



**CARDI•OH**

Ohio Cardiovascular Health Collaborative



*In partnership with:*



# Cardi-OH ECHO Reducing the Burden of Hypertension

Thursday, January 30, 2020

# Disclosure Statements



The following planners, speakers, moderators, and/or panelists of the CME activity have financial relationships with commercial interests to disclose:

- Adam T. Perzynski, PhD reports being co-founder of Global Health Metrics LLC, a Cleveland-based software company and royalty agreements for forthcoming books with Springer publishing and Taylor Francis publishing.
- Brian Bachelder, MD received funds for his role as Physician Advisor at VaxCare.
- SiranM. Koroukian, PhD received grant funds for her role as a subcontractor on a study funded by Celgene.
- Christopher A. Taylor, PhD, RDN, LD, FAND reports grant funding and travel support for his role as a consultant, researcher, and presenter for Abbott Nutrition, and is also a member of the Scientific Advisory Council of Viocare, Inc.
- Jackson T. Wright, Jr., MD, PhD reports research support from the NIH and Ohio Department of Medicaid and consulting with NIH, AHA, and ACC.
- These financial relationships are outside the presented work.

All other planners, speakers, moderators, and/or panelists of the CME activity have no financial relationships with commercial interests to disclose.

# Introduction to Factors Influencing Hypertension Treatment Adherence



Adam T. Perzynski, PhD

Associate Professor of Medicine and Sociology

Director of The Patient Centered Media Lab

Center for Health Care Research and Policy

The MetroHealth System

Case Western Reserve University

# Objectives



- Describe frameworks for understanding treatment adherence among patients with hypertension.
- Examine how social and cultural factors influence treatment adherence.
- Describe how selected health system barriers influence treatment adherence.

# What do we mean by “Adherence”?



- Patients who adhere to placebo have better outcomes than patients who do not adhere to placebo.
- Patients who do not get cancer screening are more likely to die of non-cancer related causes of death.
- Non-adherence is **BOTH**:
  - Directly causative of changes in health outcome
  - A marker of “a behavioral profile of ‘non-adherence’...associated with increased mortality.”

Irvine J, Baker B, Smith J, et al. 1999. Poor adherence to placebo or amiodarone therapy predicts mortality: results from the CAMIAT study. *Psychosom Med*, 61:566–75.

Pierre-Victor D, Pinsky PF. Association of nonadherence to cancer screening examinations with mortality from unrelated causes: a secondary analysis of the PLCO Cancer Screening trial. *JAMA internal medicine*. 2019 Feb 1;179(2):196-203.

# The Challenges of Adherence



- It is widely accepted that lack of adherence to medication and other treatment recommendations is a major contributor to excess morbidity and mortality from cardiovascular diseases.
- Review studies estimate that about 40% of patients do not take their medicine as prescribed (or at all).

Martin LR, Williams SL, Haskard KB, DiMatteo MR. The challenge of patient adherence. Therapeutics and clinical risk management. 2005 Sep;1(3):189.





