

Improving Drug Use for Elderly Heart Failure Patients

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Objectives

- Review aims
- Update on study status
- Describe problems and possible solutions

Aims

Design a multi-leveled, pharmacy-based program to improve medication use and adherence by using tailored strategies such as written and verbal patient education from a pharmacist and special medication packaging.

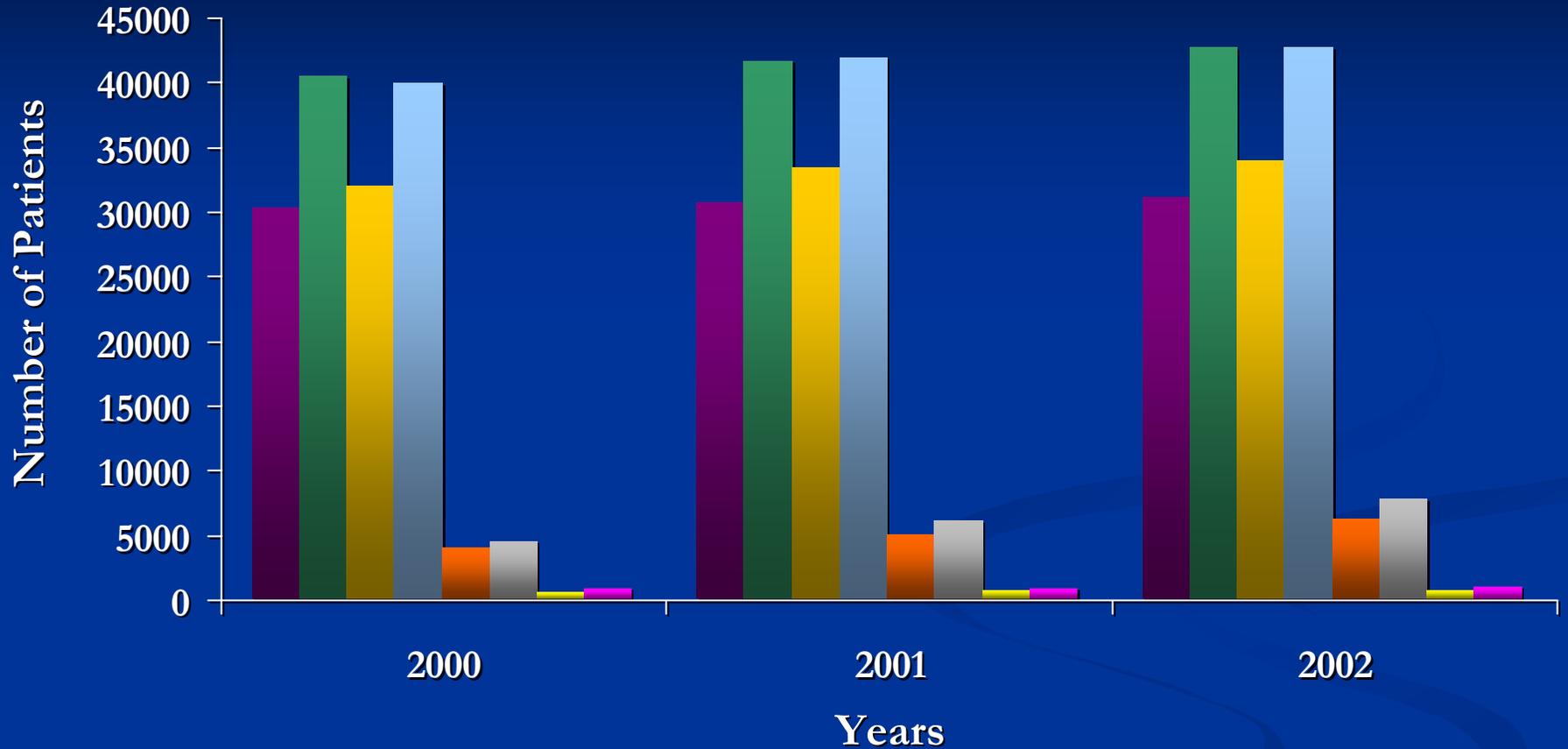
Aims

Conduct randomized controlled trials in which adults 50 years of age or older with heart failure are randomly assigned to usual care or to intervention by a specially trained and equipped pharmacist.

Aims

Determine cost-effectiveness of the intervention.

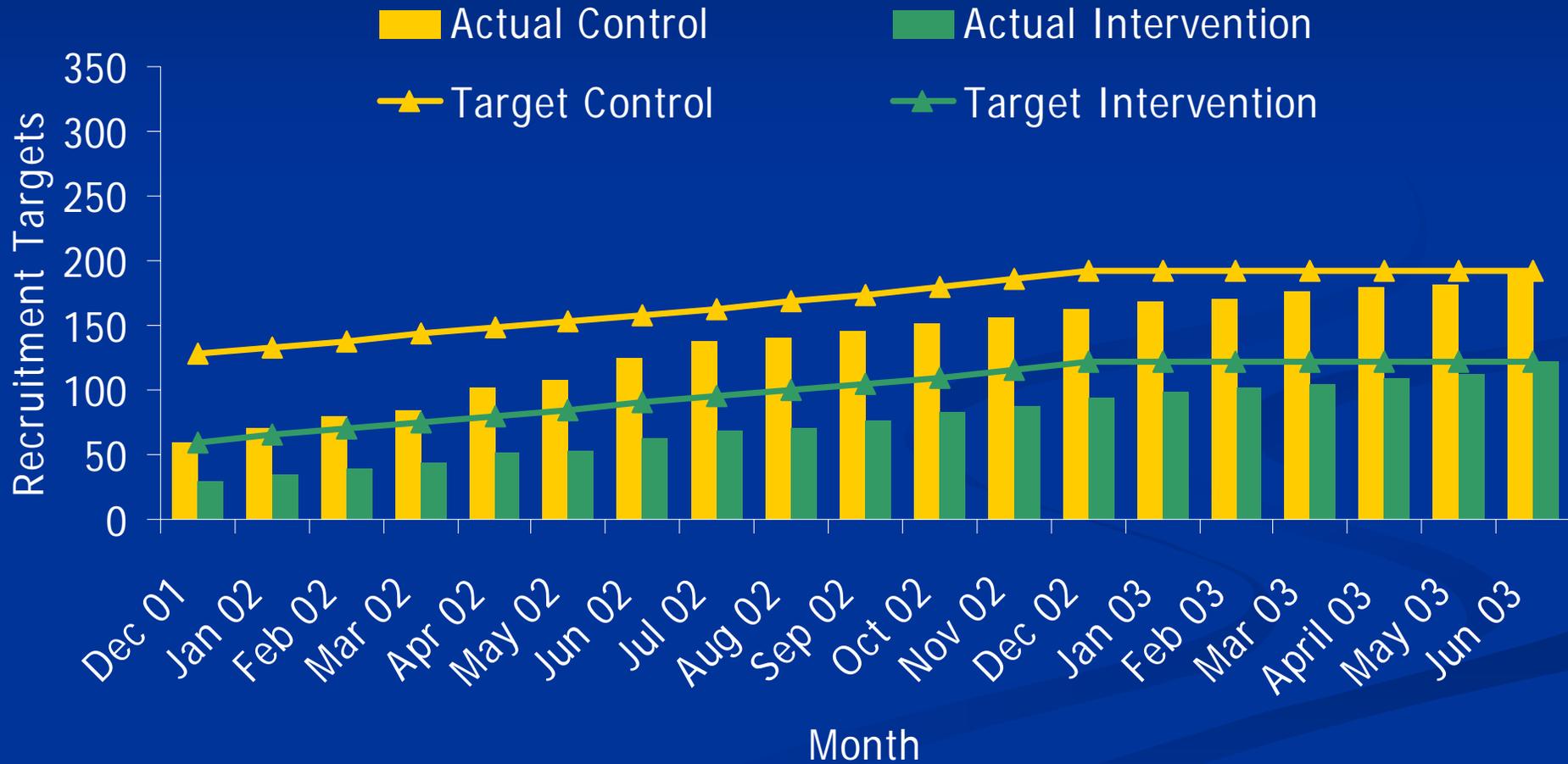
Wishard Health Services



- Black Male
- Black Female
- White Male
- White Female
- Hispanic Male
- Hispanic Female
- Asian Male
- Asian Female

