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From Prescription to Practice: Tackling Adherence Challenges in Clinical Care

M. Robin DiMatteo, PhD

Distinguished Professor, Psychology

University of California, Riverside

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Welcome

Michael W. Konstan, MD
Principal Investigator, Cardi-OH

Shari Bolen, MD, MPH
Co-Principal Investigator, Cardi-OH

Case Western Reserve University School of Medicine

About Cardi-OH

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Ohio Cardiovascular and Diabetes Health Collaborative

Founded in 2017, the mission of Cardi-OH is to improve cardiovascular and diabetes health outcomes and eliminate disparities in Ohio's Medicaid population.

WHO WE ARE: An initiative of health care professionals across Ohio's seven medical schools.

WHAT WE DO: Identify, produce, and disseminate evidence-based cardiovascular and diabetes best practices to primary care teams.

HOW WE DO IT: Online library of best practices resources available at Cardi-OH.org and via our web app, including monthly newsletters, podcasts, webinars, and quality improvement using the Project ECHO® virtual training model.

Learn more at Cardi-OH.org

Special Thanks

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  - Shari Bolen, MD, MPH; M. Robin DiMatteo, PhD; Michael W. Konstan, MD; Amy Zack, MD
- The following members of the planning committee do not have any disclosures or financial relationships from any ineligible companies:
  - Gillian Irwin, Elizabeth Littman, Ann Nevar, Devin O'Neill, Claire Rollins, Catherine Sullivan

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Agenda

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Topics	Presenter(s)	Timing
Welcome and Overview	Michael W. Konstan, MD Shari Bolen, MD, MPH	5 mins.
From Prescription to Practice: Tackling Adherence Challenges in Clinical Care	M. Robin DiMatteo, PhD	40 mins.
Audience Question and Answer	Amy Zack, MD (Moderator) M. Robin DiMatteo, PhD	10 mins.
Next Steps and Wrap Up	Shari Bolen, MD, MPH	5 mins.

M. Robin DiMatteo, PhD
University of California, Riverside

Amy Zack, MD (Moderator)
Case Western Reserve University
Cleveland Clinic

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From Prescription to Practice: Tackling Adherence Challenges in Clinical Care

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Learning Objectives

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- Identify key components of successful treatment adherence
- Understand barriers to treatment adherence
- Employ practice and communication changes to improve overall treatment adherence in patient panels

Acknowledgements

Leslie R. Martin, PhD
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Kelly B. Haskard-Zolnierek, PhD
Professor of Psychology, Texas State University

Co-developers of the Information-Motivation-Strategy Model, and Co-authors, *Health Behavior Change and Treatment Adherence: Evidence-Based Guidelines for Improving Healthcare*, 2nd Ed., Oxford University Press, 2025

Goals

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- Understand and manage patient adherence and health behavior change
- Improve cardiovascular disease and diabetes health outcomes
- Reduce health disparities, particularly in Medicaid populations
- Help health care teams through communication and connection with patients and each other
- Build awareness of patient as whole person in socio-ecological context (see Robert B. Saper, MD, MPH, December 3, 2025, Cardi-OH Statewide Webinar)

Every Touch Point in Care Matters

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All health professionals, all staff, can model and inspire:

- Healthy actions
- Awareness
- Caring
- Empathy
- Encouragement

Adherence. Not Just Another Thing to Do!

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- Stats can be discouraging, overwhelming
- Some patients can be frustrating
- So little time in practice today, fewer long-term relationships
- Prevention and early detection of nonadherence is preferable
- Essential to understand the factors that affect adherence and what to do about them

The Frame Has Changed

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- 1948 through the 1980's: "compliance" with doctor's orders
- "Does the patient comply with what the doctor intended?"
- Changed to "adherence"
- Sometimes "concordance"
- Outgrowth of "shared decision making" models

The “Hateful Patient”

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- Attitudes/framing matters: “taking care of the hateful patient”*
- Dealing with patients who evoke negative emotions: “non-compliant self-destructive deniers”
- Set appropriate boundaries while maintaining compassion and realistic expectations

*Groves, JE. N Engl J Med. 1978;298(16):883-7.

