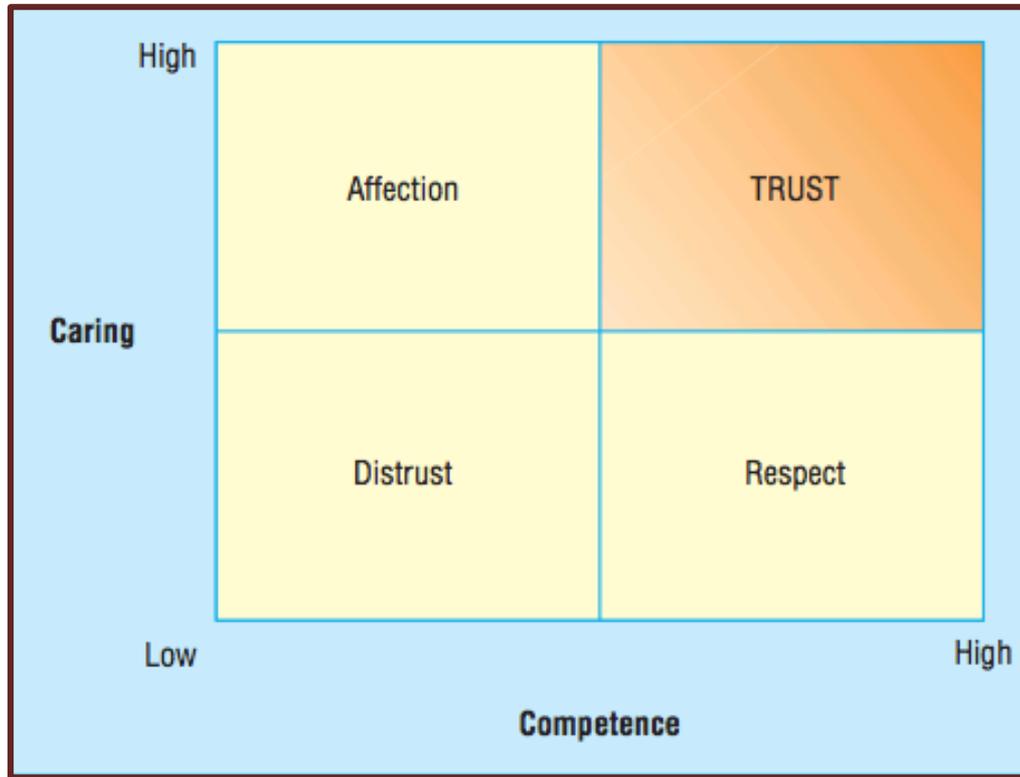
UNINTENTIONAL  
(Forgetful)

NONADHERENCE  
CAUSES



INTENTIONAL  
(Or other cause)