Design	Reference	Study period (year)	Method	No. of patients	Population	% Nonadherence
Observational						
	Yakovlevitch and Black [14]	1991	Interview	91	Resistant hypertension, tertiary care	10
	Garg <i>et al.</i> [15]	2005	Interview	141	Uncontrolled BP, tertiary care	16
	de Souza <i>et al.</i> [22]	2009	Pill count	44	Resistant hypertension	36
	Ceral <i>et al.</i> [46]	2011	Drug assay	84	Difficult-to-control BP	65
	Strauch <i>et al.</i> [47]	2013	Drug assay	163	New referral outpatients	47
	Strauch <i>et al.</i> [47]	2013	Drug assay	176	Work out for exclusion of a secondary cause	19
	Jung <i>et al.</i> [48]	2013	Drug assay	76	Uncontrolled hypertension, primary care	53
	Brinker <i>et al.</i> [52]	2014	Drug assay	56	Apparent resistant hypertension	54
	Tomaszewski <i>et al.</i> [49]	2014	Drug assay	66	Uncontrolled BP	38
	Tomaszewski <i>et al.</i> [49]	2014	Drug assay	125	New referrals patients, primary care	18
	Tomaszewski <i>et al.</i> [49]	2014	Drug assay	17	Referred for consideration of RND	24
	Pandey <i>et al.</i> [21]	2015	MMAS-8	47	Apparent resistant hypertension	26
	Ewen <i>et al.</i> [51]	2015	Drug assay	100	Resistant hypertension undergoing RND	48
	Hameed <i>et al.</i> [44]	2015	DOT + 24-h ABPM	50	Uncontrolled BP	50
	Pandey <i>et al.</i> [21]	2015	Drug assay	47	Apparent resistant hypertension	51
	Florczak <i>et al.</i> [53]	2015	Drug assay	36	Primary resistant hypertension	86
	Schmieder <i>et al.</i> [54]	2016	Drug assay	79	Apparent resistant hypertension	44
Clinical trial						
	Fadl Elmula <i>et al.</i> [43]	2014	DOT + 24-h ABPM	83	Resistant hypertension, Oslo study	29
	Azizi <i>et al.</i> [55]	2015	MMAS-8	106	Resistant hypertension, DENERHTN study	25
	Beaussier <i>et al.</i> [56]	2016	Combination methods	168	Resistant hypertension, PHARES study	18
	Azizi <i>et al.</i> [57]	2016	Drug assay	85	Resistant hypertension, DENERHTN study	51
Large population						
	Irvin <i>et al.</i> [31]	2012	MMAS-4	2654	Apparent resistant hypertension	8
	Daugherty <i>et al.</i> [32]	2012	Pharmacy records	~3500	Uncontrolled BP on 3 or more drugs	12
	Sim <i>et al.</i> [30]	2013	Pharmacy records	>60 000	Resistant hypertension	7

ABPM, ambulatory blood pressure monitoring; BP, blood pressure; MMAS-4, 8, four-item and eight-item Morisky Medication Adherence Scales.

Overview of the prevalence of nonadherence in apparent resistant hypertension

Hamdidouche I, Jullien V, Boutouyrie P, Billaud E, Azizi M, Laurent S. Drug adherence in hypertension: from methodological issues to cardiovascular outcomes. *Journal of hypertension*. 2017 Jun 1;35(6):1133-44.

TIME	A	B	C
	Initiate	Implement	Persist
NON-ADHERENCE	Patient does not initiate treatment <i>Binary (yes/no)</i>	Patient delays, omits or takes extra doses <i>Dosing history</i>	Patient discontinues treatment <i>Time to event</i>
CONSEQUENCES	Drugs <b>don't work</b> in patients who do not <b>initiate</b> them	Drugs <b>work partially or may create harm</b> in patients who implement a dosing regimen <b>sporadically</b>	Drugs <b>stop working</b> in patients who <b>discontinue</b> them
MONITORING	<b>Direct methods (PK/PD)</b> Requires sampling after prescription	Sampling is too sparse	Subject to white coat adherence
	<b>Self-report</b> Desirability bias	Recall bias	Desirability bias
	<b>Pill counts</b> Easily censored by patient	Only an aggregate summary	Easily censored by patient
	<b>Prescription &amp; refill databases</b> <b>Gold standard</b> if both databases combined	Only an aggregate summary	<b>Gold standard</b> but retrospective
	<b>Electronic monitoring</b> Gold standard in CT; needs activation	<b>Gold standard</b>	Gold standard in CT; needs patient engagement