History of Adherence Research: 1948-2026

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- 1948: Mary Hardy, MD; 1949: Angelo Taranta, MD
- Corpus of research work: tens of thousands of research papers
  - Most helpful studies are ones that focus on meta-analyses, randomized controlled trials, large cross-sectional studies
- 1982: *Achieving Patient Compliance,* DiMatteo and DiNicola (Pergamon)
- 2025: *Health Behavior Change and Treatment Adherence,* DiMatteo, Martin, and Haskard-Zolnierek (Oxford University Press)

As Recently as 2020, Nonadherence Described as…

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- "Unmet challenge"
- "Barely on the radar of practicing clinicians"
- "An epidemic hiding in plain sight"

Human behavior is the "wild card" in health care.

Malik M, et al. Psychiatric Times. 2020; 37(3):25–26.
Kleinsinger F. Perm J. 2018; 22:18–33.

European Society of Cardiology

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Report from the Working Group on Cardiovascular Pharmacotherapy:

- Heart failure affects over 60 million people globally
- Guideline-directed medical therapies reduce mortality
- Adherence is essential, but only 40-60% of patients follow treatment guidelines

Savarese G, et al. Eur J Heart Fail. 2025;27(12):2716-2731.

Nonadherence in Chronic Disease

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- At least 1-in-4 patients (~25%) nonadherent to medication or treatment
- Initiation: primary nonadherence (avg. 14.6%; 20.8% for lipid meds)
- Maintenance: persistence (following 80+% of regimen)
- After 6 months (25-50+%) stopped treatment

Lemstra M, et al. 2018;12:721-731.

“Miracle Drugs” Don’t Work if Not Taken

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- Antibiotics: 1949 rheumatic fever, “miracle antibiotics”
- GLP-1 medications: diabetes, obesity, cardiovascular benefits
  - Non-persistence within months (50% within a year): weight regain, loss of associated health benefits
  - Why? Side effects, prohibitive costs, challenges to convenient availability

Health Behavior Changes

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Commonly recommended in cardiovascular and diabetes care:

Exercise

Healthy eating, obesity prevention, and management

Moderate alcohol use

Avoid tobacco

Vaccinations

Screening

Adherence Declines as Regimen Complexity Increases

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- Lifestyle changes and complex medication regimens with side effects = lower adherence
- Treatment improves symptoms = higher adherence
- Treatment prevents consequences of a disease = mixed results
- Maintenance is difficult (e.g., 43-60% of patients with IBD on an oral medication to prevent flare-ups are nonadherent)

Unintentional Nonadherence

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Patient does not have skills or resources to follow treatment

Incomplete understanding of necessity and requirements for prescribed/proscribed behaviors (e.g., low health literacy)

Forgetting, busy, memory lapses, demands

Dosing, scheduling complexity

Lack of resources (e.g., transportation to appointments)

Intentional Nonadherence

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Skepticism of diagnosis, treatment efficacy, distrust medicine and public health messages

Frustrated, bored, expected a cure, not just maintenance

Fear of medications, side effects

"Motivated forgetting" (denial, drug/treatment holiday)

Conscious choice: adhere to social media, social/cultural group

Decision to change medication regimen (e.g., take half, save money)

Clinicians Often Don't Recognize Nonadherence

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Providers often assume patients behave "rationally"

Not my patients.

I know which ones are nonadherent.

What's the point of knowing about it if I can't do anything about it?

It's their choice.

I don't want to insult patients or seem suspicious.

What Patients Do

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- Patient hides nonadherence (don't get busted!)
- Provider seems busy, so win-win!
- Patient is inconsistent across regimens — very adherent to some treatment, not at all to others
- Rare for patient to say, "I'm having trouble taking the meds you prescribed. Can you help me?"