# Competence and Caring in Relation to Building Trust





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# Our Knowledge and Emotion





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## **Refill Consolidation**

**Proportion of medications filled per pharmacy visit**



# **Therapeutic Complexity and Adherence**

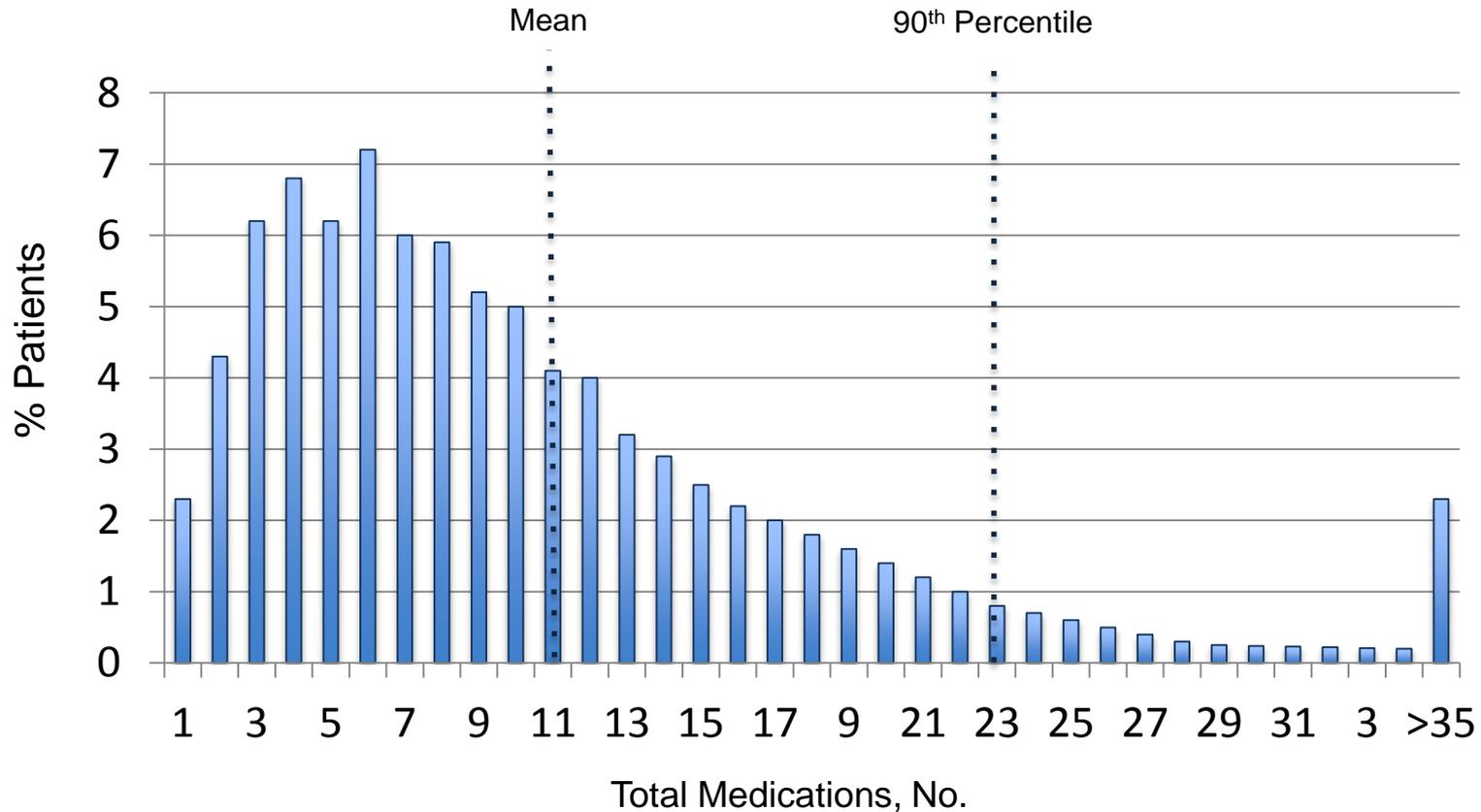
## **N=1,827,395 Patients**

- Total number of prescriptions
- Number of fills for each drug
- Number of different prescribers
- Total number of pharmacies
- Number of pharmacy visits (non mail order)
- Consolidation of refills