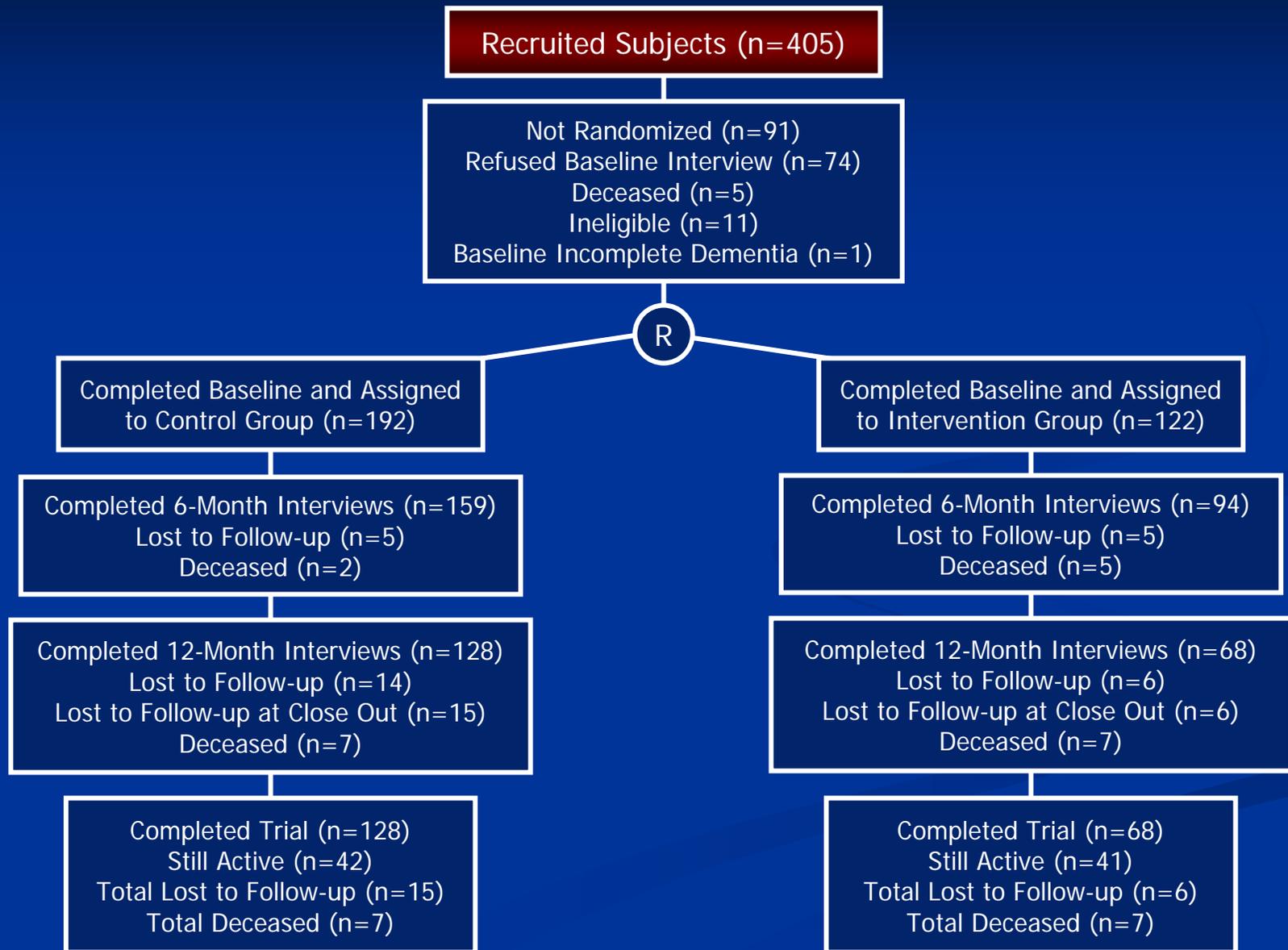
Enrollment

Control vs. Intervention



Improving Drug Use for Elderly Heart Failure Patients

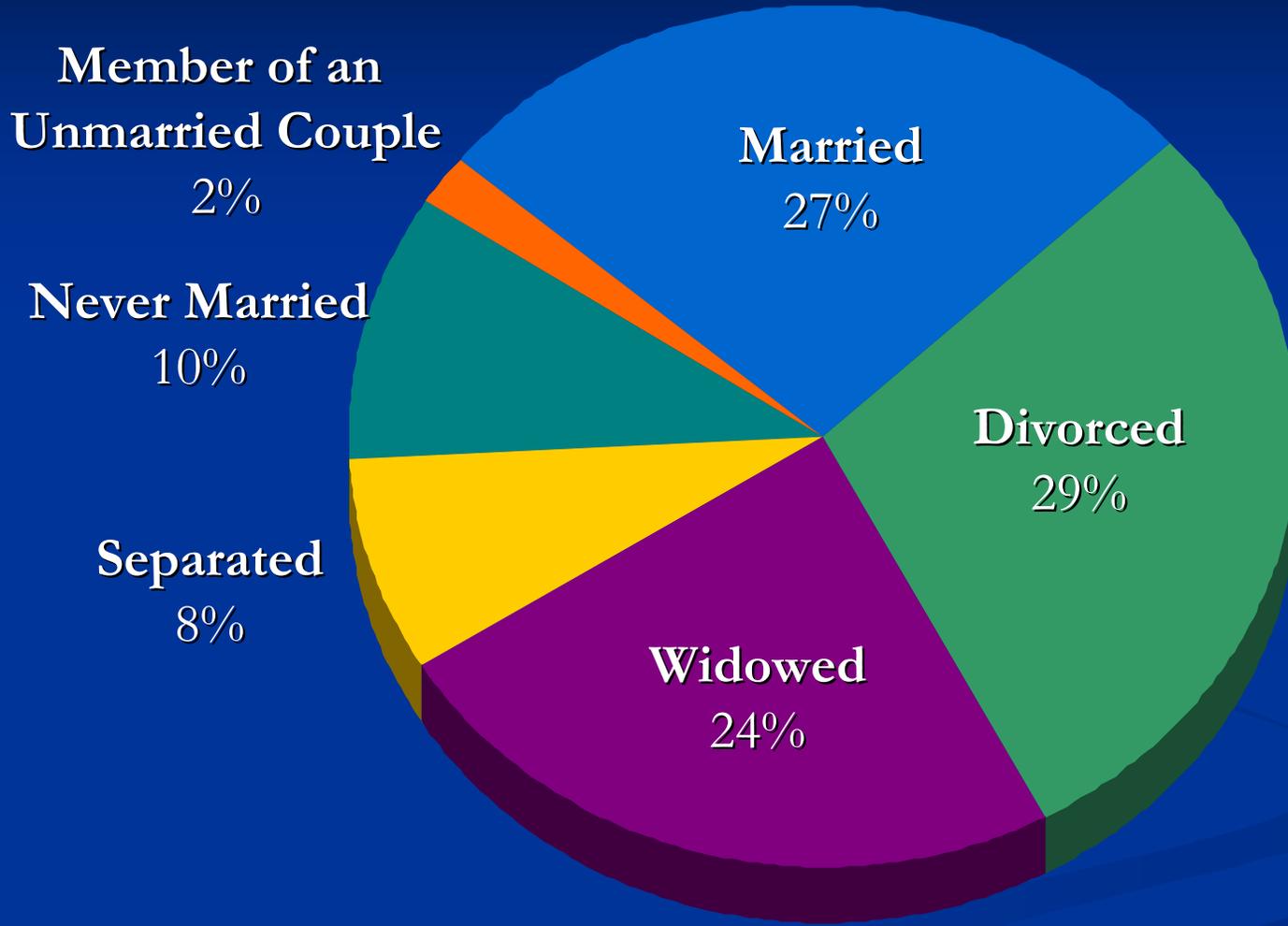
Subject Consort



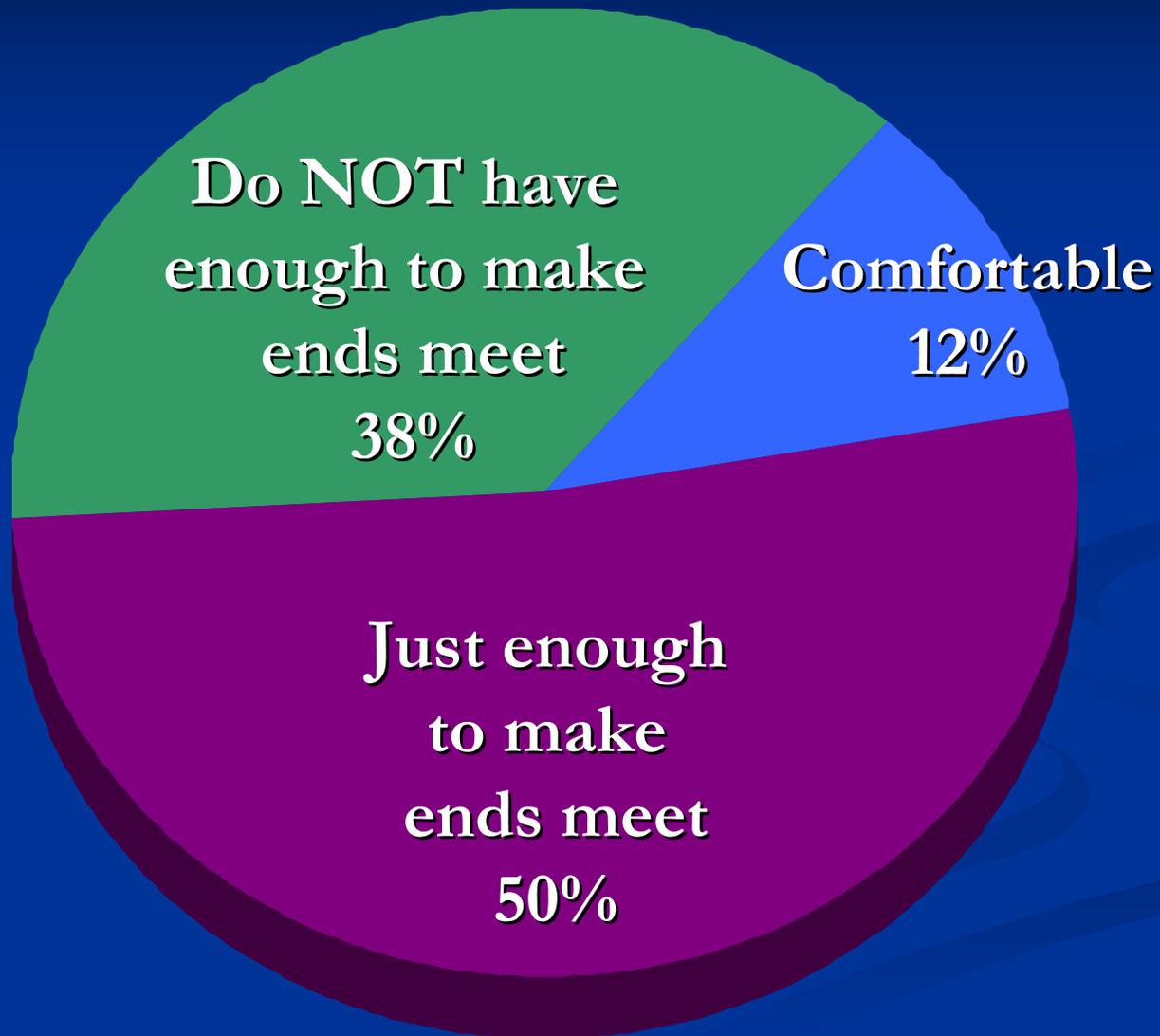
Baseline Characteristics

Variable	Control	Intervention	P value
Age	63 ± 9	62 ± 8	0.34
Sex, %W	67	68	0.80
Race, %AA	52	43	0.26
Education	11 ± 3	11 ± 2	0.07
Married,%	26	28	0.95
Literacy, adeq	71	72	0.92
NYHA II	41	42	0.98