Does Adherence Matter?

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- Meta-analyses: adherent patients have *2.88 times better odds* of positive outcome
- Most comprehensive investigation to date, 771 adherence-promoting interventions
- Standardized mean effect size of 0.29 — advantage to adherence interventions over control in variety of health outcomes
- Placebo effect of adherence

Conn VS, et al. Prev Med. 2017;99:269-276.

Financial Costs of Nonadherence

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- Costs of disease progression
- Emergency department visits, hospitalizations, additional treatments
- Expected and unexpected sequelae of suboptimal management

How do we estimate the costs associated with 25% of all medical advice wasted?

Lemstra M, et al. 2018;12:721-731.

Human Costs

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- Human costs (e.g., 89,000 premature deaths from poor management of hypertension)
- Suffering from avoidable complications
- Antibiotic-resistant bacteria from failure to correctly take prescribed antibiotics correctly
- Failure to mitigate communicable diseases in populations

Information-Motivation-Strategy Model

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- Evidence-based heuristic
- Three pillars of treatment adherence
- Front-of-mind in every conversation with patient
- Format to apply your clinical experience to health behavior change and treatment adherence
- Create unique profile for each patient
  - Challenges, strengths, open questions, potential solutions

DiMatteo, MR, et al. Health Psychology Review, 2012; 6(1)74–91.
DiMatteo, MR, et al. Health Behavior Change and Treatment Adherence: Evidence-Based Guidelines for Improving Healthcare, 2nd Ed., Oxford University Press, 2025.

Information-Motivation-Strategy Model

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Information (Know)

Does patient know what to do and understand why?

Motivation (Want)

Does patient want to follow the treatment?

Strategy (Able)

Is the patient able to follow the treatment to overcome or manage barriers?

Information

Does the Patient Know What To Do?

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- Does patient understand treatment?
- Smiling/nodding = not evidence of understanding
- Patients forget or misunderstand 40-80% of visit information by arrival at waiting room
- After visit summary in online chart may not be enough
  - Patient health literacy
  - Anxiety
  - Pre-existing beliefs and expectations

DiMatteo, MR, et al. Health Psychology Review, 2012; 6(1)74–91.
DiMatteo, MR, et al Health Behavior Change and Treatment Adherence: Evidence-Based Guidelines for Improving Healthcare, 2nd Ed., Oxford University Press, 2025.

Information

What Is the Patient Telling You?

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- Asking “Are you taking your meds?” invites a “yes” response
- Nonjudgment about nonadherence:
  - “Sometimes patients find it hard to take their pills every single day. In a typical week, how many doses do you think you might miss?”
  - “What do you find is the hardest part about following this plan?”
- Hold open lines of communication for honest interchange
- Listen

Information

Be Open to Recognizing Nonadherence

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- Red flags
  - Previously well-controlled condition worsens
  - Pharmacy lags (EMR-missed or late refills)
  - Vague answers to “How do you take your medicine?”
    - “I take them most of the time” versus “I take the pink one right before bed”
- Ask, connect, understand, be nonjudgmental and empathic

Information

Low Health Literacy

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- Limits understanding, recall, promotes medication errors
- Nearly 20% of U.S. adults have low literacy, and up to 36% of seniors have low health literacy
- Information must be tailored to the patient's literacy level and cultural context
- Enhance communication with technology and teams

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. https://nces.ed.gov/pubs2022/2022004.pdf.
Gazmararian JA, et al. Patient Educ Couns. 2003;51(3):267-275.