# Therapeutic Complexity Over 90 Days Among Statin Users

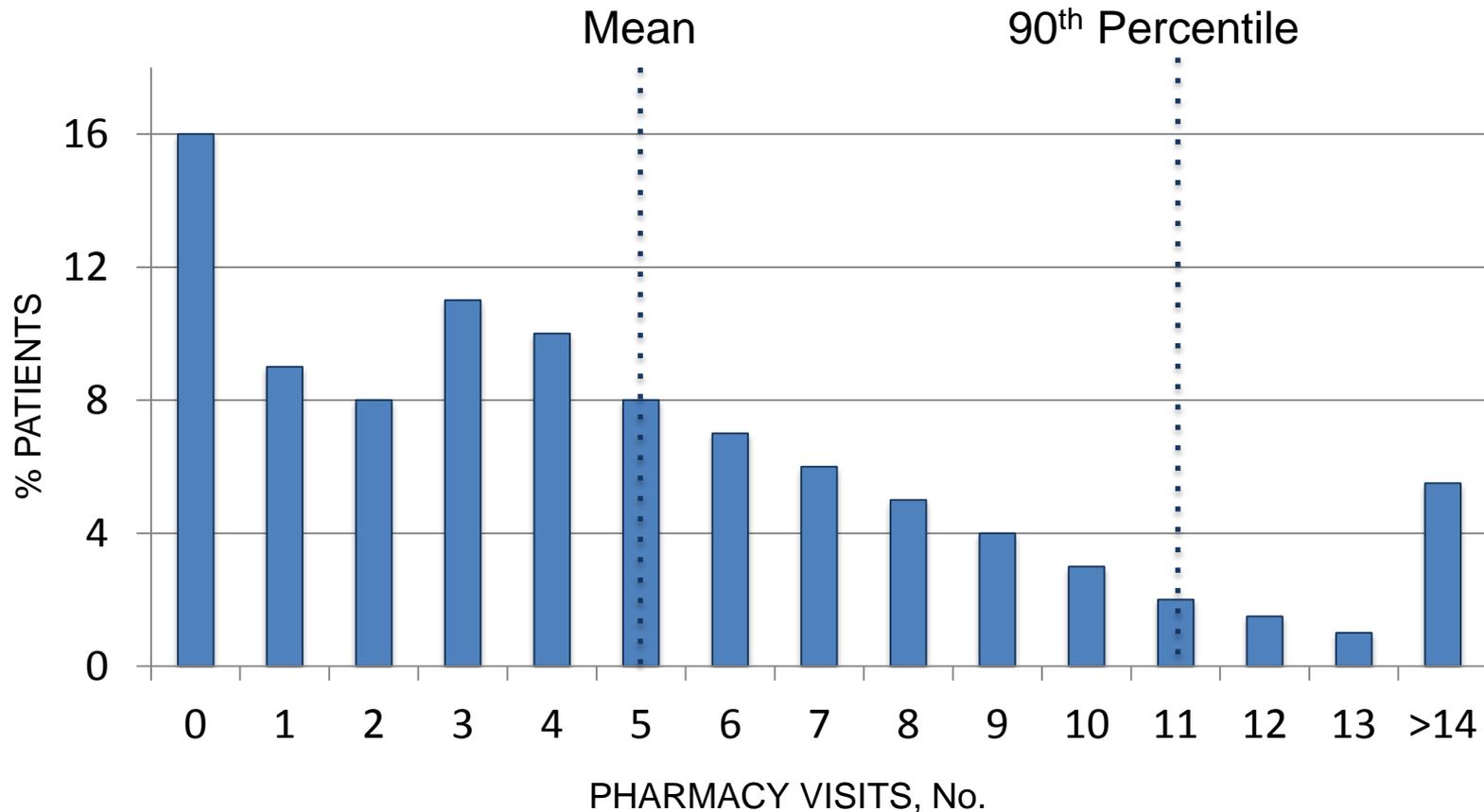
N=1,827,395 Patients





# Pharmacy Visits Over 90 Day Period For Statin Users

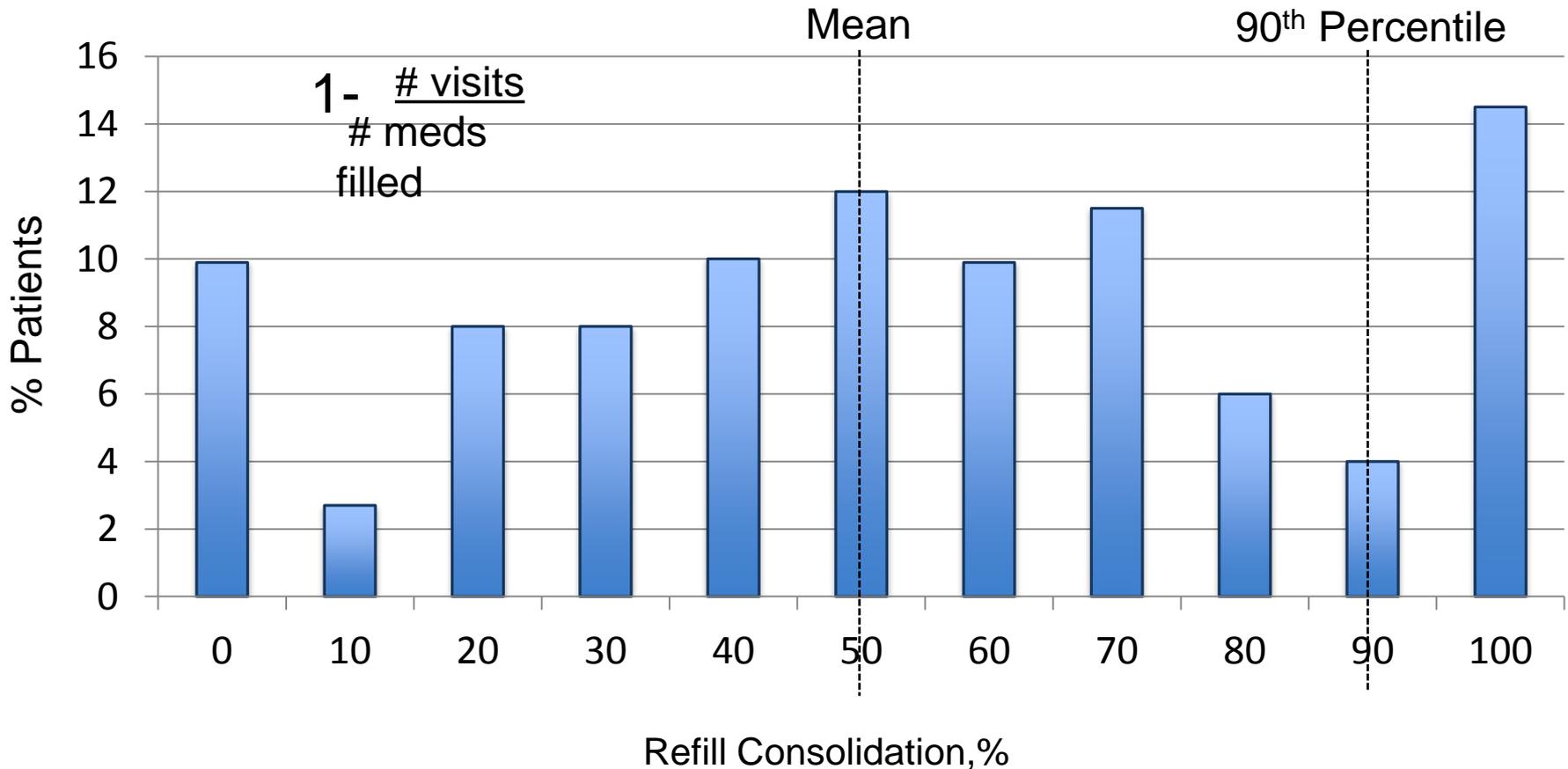
N=1,827,395 Patients