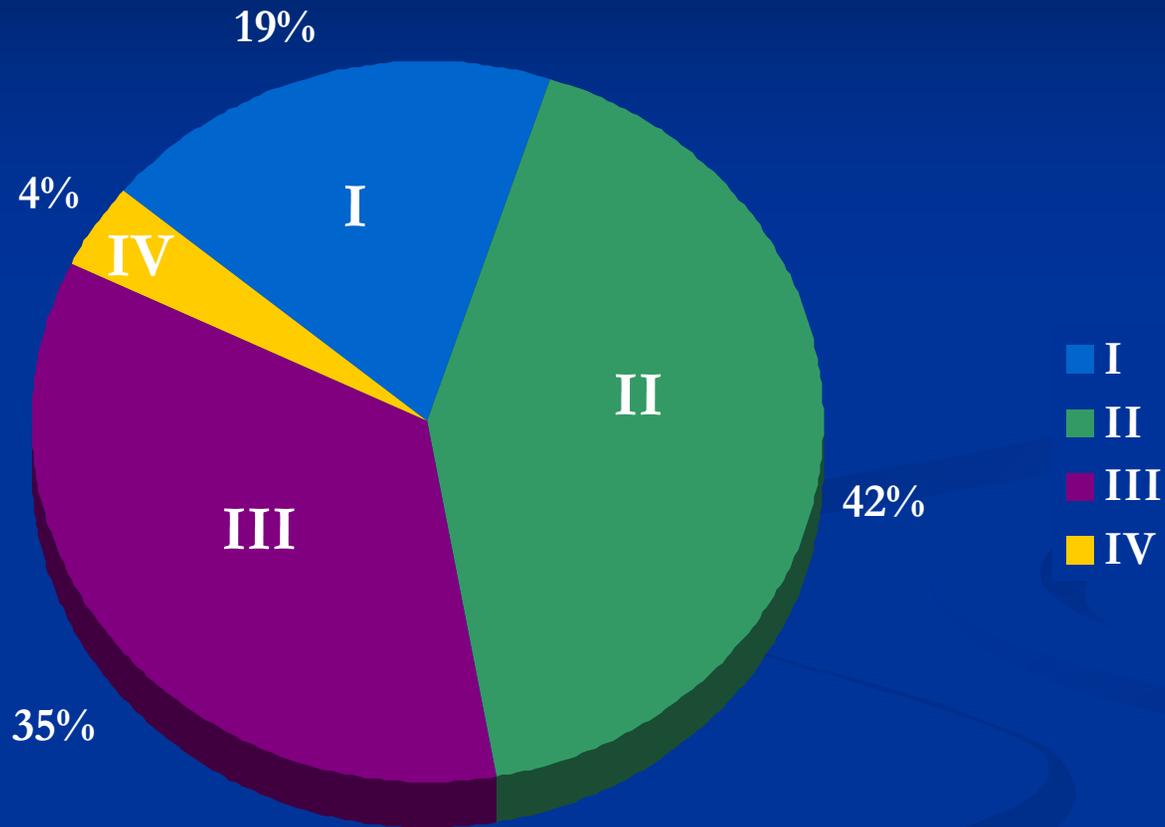
Marital Status



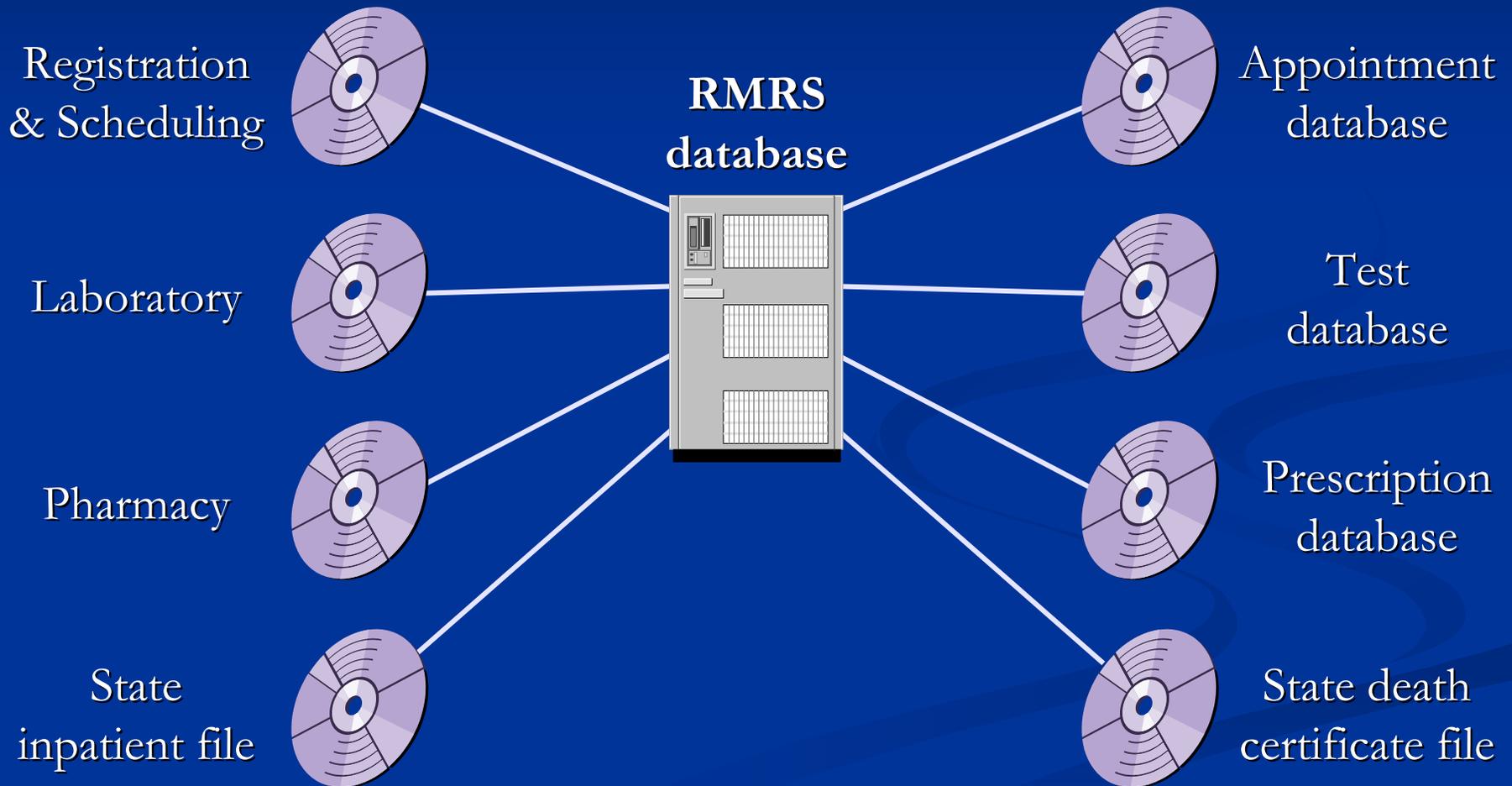
Relative Income



NYHA Class



Regenstrief Medical Record System (RMRS)



ARBs

Bisoprolol

Digoxin

Irbesartan

Lanoxin

Toprol XL

Carvedilol

Losartan

Heart Pill

Bumex®

Diuretics

β adrenergic antagonists

Captopril

Tenormin

Vasotec

VALSARTAN

Lisinopril

Trandolapril

Bumetanide

Demadex

Furosemide

Angiotensin converting enzyme (ACE) inhibitors

Moexepiril

Enalapril

Ramipril

Lasix

Coreg

Propranolol

Zestril

Angiotensin receptor antagonists

Telmisartan

Water pill

Inderal

Torseamide

Fosinopril

Quinapril

Spiroinolactone

ACE

Aldactone

Candesartan

Innovade

Mavik

Cozaar

Intervention Components

- Patient Education
- Therapeutic Monitoring
- Communication with Providers

Icon-Labeled Materials

Icon-Based Medication Instructions

- Schema for written instruction:
 - Content
 - Language
 - Organization
 - Presentation
- Coupled with icon or glyph labeling

Example of Icon-Based Labeling



PLAY TO WIN. WIN FOR LIFE.



ACE Inhibitors

(Pronounced: ACE in-HIB-it-ors)



IDENTIFYING YOUR MEDICATION

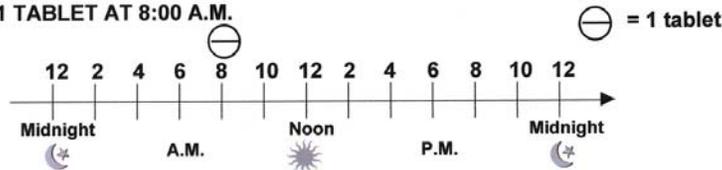
- The ACE Inhibitor label is red.
- ACE Inhibitors are used to manage blood pressure and chronic heart failure.
- The types of ACE Inhibitors are Fosinopril (Monopril[®]), Benazepril (Lotensin[®]), Enalapril (Vasotec[®]), Lisinopril (Prinivil[®], Zestril[®]), Quinapril (Accupril[®]), Ramipril (Altace[®]), Moexipril (Univasc[®]), and Trandolapril (Mavik[®]).

DIRECTIONS

The pills in the bottle with the red label are used to decrease the blood pressure and severity of chronic heart failure, and should be taken continuously. Ask your pharmacist if you can take this medication with food.

If you forget to take your ACE Inhibitor on time, take it as soon as you remember. However, if it is almost time for your next dose, skip the dose you missed and go back to your regular schedule. **DO NOT DOUBLE-DOSE.**

TAKE 1 TABLET AT 8:00 A.M.



SIDE EFFECTS

Some patients experience dizziness, headache, low blood pressure, nausea, vomiting, diarrhea, fatigue, bad rash or swelling, difficulty breathing, fever or a cough. Contact your doctor if these symptoms become bothersome to you.

NOTES

- Before taking these medications, make sure your doctor and pharmacist know about all other prescription and over-the-counter medications that you take.

REMINDER:

WINNING TAKES WORK. YOU HAVE TO CONCENTRATE.

GETTING BETTER TAKES WORK. YOU HAVE TO FOCUS ON YOUR GOAL: A BETTER TOMORROW.

PLAY TO WIN. WIN FOR LIFE.

MED/pharmacy

#9944 Ph: 317-987-6543

2929 E. 38TH ST.
INDIANAPOLIS, IN
46220-0000

www.med.com

IF YOU HAVE ANY QUESTIONS ABOUT YOUR
MEDICATION, PLEASE CONTACT YOUR PHARMACIST:
JOHN MILLER, RPh.**PATIENT PRESCRIPTION INFORMATION****JONES, MIKE W**
2255 OAKLAWN DR
INDPLS, IN 46224-0000
Ph: 317-956-843201-29-2001
DR. JACKSON, ANN C
Refills: 0**COREG 50MG TABLET TEV**

TAKE 1 TABLET BY MOUTH 2 TIMES A DAY

CARVEDILOL (BETA BLOCKER) - ORAL