CARDI·OH  
Ohio Cardiovascular Health Collaborative

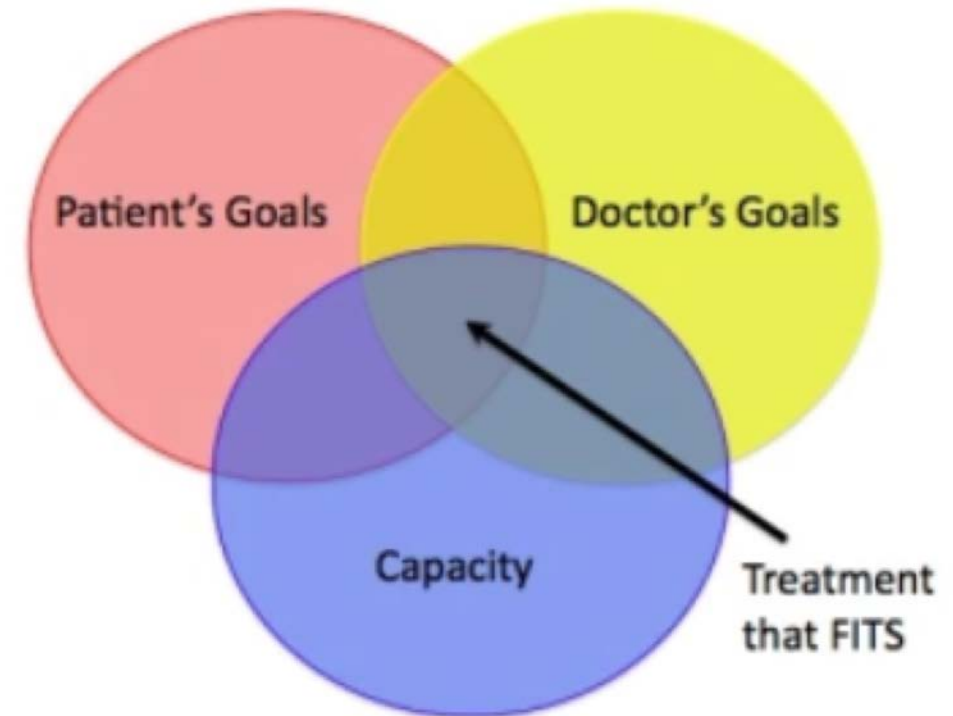
Vrijens, B., and Urquhart, J. (2014). Methods for measuring, enhancing, and accounting for medication adherence in clinical trials. *Clin. Pharmacol. Ther.* 95, 617–626. doi: 10.1038/clpt.2014.59



# The Minimally Disruptive Medicine Approach

Victor Montori, MD ***“Being a patient, especially being a patient with a chronic condition, is a lot of work.”***

- Being exhausted, frustrated, overwhelmed, fed up, disinterested, untrusting or even deceptive can be as much an outcome of medical care as an indicator or feature of “non-adherence”.



[What is fit? by Hannah Fields, Mayo Medical School student, https://minimallydisruptivemedicine.org/category/reference-material/](https://minimallydisruptivemedicine.org/category/reference-material/)

# What patients have told me:

*“... stress can bring on a lot of different things. High blood pressure and the works, you know, and the next thing ya know you’re a walkin’ time bomb.”*  
– Participant 4

**STRESS**

*“Yes. The care providers don’t listen, it’s just like this.”* – Care Partner 1

**Communication**

*“Well what about this medication? Oh this medication is so expensive you are going to have to order it from Canada because it’s \$700.”* – Participant 1

**COST**

*“I’ve been on many medications. They’ve caused vomiting, they’ve caused bad rashes. They’ve caused all kinds of different. They’ve caused stumbling, they’ve caused you know where I’ve felt like I, like suicidal type things, and I stopped them immediately. They’ve caused um frustration, not being able to sleep ugh.”* – Participant 3

**SIDE EFFECTS**

*“It’s not the fact that you don’t want to take your pills. It’s the fact that you’re just so tired of seeing, of hearing that alarm. You’re tired of seeing that note.”* – Participant 1