# Therapeutic Complexity and Adherence

## N=1,827,395 Patients





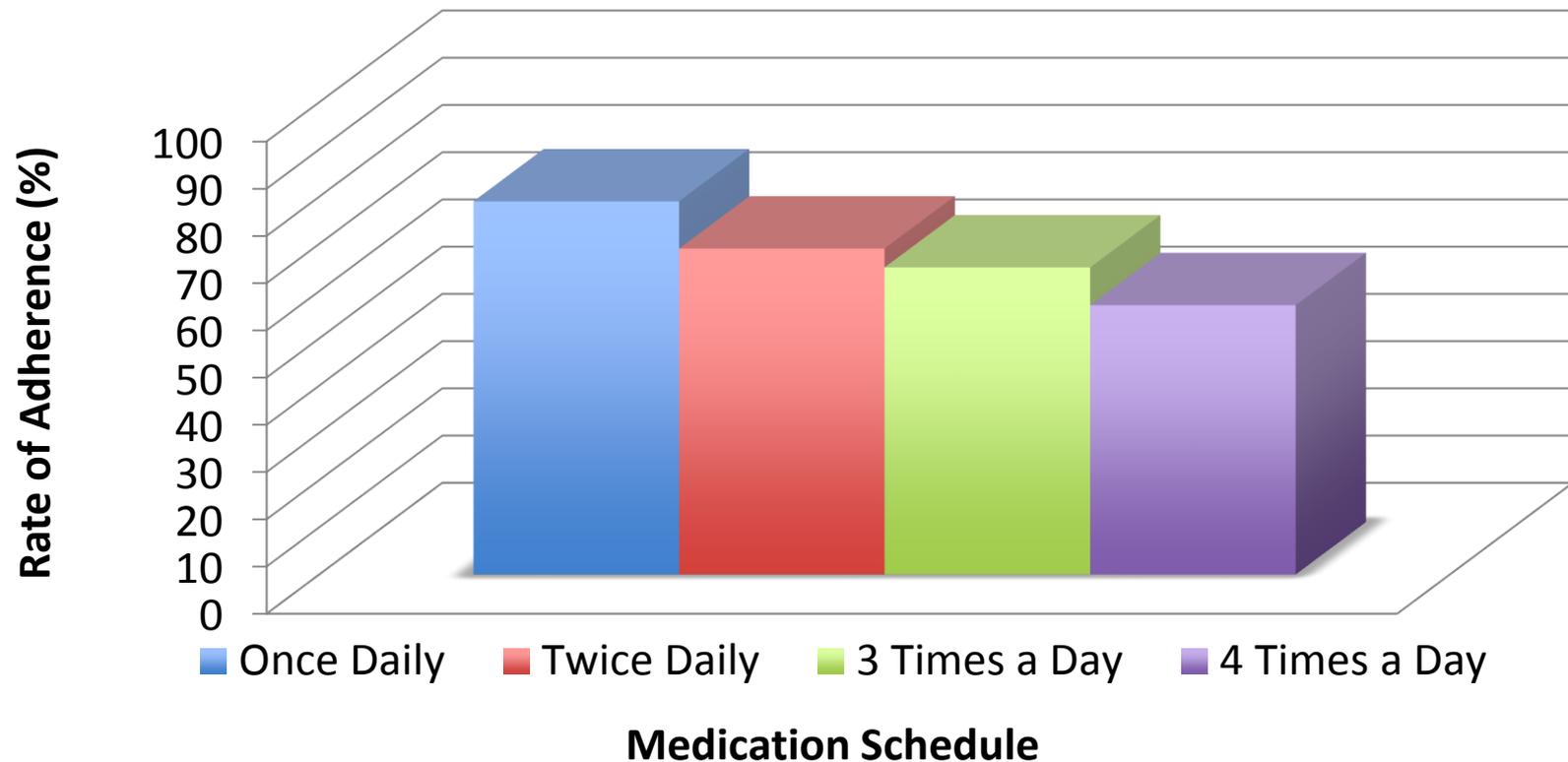
# **Therapeutic Complexity and Adherence**

## **N=1,827,395 Patients**

Greater therapeutic complexity  
was associated with  
lower medication adherence  
(especially for newly initiated meds)