WARNING: If you have angina or have had heart problems, do not suddenly stop using this medication without first consulting your doctor. If your doctor decides you should no longer use this medication, you must stop this medication gradually according to your doctor's instructions.

USES: This medication is used for chest pain (angina), high blood pressure and irregular heartbeats.

HOW TO TAKE THIS MEDICATION: Take this medication exactly as prescribed. Try to take it at the same time(s) each day. Do not suddenly stop taking this medication without consulting your doctor. Some conditions may become worse when the drug is suddenly stopped.

SIDE EFFECTS: You may experience dizziness, lightheadedness, drowsiness, and blurred vision as your body adjusts to the medication. Use caution engaging in activities requiring alertness. Because beta-blockers reduce blood circulation to the extremities, your hands and feet may be more susceptible to the cold. Dress warm. Inform your doctor if you develop: easy bruising or bleeding, swollen hands or feet, confusion, depression, a sore throat. In the unlikely event you have an allergic reaction to this drug, seek medical attention immediately. Symptoms of an allergic reaction include; rash, itching, swelling, dizziness, trouble breathing. If you notice other effects not listed above, contact your doctor or pharmacist.

PRECAUTIONS: Before taking this drug, tell your doctor if you have a history of: heart disease, kidney disease, liver disease, asthma, bronchitis, emphysema, any other lung disease, diabetes, overactive thyroid gland, any drug allergies. Before having surgery, tell the doctor or dentist in charge that you are taking a beta-blocker. This drug should be used only if it is clearly needed during pregnancy. Discuss the risks and benefits with your doctor. This drug is excreted into breast milk and though no problems have been noted, the possibility for adverse effects to the infant exists. Consult your doctor before breast feeding.

DRUG INTERACTIONS: Tell your doctor of all prescriptions and nonprescription drugs you may use, especially of: diuretics, cold preparations and nasal decongestants, reserpine, other heart or high blood pressure medications. Do not start or stop any medications without doctor or pharmacist approval.

OVERDOSE: If overdose is suspected, contact your local poison control center or emergency room immediately. Symptoms of overdose may include unusually fast or slow heartbeat, dizziness, slow or shallow breathing, seizures, unconsciousness, weakness, or fatigue.

NOTES: Your doctor may want you to take your pulse each day while taking this medication. Learn how to monitor your pulse.

MISSED DOSE: If you miss a dose, take as soon as remembered but not if it is within 4 hours of next dose (8 hours for penbutolol, atenolol, nadolol). If it is, skip the missed dose and resume your usual dosing schedule. Do not "double-up" the dose to catch up.

STORAGE: Store at room temperature between 59 and 86 degrees F (15-30 degrees C) away from moisture and sunlight. Do not store in the bathroom.