**Fatigue**



**Table 1** Psychological and social constraints on risk factor reduction

Recommendation and odds of continued risk <sup>a</sup> (INTERSTROKE)	Psychological and social constraints (TEAM study)	Example
A. Control hypertension with medication (OR = 2.6) and B. Control lipids with medication (OR = 1.9)	<ul style="list-style-type: none"><li>• Poor access to care prevents effective use of medication and health services</li><li>• Non-adherence due to mistrust or negative attitudes</li><li>• Tailoring of medication (skipping doses, bargaining)</li><li>• Racial discrimination and a lifetime of distress can make hypertension more difficult to treat</li><li>• Expensive medication</li></ul>	<p>“Man their scheduling... I’m almost at the end of my medication. I’m like oh God I need a refill.” (participant P1)</p> <p>“Sometimes I think of the doctors as just using us as a paycheck. If you get sick who you gonna go see, your doctor, who gets paid, your doctor. If they write a prescription for you they get kickbacks.” (participant P2)</p>
C. Salt restriction and consumption of a diet rich in fruits, vegetables, and low-fat dairy products (OR = 1.4)	<ul style="list-style-type: none"><li>• Cultural traditions including high salt/high fat foods</li><li>• Difficulty/costs in obtaining low-salt/low-fat foods</li><li>• Pressure from family and friends to eat “traditional” foods</li><li>• Knowledge and literacy barriers to reading labels and selecting healthy foods</li></ul>	<p>“I grew up on soul food all my life and it’s kind of hard for me to change.” (participant P5)</p>
D. Regular aerobic physical activity (OR = 1.4)	<ul style="list-style-type: none"><li>• Inadequate access to safe and affordable exercise programs/facilities</li><li>• Competing demands (stroke survivors are often themselves caregivers for spouses, children, older parents, or siblings)</li></ul>	<p>“I have a hard time walking... Because a house is not big enough to just get up and walk around any damn place you want. I mean you can do that, but where are you going to go?” (participant P3)</p>
E. Limit alcohol consumption (OR = 1.5) and F. Quit smoking (OR = 2.1)	<ul style="list-style-type: none"><li>• Family, peer, and social network pressures to continue past behaviors</li><li>• Poor mood, negative affect, and psychosocial stress may contribute to increased smoking and/or alcohol use</li></ul>	<p>“The things that get in the way of staying healthy and preventing another stroke? Okay. We put drinking alcohol.” (participant P9)</p>
G. Weight loss (OR = 1.7)	<ul style="list-style-type: none"><li>• Inadequate access to safe and affordable exercise programs/facilities</li><li>• Depression and psychosocial stress can make weight</li></ul>	<p>“My left side is pretty much paralyzed, so I have a hard time getting around or using the whole left side of my body.” (participant P4)</p>