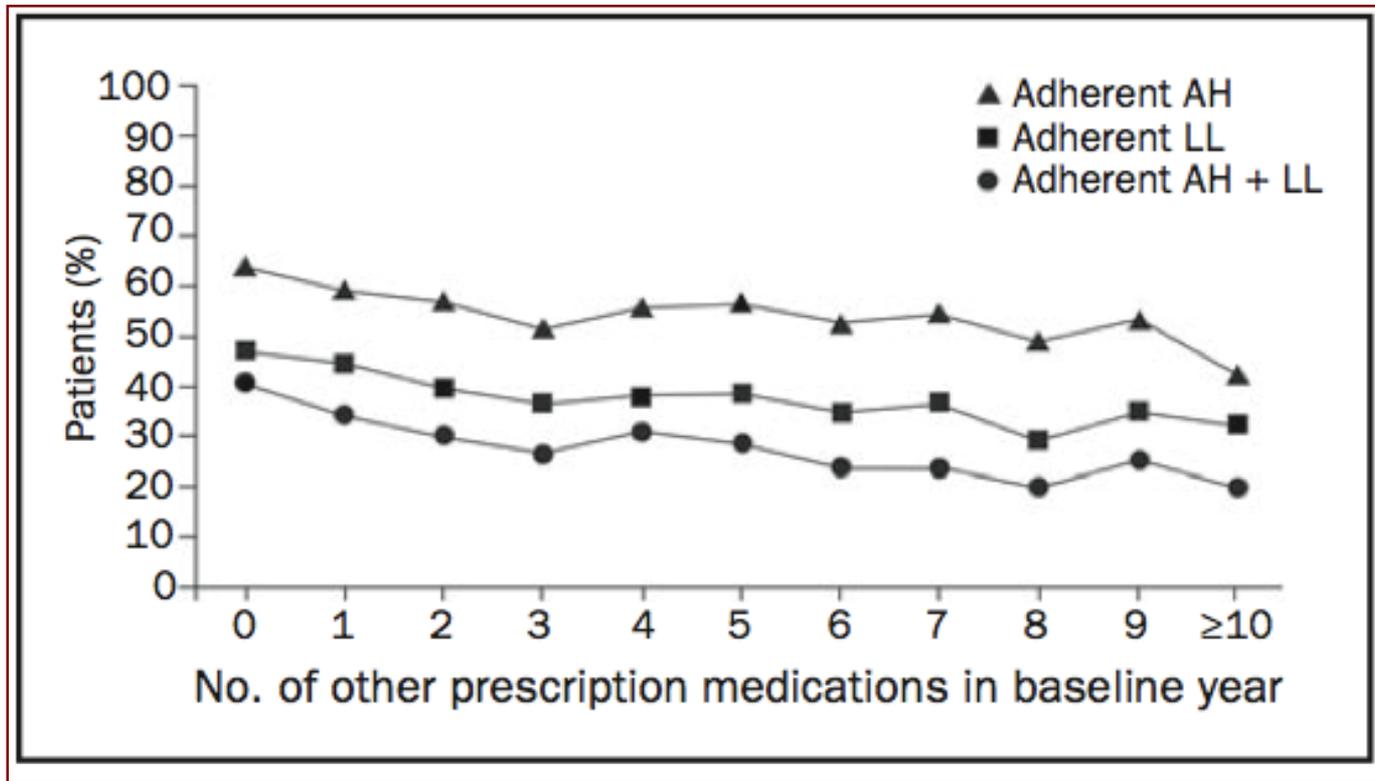
# Adherence Decreases as Frequency of Dosing Increases



*Adapted from Claxton, AJ. Clin. Therapeutics, 2001;23:1296-1300*

*Osterberg L N Engl J Med. 2005;353(5):487-497*

# Adherence Affected by Burden





# Simplify Regimen

- Use daily medication dose
- Adjust medication to take at the same time of day
- Use combination medication
- Avoid prescribing medications with special requirements
- Encourage adherence aids usage



# Variations in Pill Appearance and the Risk of Nonadherence

- Changes in pill color increased risk of nonadherence
- 80% of all meds in US are now generic
- If taking 5 medicines, each produced by 5 generic manufacturers theoretically over 3000 possible arrays of pill appearances ( $5^5$ )
- If taking 9 meds, patients experience 36 opportunities/yr to change appearance if given 3 month supply





ORIGINAL INVESTIGATION

# Communication and Medication Refill Adherence

## *The Diabetes Study of Northern California*

*Neda Ratanawongsa, MD, MPH; Andrew J. Karter, PhD; Melissa M. Parker, MS; Courtney R. Lyles, PhD; Michele Heisler, MD, MPA; Howard H. Moffet, MPH; Nancy Adler, PhD; E. Margaret Warton, MPH; Dean Schillinger, MD*

- Medication (i.e., oral hypoglycemic medications)  
Refill Adherence is independently associated with:
  - Patient Centered communication  
(CAHPS, Shared decision making: IPC)
  - Trust with their physicians (TIPS)



# Metformin

## Initiating Metformin

- Low dose
- Expect GI side effects
- Empower patient directed titration
- Increase dose 7 days after GI side effects have resolved
- Expect return of GI side effects after a brief drug holiday (as short as 3 days)





# Metformin Patient Instructions



To use metformin to lose weight and lower your sugar, please follow these directions:

1. Metformin will give you a mild upset stomach and diarrhea but this will go away within a few days as your body gets used to it.
2. Take  $\frac{1}{2}$  of a 500mg tablet and let your body get accustomed to it. After you have no stomach symptoms for 1 week, increase the metformin to 1 whole tablet. Stomach upset and diarrhea may return every time you increase the dose. These symptoms will go away within a few days if you keep taking the metformin.
3. If you stop taking the metformin for even 2 days, when you restart it all the stomach upset will return so try not to stop the medicine but if you do-restart at the lower dose and let your stomach get used to it again.
4. We may increase the metformin every 2-3 months depending on how much weight you lose and your A1c level. Metformin will not make your sugar go too low-we never have to worry about that.