Reasons for Instruction Preferences

Patient-centered

- Larger print
- Simplicity and length
- Icon time-line
- Icon-color
- Clearer
- Organization
- More interesting

Standard

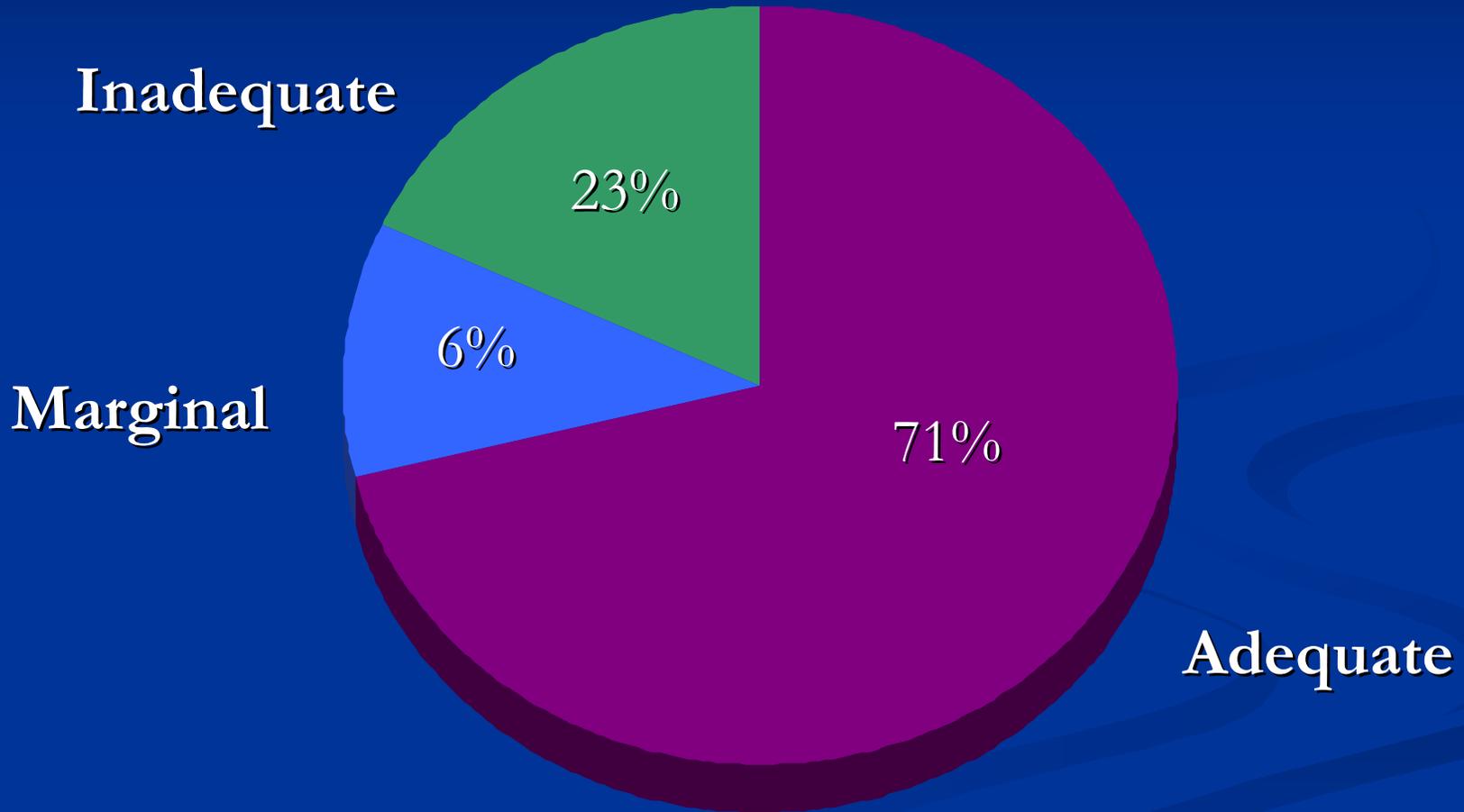
- More information
- Format familiarity

All Presented Data...

that are unpublished should be
considered preliminary

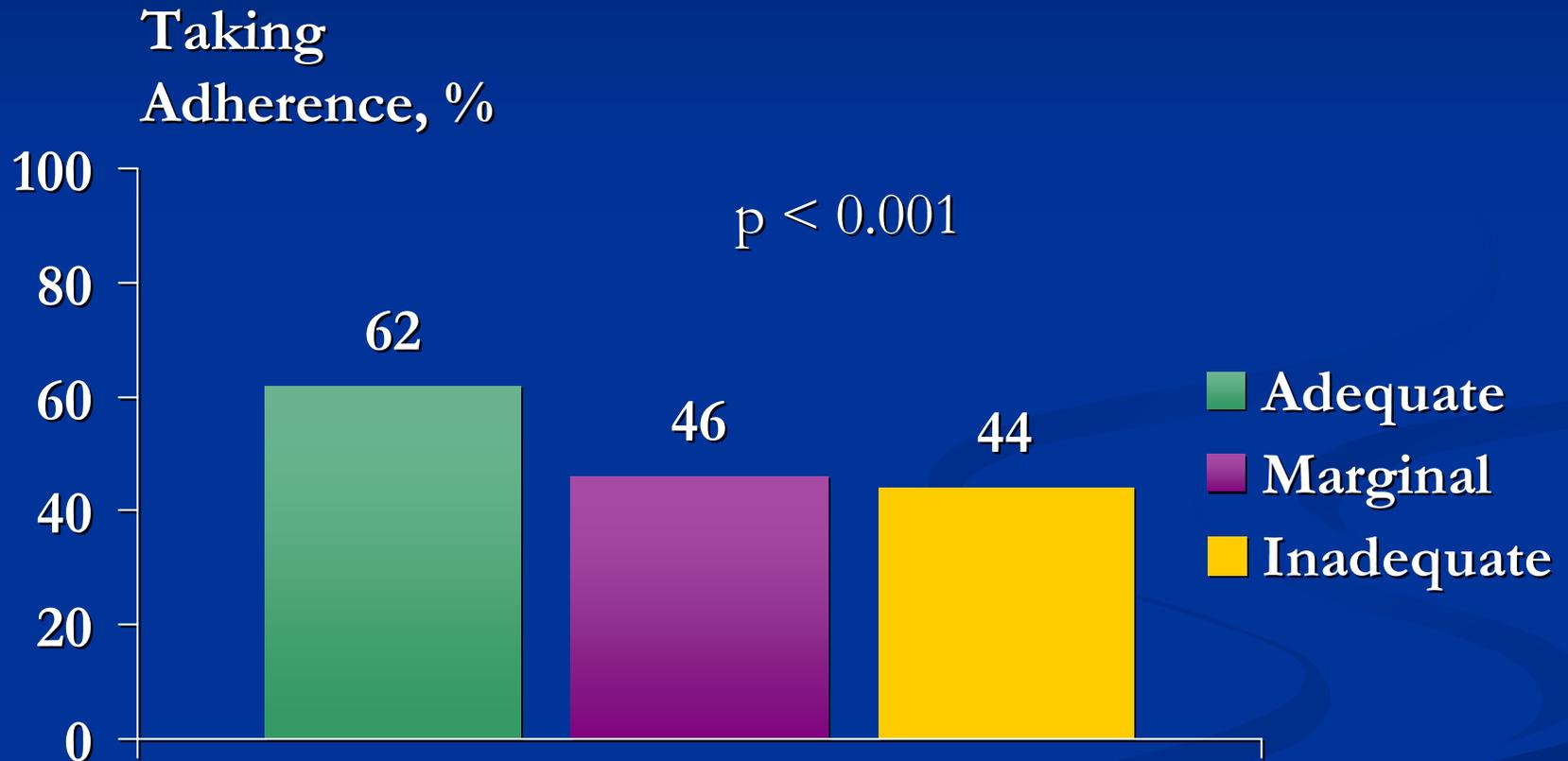
Literacy Classification*

(n=314 patients with CHF)



* Using the Short Test of Functional Health Literacy (S-TOFHLA)