Information

Communication Strategies

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- The Teach-Back Method
  - Interactive loop: patients restate treatment plan in their own words to ensure comprehension. “Just so I'm sure I explained this clearly, can you describe how you will take this new medicine?"
- Ask-Tell-Ask
  - Ask what they know, tell them the new info (limit to 3 points), then ask what they understood
- Identify "Key Learner”
  - "Who helps you with your health at home? Can you include that person?”
  - Invite their reading of the after visit summary

Information

Trust is Built With Nonverbal Communication, Empathy, Rapport

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- Nonverbal immediacy: your full attention
- Vocal tone, eye contact, and facial expressions
- Patient's viewpoint valued, foster trust/engagement
- Effective communication = foundation of adherence
  - Meta-analysis: 19% risk difference – better adherence among patients of providers with better communication skills

Zolnierek KB, et al. Med Care. 2009;47(8):826-34.

Motivation

What Does the Patient Want To Do?

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- Patients follow treatment they want to follow, believe benefits outweigh costs
- Motivation is not just about willpower
- Requires collaborative partnership between clinician and patient
- Joint decision-making, examining risks, expectations

Motivation

Beliefs and Attitudes

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- Motivation for health is partly personal, internal, and thought-driven

Health Belief Model

Patients' health behaviors are driven by:

- Perceived severity of disease
- Perceived susceptibility to disease
- Perceived utility/benefits of treatment versus perceived costs

Social Cognitive Models

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- Motivation is also social
- Examine influence/interplay of factors driving beliefs, attitudes
  - Subjective norms (family, friendship network)
  - Cultural beliefs, expectations
  - Social media (two-way communication)
- Behavioral commitment: some patients influenced by what family, friends, and peers think the patient *should* do

Motivation

Persuasive Messenger

- “Doctor’s orders” compete with other loud or trustworthy voices
- Persuasive clinician has expertise, is respected
- Affinity and trust
  - Familiar, likeable
  - Points of similarity, connection, parallels
- Reciprocity (e.g., gift of attention, whole person care)

Motivation

Persuasive Messaging

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- Message framing
  - What might be gained with adherence
  - Expectations for not adhering
- Consistency: reconcile personal beliefs with actions
- Fear induction mostly does not work
  - If used, it requires clear action steps
- Salience and teachable moments

Motivation

The Lay Referral Network

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- Informal social network consulted
- Now the internet: AI, social media, "Dr. Google"
- Is it a bad (or a good) idea for your patients to consult the internet for health advice?
- Reasons for consulting:
  - Lack of access
  - Lack of trust

Motivation

Behavioral Management Is "Hard" and/or "Boring"

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- Not as appealing as cure
- Classical and operant conditioning
- Cues to action
- Many people believe behavioral management is too hard and/or boring

Motivation

Quantum vs. Incremental Change

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- Offers of quantum change abound
- Health behavior change is incremental: behavioral discipline
- Experience with habit formation and maintenance
  - Train self out of bad habits
  - Adopt and maintain good ones
- Goal-framing, goal-setting, self-efficacy