# Pharmacy Approaches to Improve Medication Adherence

- 55,400 Community pharmacies in United States
- Approximately 71% of patients receive their medications from a community pharmacy



# The Pennsylvania Project: Pharmacist Intervention Improved Medication Adherence And Reduced Health Care Costs

Estimate: 10,000 members = **Savings of \$1.4 million/year**  
(If taking 35% statin, 10% diabetes med, or 10% both)

HealthAffairs

	I – Pharmacist (PDC)		C (PDC)		Average Effect (doubly robust propensity score)		Annual Health Care Savings for Intervention Patients
	Before	After	Before	After			
Oral Diabetes medication	61%	63%	63%	59%	0.048	p<0.01	<b>\$341</b>
Calcium channel blockers	65	70	66	65	0.033	p<0.001	21
Beta-blockers	63	68	65	64	0.031	p<0.01	19
Statins	66	73	68	70	0.041	p<0.01	241
RASA	66	72	66	65	0.037	p<0.001	91



# Effect of a Pharmacy Care Program on Medication Adherence and Persistence, Blood Pressure, and Low-Density Lipoprotein Cholesterol

A Randomized Controlled Trial



- Face to face education by pharmacist led to enhanced adherence that decreased systolic and diastolic blood pressure

	I - Pharmacist	Control	Blood Pressure
Medication Adherence	96.9% P<0.001	61.2%	Decreased 6.9mmHg 95%CI, -10.7 to -3.1mmHg
MPR after 6 months	95.5% P<0.001	69.1%	Decreased 1.0mmHg 95%CI, -5.9 to 3.9mmHg



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# Copayment Reductions Generate Greater Medication Adherence In Targeted Patients

# Health Affairs

Maciejewski, MI. HEALTH AFFAIRS 29, NO. 11 (2010): 2002–2008



The NEW ENGLAND  
JOURNAL of MEDICINE

**SPECIAL ARTICLE**

Choudhry, NK. *N Engl J Med.*  
2011;365:2088-97

# Full Coverage for Preventive Medications after Myocardial Infarction

**MEDICAL CARE**

The Impact of Medicare Part D on Medication  
Adherence Among Older Adults Enrolled in Medicare-

**Advantage Products**

Zhang, Y. *Med Care* 2010;48: 409–417



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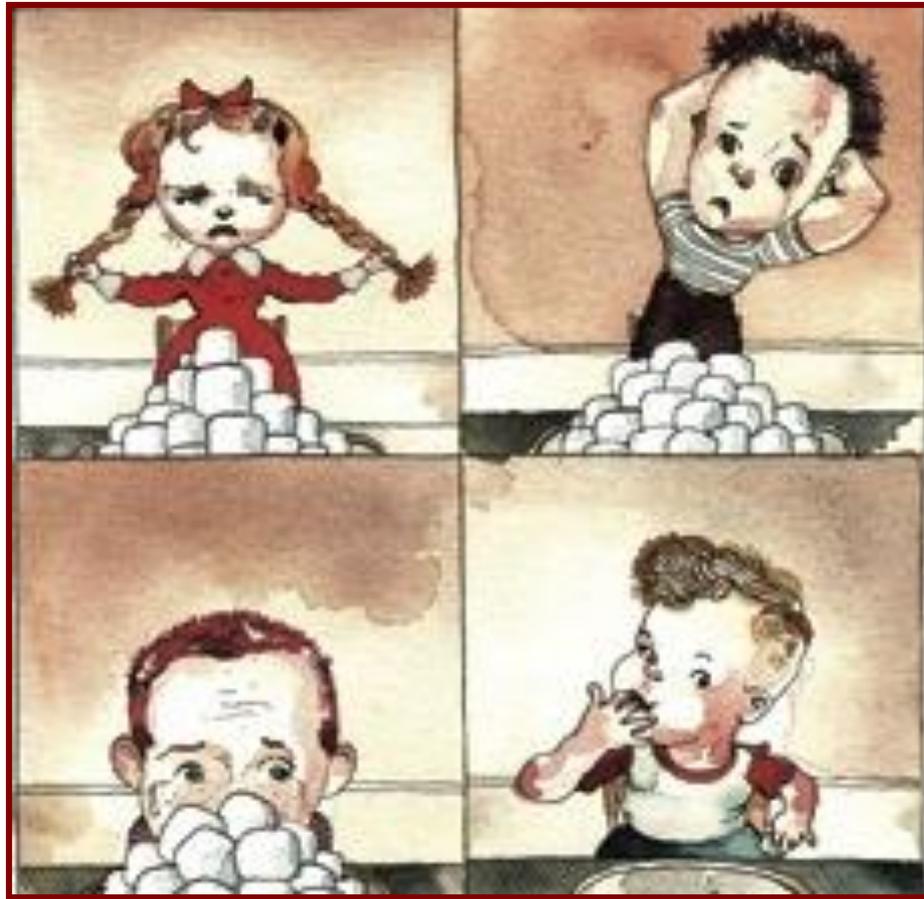
# Patients' Knowledge and Emotion



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# GENOTYPE FOR IMPATIENCE





# The Impatient Patient

- Prefers immediate rewards to efforts linked to long term therapy.
- Prefers smaller-sooner to larger-later rewards.
- The reward of adherence is “to avoid complications”.
- Paradoxically this type of reward is never “received”.



# The Impatient Patient

We are future oriented...while patients may not consider themselves as having a future to look forward to.