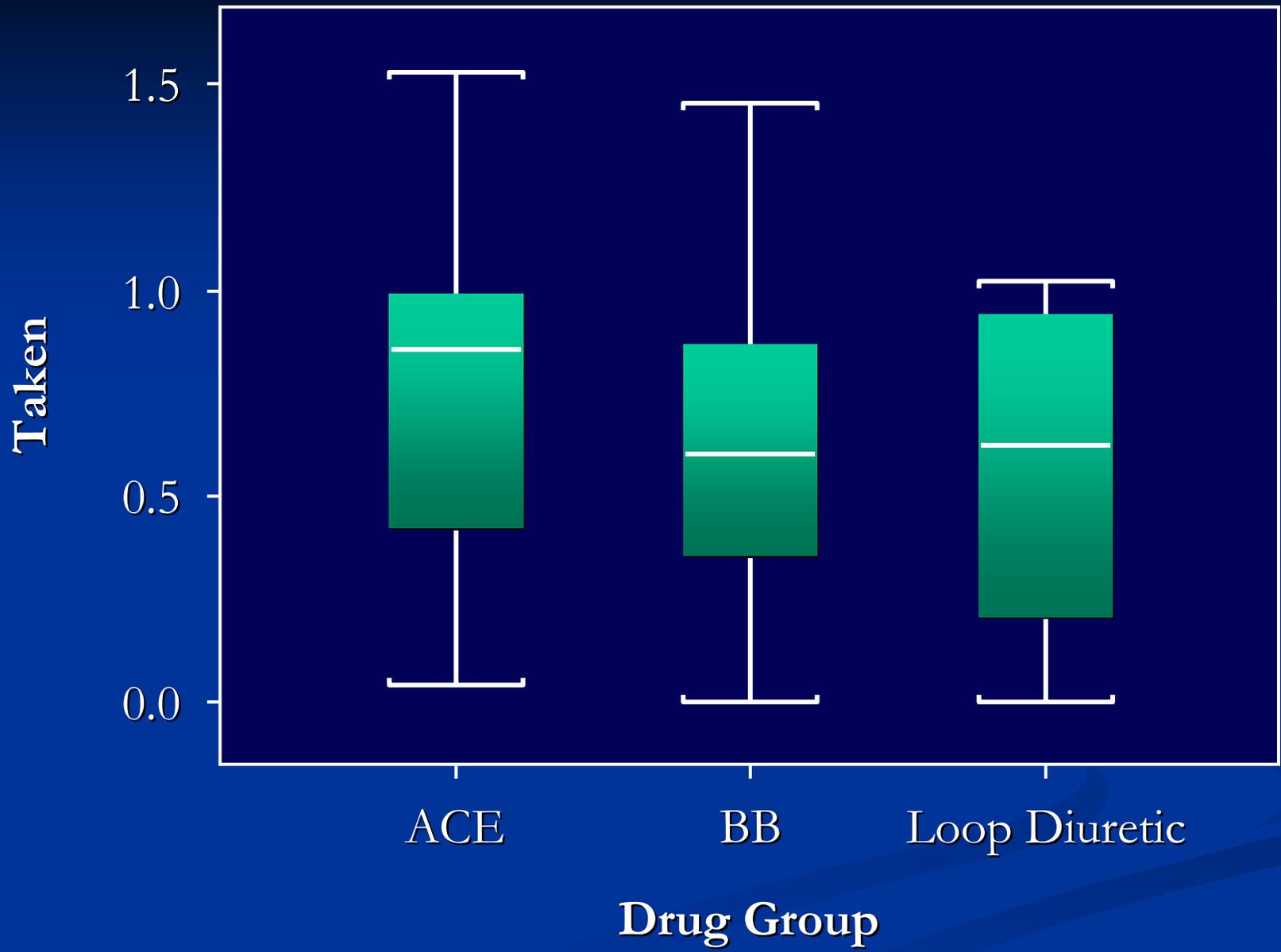
Literacy Classification and MEMS Adherence at 6 months (n=50 patients with CHF)

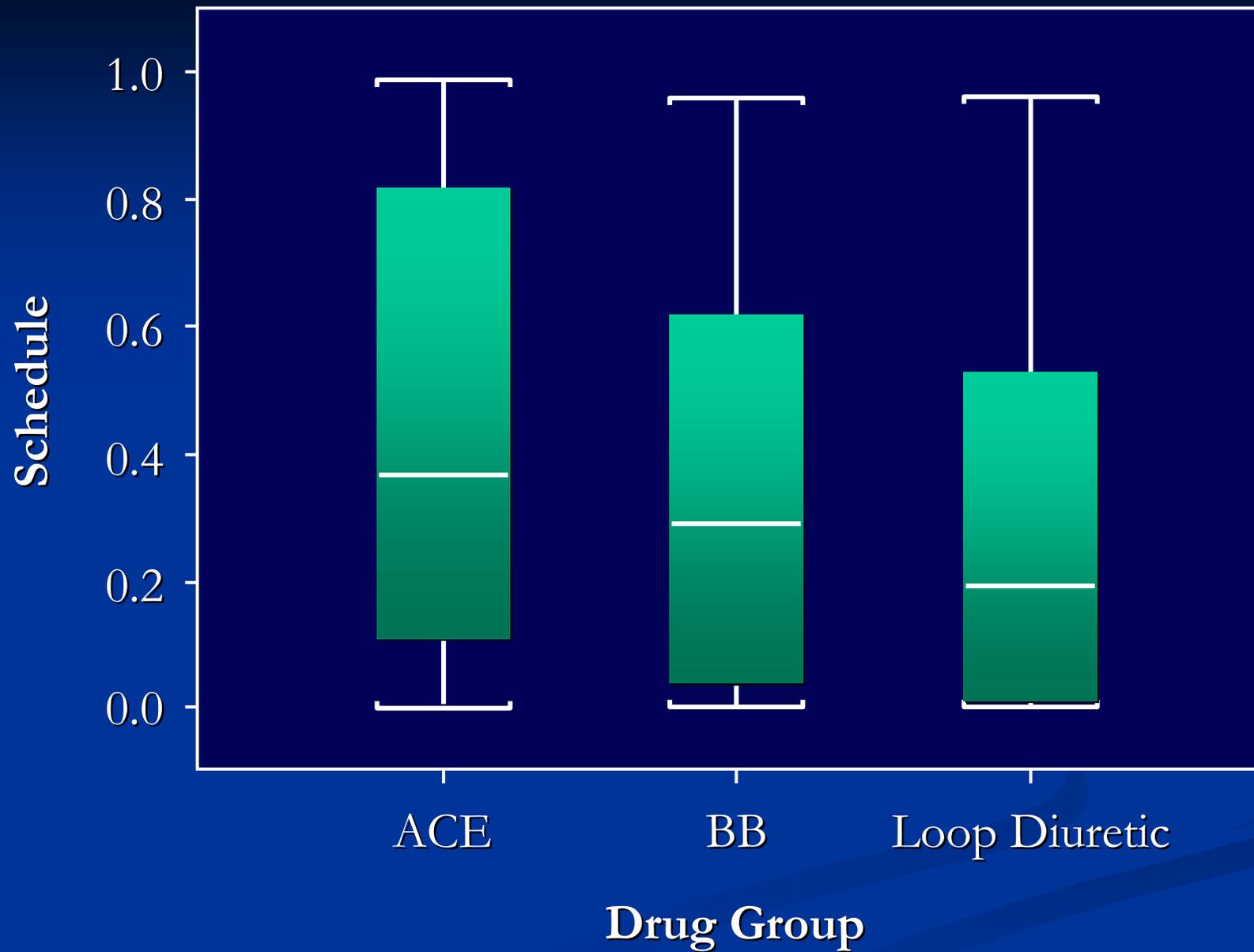


* Using the Short Test of Functional Health Literacy (S-TOFHLA)

Medication Adherence

- Electronic Monitoring
 - Medication Event Monitoring System (MEMS Track V)
- Refill Adherence
 - Medication possession ratio
 - Refill adherence
- Patient report





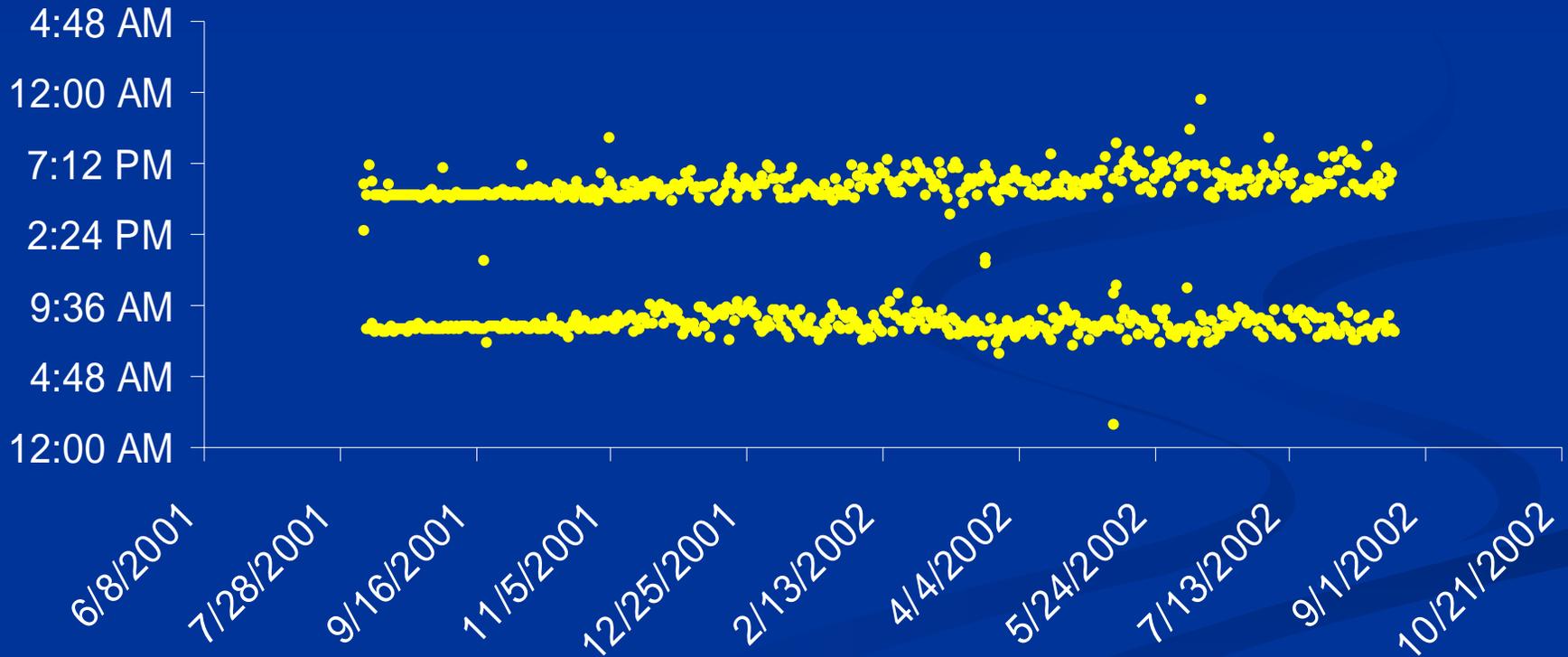
Patient C:

% Prescribed number of dose taken: 100.5%

% Prescribed doses taken on schedule: 64.5%

MPR: 1.0

Diuretics



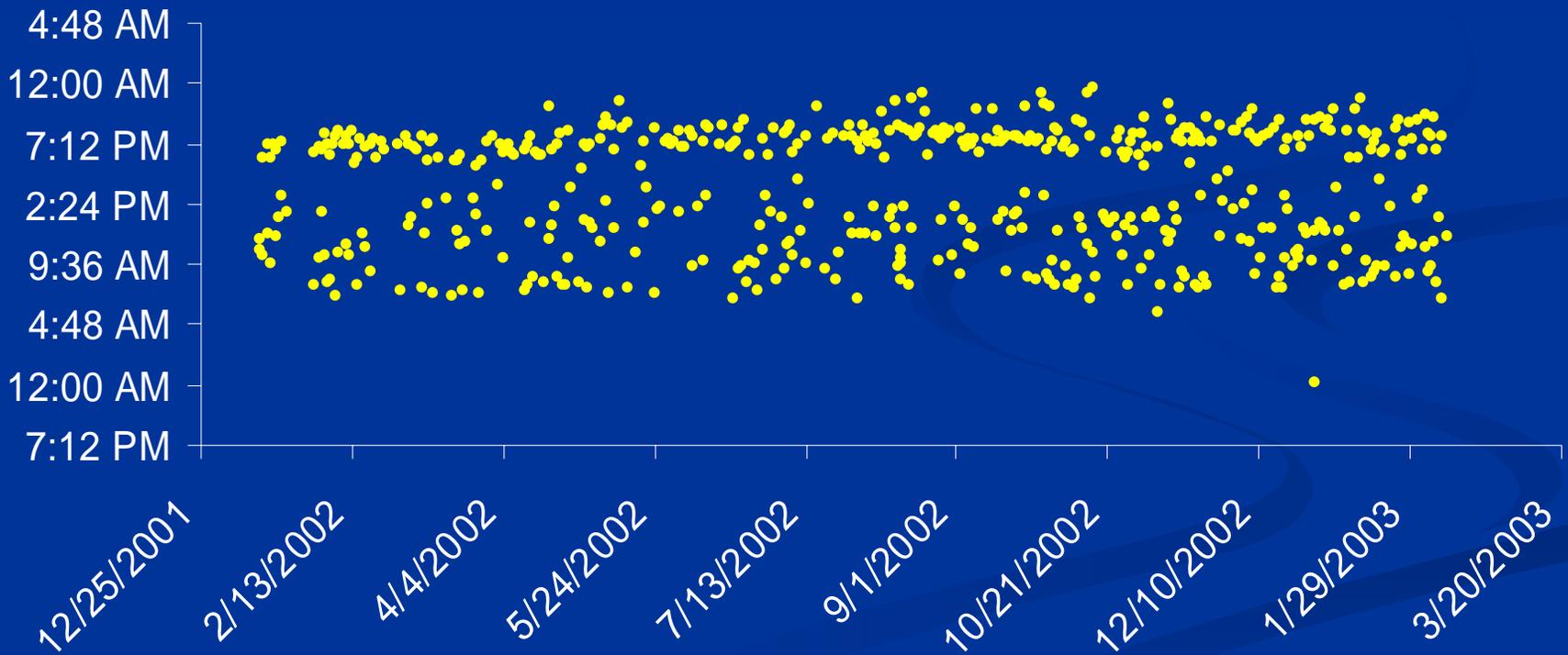
Patient D:

% Prescribed number of dose taken: 63.9%

% Prescribed doses taken on schedule: 20.4%

MPR: 0.8

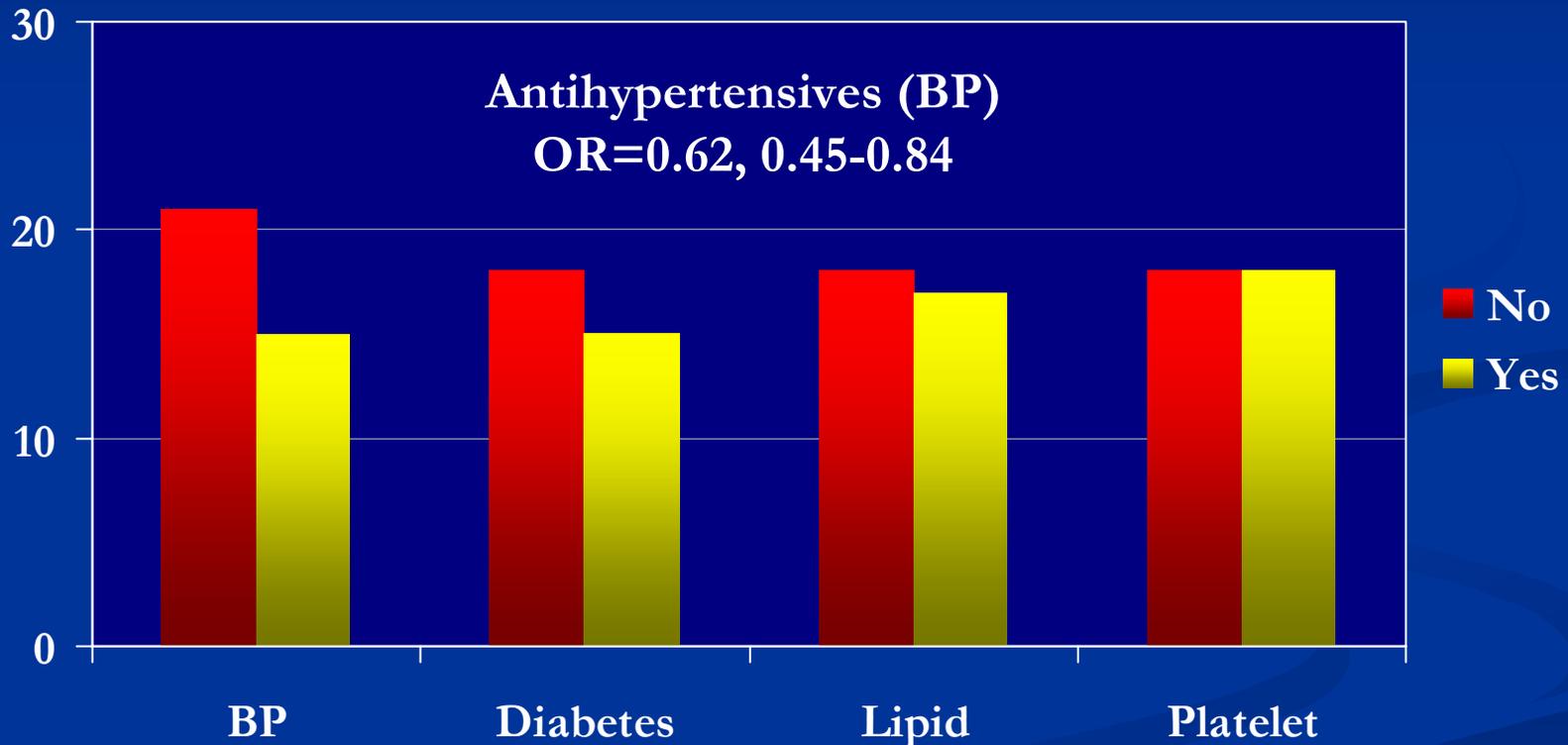
Diuretics



Predictors of Hospitalization (n = 42)