Motivation

Stages of Change: Motivational Interviewing

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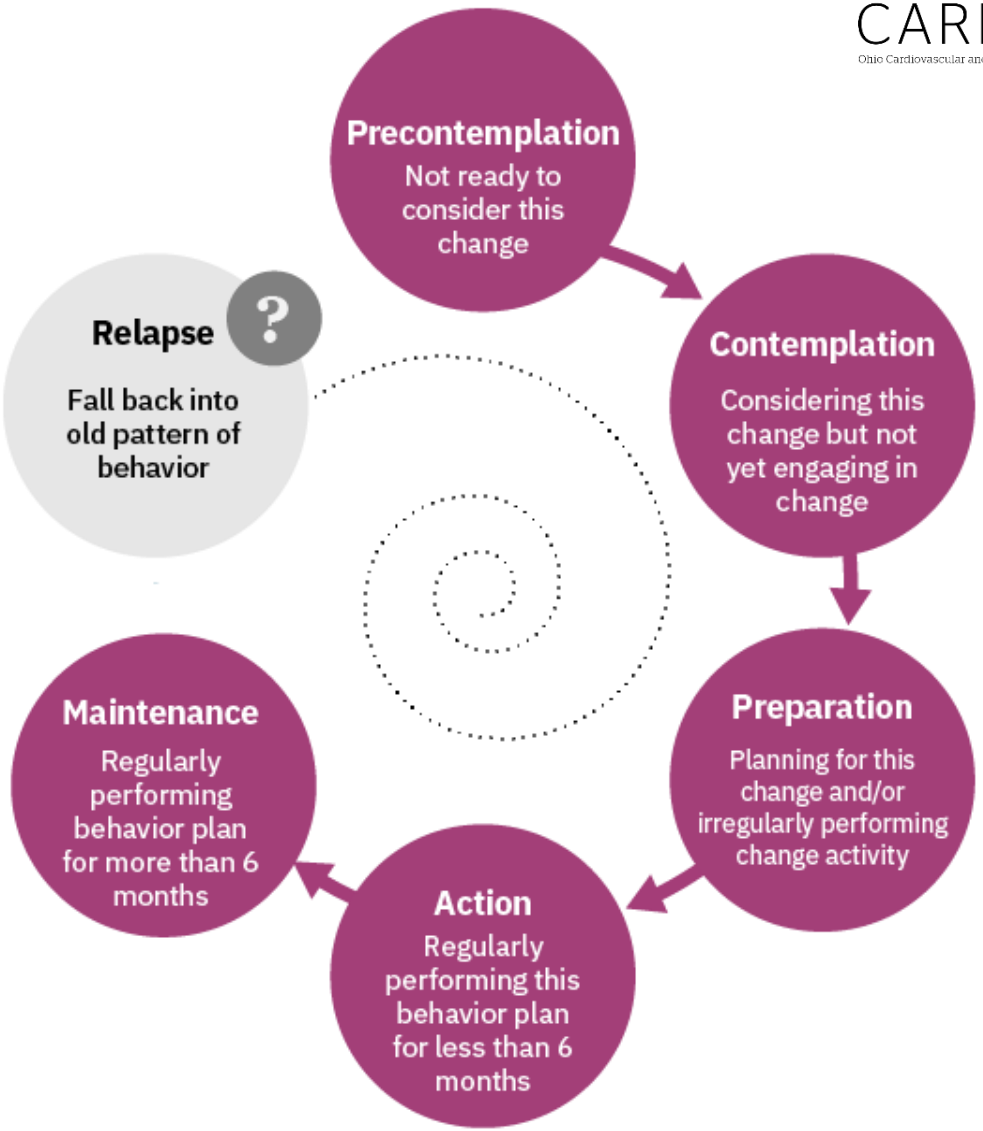
- Motivational interviewing is a clinical application of the Stages of Change Model (Transtheoretical Model)



Dean J et al. Journal of Renal Nursing; 2012; 4(6)284-288.
Prochaska J et al. Changing to Thrive: Using the Stages of Change to Overcome the Top Threats to Your Health and Happiness, Hazelden Publishing, 2016.

Motivation

Depression

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- Approximately 30-50% with chronic illness have comorbid depression
- Patients with depression: 3 times more likely to be nonadherent
  - Pessimism and hopelessness
  - Difficulty planning
  - Cognitive challenges
  - Social withdrawal
- Address depression as part of the adherence conversation
- Patient Health Questionnaire-2 (PHQ-2): two item adult screener; depressed mood and anhedonia

DiMatteo MR, et al. Arch Intern Med. 2000 Jul 24;160(14):2101-7.

Motivation

Patient Health Questionnaire-2

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Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not At All	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3

PHQ-2 scores range: 0 to 6; scores of 3 or more should trigger further evaluation for depressive disorder, anxiety, etc. (e.g., PHQ-9, Mental Health Inventory-5 [MHI-5], clinical interview)

Motivation

Serious Illness Paradox

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- We expect patients to adhere better as disease progresses
- But in very serious diseases, patients in objectively poorer health are often less adherent
- Adherence can feel futile if the disease is progressing

DiMatteo MR, et al. Med Care. 2007 Jun;45(6):521-8.