## Identify *Why* (DDx) Patient is Nonadherent and Tailor the Solution

PATIENT BARRIERS	APPROACHES TO IMPROVE MEDICATION ADHERENCE
• Fear	Health education programs, Education resources
• Misunderstanding	Indication for Rx, Screen for health literacy, Patient centered communication
• Lack of symptoms	Review benefits
• Depression	Screen for depression and treat
• Cost	Generic Rx, Rx assistant information, Copayment reduction
• Too many medications	Simplify Rx regimen, Refill consolidation
• Worry	Review beliefs, Address concern of dependency, Empower patient
• Mistrust	Time, High level of caring/competence to develop trust
• Forgetting	Pill box, Alarms, Simplify Rx



Screen for health literacy	SAHL-SE, REALM-SF <a href="http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy/index.html#rapid">http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy/index.html#rapid</a>
Use “teach-back” or “show-back” techniques	<a href="http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2.html">http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2.html</a>  <a href="https://www.acponline.org/multimedia/?bclid=782539368001&amp;bctid=790962260001">https://www.acponline.org/multimedia/?bclid=782539368001&amp;bctid=790962260001</a>
Use simple language and communicate clear instruction	<a href="http://www.npsf.org/?page=askme3">http://www.npsf.org/?page=askme3</a>
Use pictures, graphics, website	<a href="http://www.ahrq.gov/patients-consumers/diagnosis-treatment/treatments/pillcard/index.html">http://www.ahrq.gov/patients-consumers/diagnosis-treatment/treatments/pillcard/index.html</a>  <a href="http://healthcare411.ahrq.gov/">http://healthcare411.ahrq.gov/</a>  <a href="http://medlineplus.gov">http://medlineplus.gov</a>



# Prescription Drug Assistance From Familydoctor.org

- [www.PPARx.org](http://www.PPARx.org)
- [www.rxassist.org](http://www.rxassist.org)
- [www.togetherRxAccess.com](http://www.togetherRxAccess.com)
- [www.needymeds.com](http://www.needymeds.com)
- [www.RxHope.com](http://www.RxHope.com)



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# MAYO CLINIC PROCEEDINGS

## REVIEW

### **Medication Adherence: WHO Cares?**

MARIE T. BROWN, MD, AND JENNIFER K. BUSSELL, MD

The treatment of chronic illnesses commonly includes the long-term use of pharmacotherapy. Although these medications are effective in combating disease, their full benefits are often not realized because approximately 50% of patients do not take their medications as prescribed. Factors contributing to poor medication adherence are myriad and include those that are related to patients (eg, suboptimal health literacy and lack of involvement in the treatment decision-making process), those that are related to physicians (eg, prescription of complex drug regimens, communication barriers, ineffective communication of information about adverse effects, and provision of care by multiple physicians), and those that are related to health care systems (eg, office visit time limitations, limited access to care, and lack of health information technology). Because barriers to medication adherence are complex and varied, solutions to improve adherence must be multifactorial. To assess general aspects of medication adherence using cardiovascular disease as an example, a MEDLINE-based

portant that they partner with patients in doing what is right together.

This review will discuss general aspects of medication adherence, using cardiovascular disease (CVD) as an example, and provide the physician with various practical strategies and resources for improving medication adherence among their patients.

#### **METHODS**

We conducted a MEDLINE database literature search limited to English- and non-English-language articles published between January 1, 1990, and March 31, 2010, using the



# Summary

- 50% of patients do not take medication as prescribed
- Simply asking if the patient is taking the medication is not enough
- How you ask is critical
- Develop a Differential diagnosis to determine the cause
- Recognize that most nonadherence is intentional
- Tailor the solution and individualize the conversation
- Involve the patient in developing their treatment plan



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# **PROMOTING MEDICATION ADHERENCE IN DIABETES**

**Joanne Gallivan, MS, RD**

Director, National Diabetes Education Program

National Institutes of Health



## Promoting Medication Adherence in Diabetes YourDiabetesInfo.org/MedicationAdherence



NDEP is a partnership of the National Institutes of Health, the Centers for Disease Control and Prevention, and more than 200 public and private organizations.



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#### Promoting Medication Adherence

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- > [Resources for Health Care Teams](#)
- > [Scientific Evidence](#)

### Promoting Medication Adherence in Diabetes

Achieving optimal medication-taking behavior is a collaborative process of communication and understanding between patients and their health care teams. Health care professionals can improve medication-taking behavior in their patients by modifying their approach on an individual and a system level. The National Diabetes Education Program has compiled the resources on this website to support health care professionals in promoting medication adherence\* among their patients and within their teams.



**Resources for patients**

Tools, such as handouts and websites, for health care professionals to share with their patients

**Resources for health care teams**

Tools, such as videos, presentations, and training guides, for health care professionals to modify their practice

**Scientific evidence**

Journal articles for health care professionals and researchers



**Medication facts:** View up-to-date medication information sheets from the National Library of Medicine.

#### Submit a Resource or Article

Help us expand our collection. If you know of a resource or article to help improve medication-taking behavior, visit the [Submit a Resource](#) webpage.

# Resources for Patients



 Centers for Disease Control and Prevention
  National Institute of Diabetes and Digestive and Kidney Diseases

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### My Medicine List



Can you name all of the medications you are taking? Do you know what does you are taking and what the medicine is for?

My Medicine List™ can help you keep track of everything you take to keep you healthy, including pills, vitamins, and herbs.