**CARDI•OH**  
Ohio Cardiovascular Health Collaborative

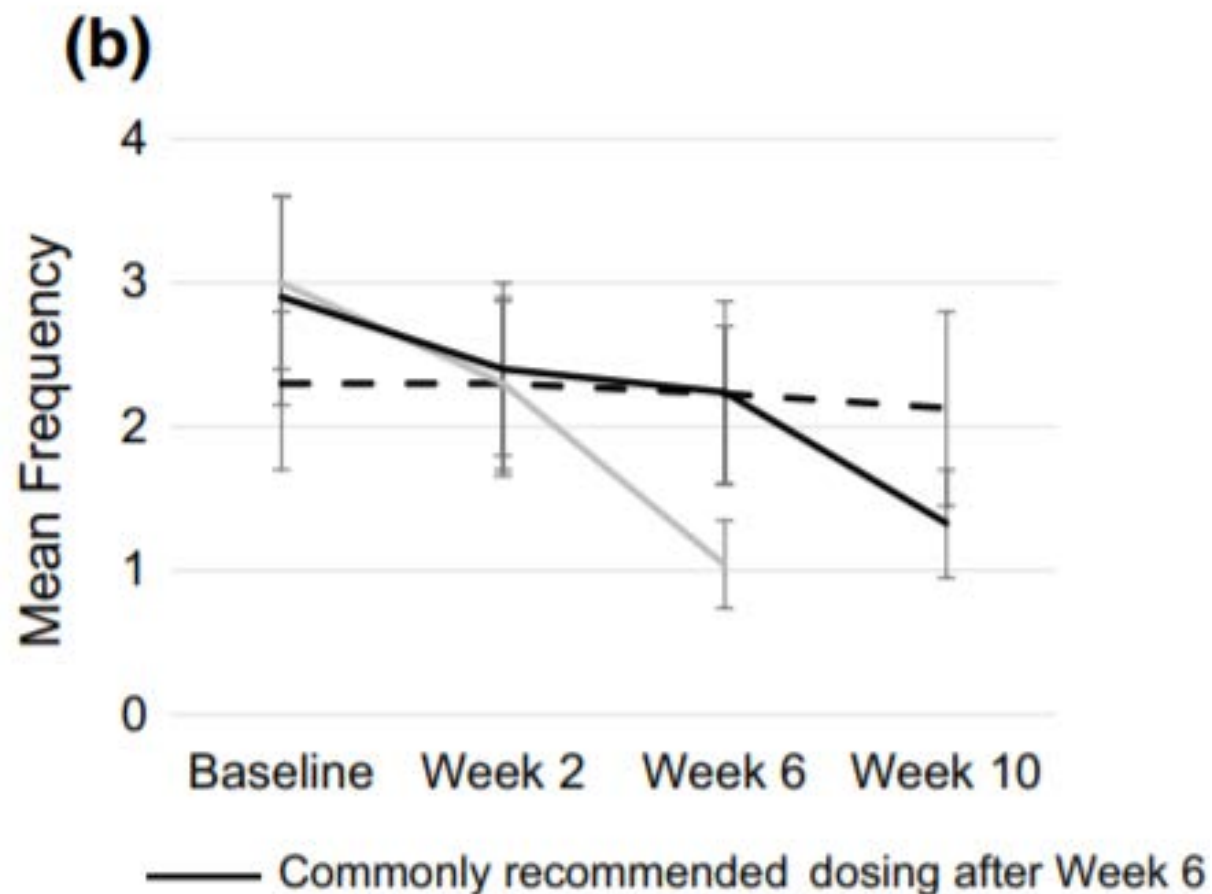
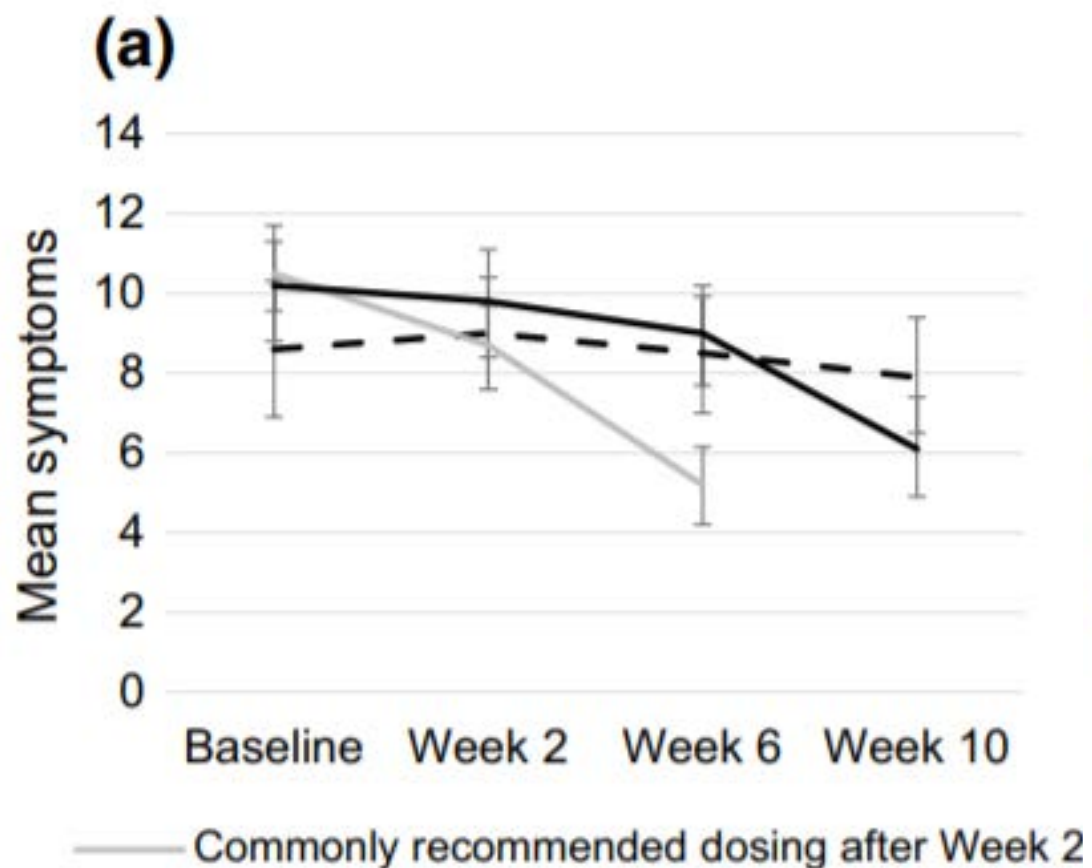
Perzynski A, Blixen C, Cage J, Colón-Zimmermann K, Sajatovic M. Informing Policy for Reducing Stroke Health Disparities from the Experience of African-American Male Stroke Survivors. *Journal of racial and ethnic health disparities*. 2016 Sep 1;3(3):527-36.