Strategy

What Is the Patient Able to Do?

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- Barriers to treatment adherence and health behavior change
- Look past “patient failed the plan”
- Nonadherence is a symptom of:
  - Specific barriers
  - Practical difficulties
  - Lack of resources

Strategy

Practical Difficulties

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- Often correlated with socioeconomic status: resource limitations
- Lack of personal physician
- Needs of family, children, “sandwich generation”
- Work schedules: sleep limitations, sleep disorders
- Time, funds, energy to acquire and prepare fresh foods
- Transportation
- Unique features (e.g., fear of needles, difficulty swallowing pills)

Strategy

Regimen Complexity

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- Simplifying regimens (e.g., once-daily dosing) consistently improves adherence
- Reduce pill burden, consolidate dosing where possible
- Help patient with strategies (e.g., pairing meds with daily activities, reminders, tiny habits)
- Build behavior change habits by linking behaviors, regimens

DiMatteo MR. Med Care. 2004 Mar;42(3):200-9.

Strategy

Cost Barriers and Side Effects

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- Cost barriers
  - Financial strain and rising medication costs
  - Major drivers of "intentional" nonadherence
  - Proactively offer generics, guide to finding discounts
- Side effects
  - Respect patient's point of view, quality of life
  - Help patient to make side effects manageable
  - Offer a plan for adjustment if necessary

Strategy

Adherence Enhancing Tools

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- Recommend patient use:
  - Pill box organizers: easy and cost effective
  - Smartphone alerts/medication reminders: for the tech savvy
- Prescribe 90-day refills: increase first-fill and refill rates by reducing logistical friction
- Confirm patient is taking the first medication before adding more
- Identify individuals who can provide assistance
- Link patient to community resources

Strategy

Social Support

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- Patients with social support have *2.35 times higher odds* of adherence than those who do not
- Provides:
  - Encouragement
  - Supervision (e.g., reminders without nagging)
  - Modeling (e.g., habit of evening walk with friend/family member, regular bedtime)

DiMatteo MR. Health Psychol. 2004 Mar;23(2):207-18.

Strategy

Practical and Emotional Support

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- Practical support: odds of adherence *3.60 times higher*
  - Assistance with chores, reminders, transportation
  - Shopping and cooking heart healthy meals, giving at home injections
- Emotional support: odds of adherence *1.35 times higher*
  - Encouragement
  - Listening (to fears and frustrations)

Strategy

Family Dynamics

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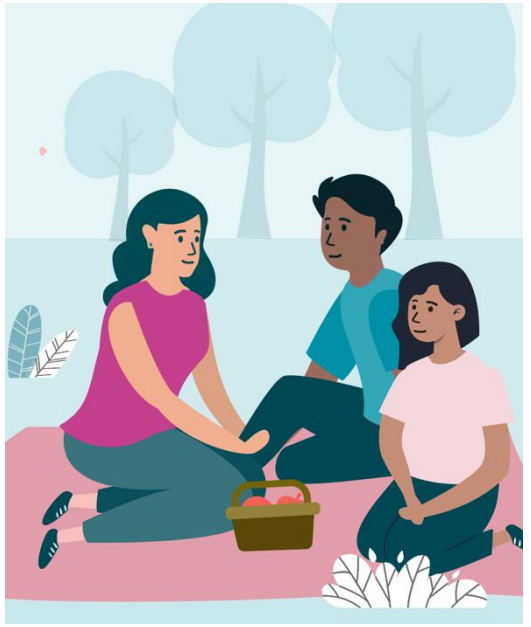
Close others can be a tremendous asset:

- With a supportive family network - odds of adherence *3.03 times higher*

They can also be a liability:

- Family characterized by conflict - risk of patient nonadherence *1.74 times higher*
- Stress of conflict, poor modeling