Having a list of all your medicines in one place also helps your doctor, pharmacist, hospital, or other healthcare workers take better care of you.

Click here to download your PDF copy of "My Medicine List™." You can then fill out each line electronically, save it to your computer, and print out a copy.

• My Medicine List in Spanish—Mi Lista de Medicamentos

**NOTE:** This form works best using Internet Explorer. Other browsers may not support it. If you cannot fill out the form electronically using a browser other than Internet Explorer, simply print out the list and fill it in by hand.

My Medicine List™ was developed by ASHP and the ASHP Foundation through a sponsorship from sanofi-aventis.

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**Organization**

	National Council on Aging
<p><b>My Medicine List</b> </p> <p>This online tool helps patients keep track of all of their medications. Patients can save electronic versions and print copies. This tool is for people with higher literacy levels.</p>	ASHP
<p><b>NeedyMeds</b> </p> <p>NeedyMeds is a national non-profit organization that maintains a website of free information on programs that help people who can't afford medications and health care costs.</p>	NeedyMeds, Inc
<p><b>Partnership for Prescription Assistance</b></p> <p>The Partnership for Prescription Assistance helps qualifying patients find the medications they need for free or at a discounted price. Users can be matched with patient assistance programs based on their eligibility or find free or low-cost clinics who can provide financial assistance.</p>	Partnership for Prescription Assistance



# Resources for Health Care Teams



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## Medication Adherence: Resources for Health Care Teams

Health care professionals can improve their own skills and processes to help promote medication-taking behavior in their patients. This page has resources to support members of the health care team.

[Print this list](#)

Show 10 entries

Title	Description	Organization
<a href="#">Adherence Measurement</a>	This presentation, in PDF form, summarizes and provides data for different options for adherence measurement.	David Nau and Pharmacy Quality Alliance (PQA)
<a href="#">Adherence to Type 2 Diabetes Management Plans: Developing Successful Patient Interactions</a>	This video includes activities to help health care professionals recognize the importance of empathy in fostering physician-patient partnerships and improving patient adherence to therapies for type 2 diabetes. It also presents solutions for overcoming barriers to patient adherence to therapies for type 2 diabetes.	Medscape
<a href="#">Adult Medication: Improving Medication Adherence in Older Adults</a>	This web-based program is for health care professionals and any other professionals who work with older adults. It provides education on important aspects of medication adherence in older adults and encourages collaboration to identify, resolve, and prevent medication nonadherence in older adults. Multiple tools and resources are provided.	American Society on Aging and American Society of Consultant Pharmacists Foundation



# Scientific Evidence Resources



NDEP is a partnership of the National Institutes of Health, the Centers for Disease Control and Prevention, and more than 200 public and private organizations.



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  - Scientific Evidence

## Medication Adherence: Scientific Evidence

This page contains research and review articles for health care professionals and researchers. Articles address a wide variety of medication adherence topics, such as assessment, barriers, and interventions.

Resources listed by title (A-Z)

Print this list

Title	Author
<p><b>Adherence to Preventive Medications: Predictors and outcomes in the Diabetes Prevention Program</b></p> <p>View full citation</p> <p><b>Description:</b> This article evaluated the effects of medication adherence strategies and barriers in the Diabetes Prevention Program (DPP). Multiple strategies to address medication adherence and fewer barriers were associated with improved adherence rates. Adherence was associated with risk reduction for diabetes, a finding that supports the development of brief interventions in clinical settings where medication adherence is a challenge.</p>	<p>Walker EA, Mollitch M, Kramer MK, et al.</p> <p>PubMed ID: 16936143   Abstract   Full text</p>
<p><b>Association between prescription burden and medication adherence in patients initiating antihypertensive and lipid-lowering therapy</b></p> <p>View full citation</p> <p><b>Description:</b> This study examined the association between prescription burden and medication adherence in patients initiating antihypertensive and lipid-lowering therapy. Among patients in a managed care database, taking antihypertensive and lipid-lowering medications, adherence became less likely as the number of prescription medications increased. The reduction in adherence with additional prescription medications was greatest in patients with the fewest preexisting prescriptions.</p>	<p>Benner JS, Chapman RH, Petrella AA, Tang SS, Rosenberg N, Schwartz JS</p> <p>PubMed ID: 19667004   Abstract</p>
<p><b>Improving Adherence to Cardiovascular Disease Medications With Information Technology</b></p> <p>View full citation</p> <p><b>Description:</b> This study was designed to improve adherence to cardiovascular disease medications using a low-cost, electronic medical record linked telephone reminder intervention. Findings showed small but statistically significant improvements in adherence.</p>	<p>Vollmer W, Williams A, Vupputuri S, et al.</p> <p>PubMed ID: PMC3251417   Abstract   Full text</p>
<p><b>Interventions for Enhancing Medication Adherence (Review)</b></p> <p>View full citation</p> <p><b>Description:</b> This Cochrane Review is an updated assessment of interventions designed to promote medication adherence across a variety of disease states. Findings from 182 trials underline the fact that few interventions are highly effective in improving medication adherence.</p>	<p>Nieuwaat R, Wilczynski N, Navarro T, et al.</p> <p>Publication Links: Abstract   Full text</p>



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