## Optimal Omeprazole Dosing and Symptom Control: A Randomized Controlled Trial (OSCAR Trial)

Abhijeet Waghray<sup>1</sup> · Nisheet Waghray<sup>2</sup> · Adam T. Perzynski<sup>1,4</sup> · Mark Votruba<sup>3,4</sup> · M. Michael Wolfe<sup>1,2</sup>



CARDI·OH  
Ohio Cardiovascular Health Collaborative



# Simple Strategies Improve Adherence



- Treatment priorities should be the patient's priorities
  - Teach back method
  - Inform patients of the benefits of taking medicine, and taking medicine according to instructions
  - Align treatment plans recommendations to patient goals and motivations (ie Motivational Interviewing approaches)



# Growing Old in a New World



CARDI•OH  
Ohio Cardiovascular Health Collaborative

## Tamer Hassan Said and Hardeep Gill

A 72-year-old Indian female with history of asthma, hypertension, and hyperlipidemia was seen in clinic for a follow up visit. She consistently had blood pressure readings over 180 despite continuously adding and increasing her doses of antihypertensives. She was accompanied by her son who interpreted for her. She was seen by a physician who spoke Hindi and was familiar with her cultural background. It was discovered that she only took her medications on days she did not feel good so that her medication could last longer. She was explained the rationale of taking her blood pressure medications daily in a culturally recognized fashion. Dietary education was provided based on her dietary habits. Follow-up appointments at 3 and 6 months showed a great improvement in blood pressure recordings; her blood pressure was 154/76 and 140/80, respectively.

Perzynski, A., Shick, S. and Adebambo, I. eds., 2019. *Health Disparities: Weaving a New Understanding Through Case Narratives*. Springer.

# Summary

- Many patients with hypertension do not take their medicine.
- Not taking medicine is a highly individual decision, influenced by many factors:
  - Community
  - Social
  - Medical
  - Historical
  - Behavioral
  - Financial
  - Environmental
  - Interpersonal
- Care teams can work together with patients to reinforce a healthy pattern of medication taking and thereby reduce blood pressure.

Thank you!

Questions/Discussion

# Watch Previous ECHO Clinics



Register with Cardi-OH and watch all ECHO Reducing the Burden of Hypertension clinics

<https://www.cardi-oh.org/user/register>

<https://www.cardi-oh.org/echo/hypertension-spring-2020>

Additional core principles

- Empathy
- Shared experience
- Collaborative
- Structure
- Time
- Recognition of successes
- Medicalization
- Reflection on recommendations

Communication: Core Principals

September 26, 2019  
Goutham Rao, MD  
Case Western Reserve University

Obesity - Why it Falls in the Primary Care Domain

September 19, 2019  
Goutham Rao, MD  
Case Western Reserve University