Strategy

Culturally-Informed Health Care

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- Culture: shared behavioral patterns within groups (ethnicity, age, social class, gender, religion, etc.)
- Offers a way to understand health behaviors (food preferences, patterns of exercise, alcohol use, view of medicine, science, experts, etc.)
- Essential in care of ethnically diverse populations
- In many ways, medicine is a “clinical social science”

Clinical Supports: Technologies and Teams

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- Tech solutions that allow for greater patient-clinician connection
- Digital tools (such as apps) that promote physical activity and healthy eating through reminders, tracking, and personalized encouragement

- Support all clinical team members to help patients with behavioral management
- Integrate health behavior promotion into practice, such as with psychologists, medical social workers, etc.

Clinical Supports: Collaborative Care/ Primary Care Behavioral Health Model

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- "Chronic Care Model" - flying lesson analogy
- Evidence-based support for primary care, behavioral/mental health
- Screening, facilitation of referrals to psych consultations/treatments
- Collaboration among multiple providers in care decisions, follow-up

Agency for Healthcare Research and Quality. https://integrationacademy.ahrq.gov/about/integrated-behavioral-health.
Wagner EH, et al. Health Aff (Millwood). 2001 Nov-Dec;20(6):64-78.
Fiscella K, et al. Am Psychol. 2018 May-Jun;73(4):451-467.

Patient Within Their Broader Socio-Ecological Framework

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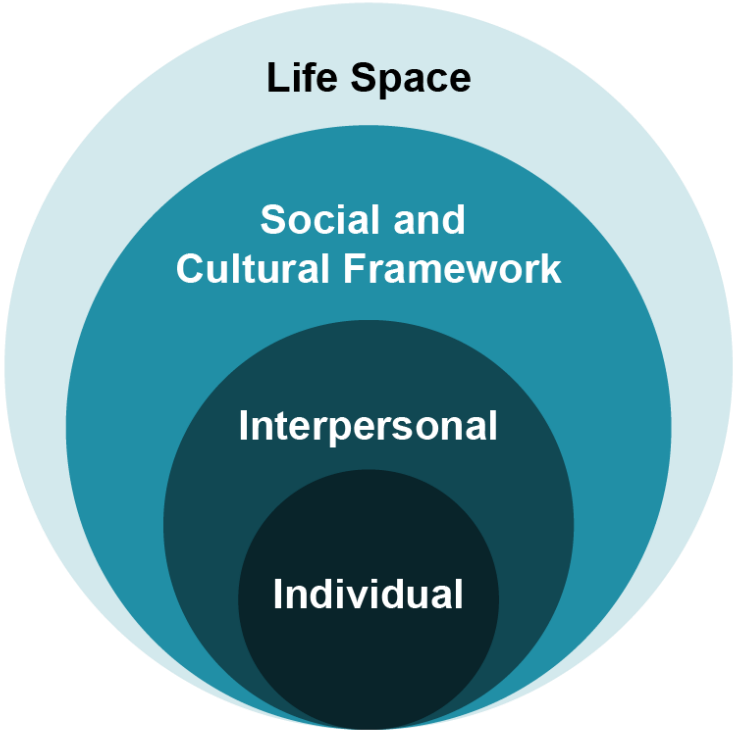
- Patient is embedded in socio-ecological-economic-cultural context
- Who is your patient as a person?
  - What matters to them; what do they believe
  - How do they live, what are their health habits
  - Are they depressed, hopeless, anxious, discouraged
  - What are their resources limitations; what stresses are on them



Information-Motivation-Strategy Model

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What do our patients know, what do they want, what are they able to do?

- Unique to each provider-patient relationship
- Nonadherence is not failure; adherence is a process
- Two-way communication; collaborative decision making
- Trust and empathy are foundational to adherence

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Audience Question and Answer

Amy Zack, MD

Case Western Reserve University School of Medicine

Speakers

REMINDER:
Submit questions using the 'Q&A' feature

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M. Robin DiMatteo, PhD
University of California, Riverside

Amy Zack, MD (Moderator)
Case Western Reserve University
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Ohio Cardiovascular and Diabetes Health Collaborative

Next Steps and Wrap Up

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CME Reminder

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- Registration is required for CME credit:

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We Want to Hear from You!

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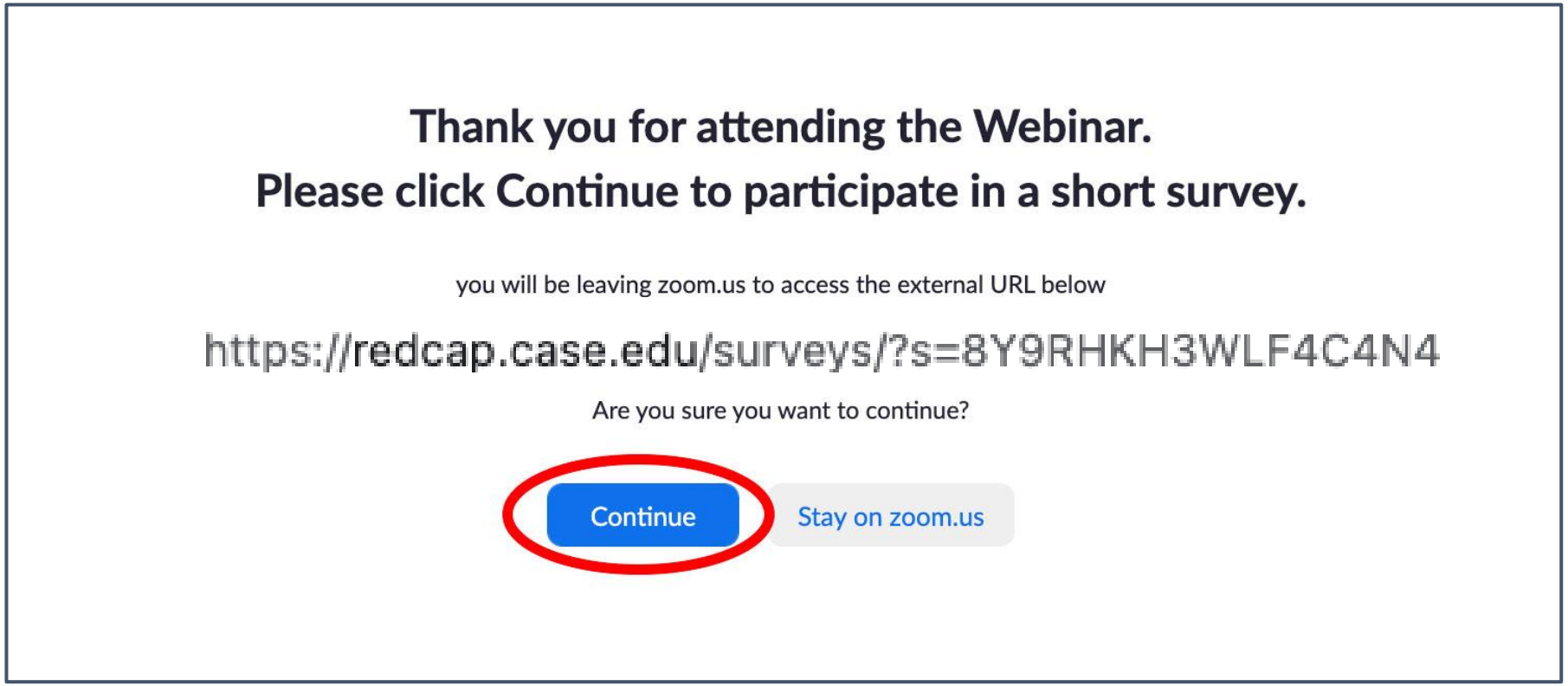

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THANK YOU!

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