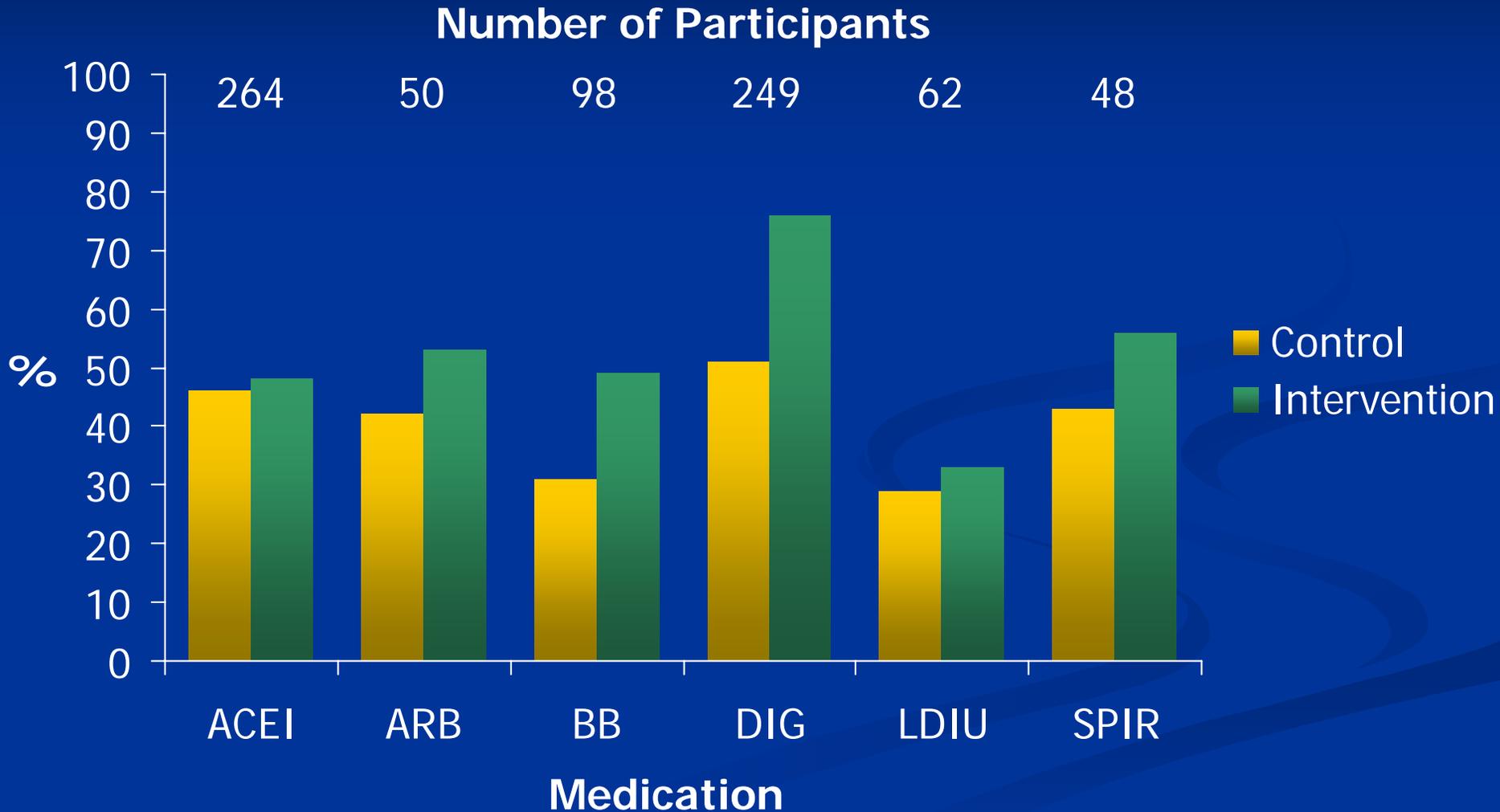
Type of Admission	Covariates	df	X ²	P value
Cardiovascular	Scheduling adherence	1	12	0.0006
	NYHA class	3	43	< 0.0001
	Income	1	19	< 0.0001
CHF	Scheduling adherence	1	4	0.04
	NYHA class	3	44	< 0.0001
	Income	1	12	0.0007

Percent Cognitive Impairment Among 1,900 Participants Taking Vasculoprotective Drugs

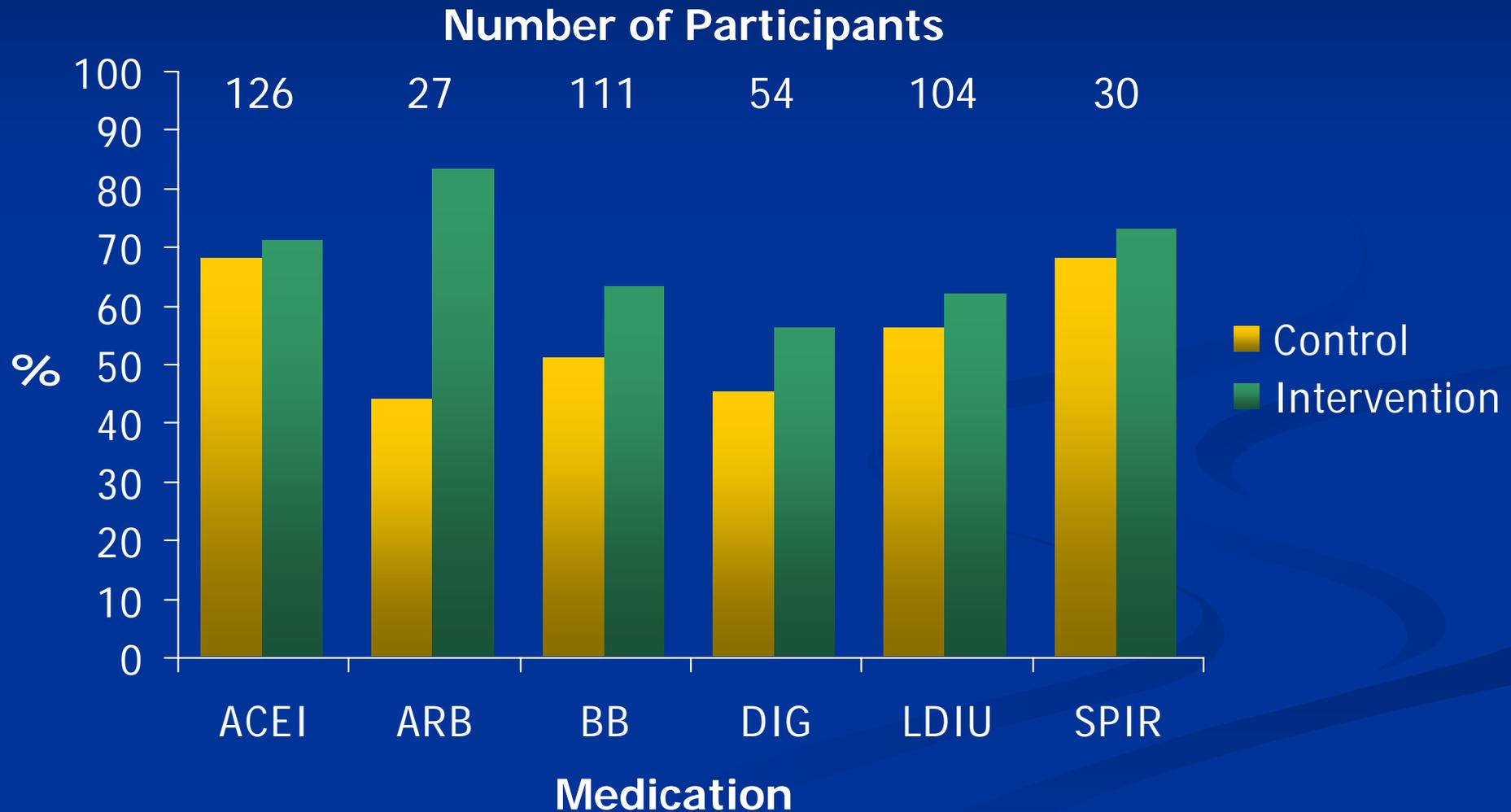


Murray MD, et al. Arch Intern Med 2002; 162:2090-2096.

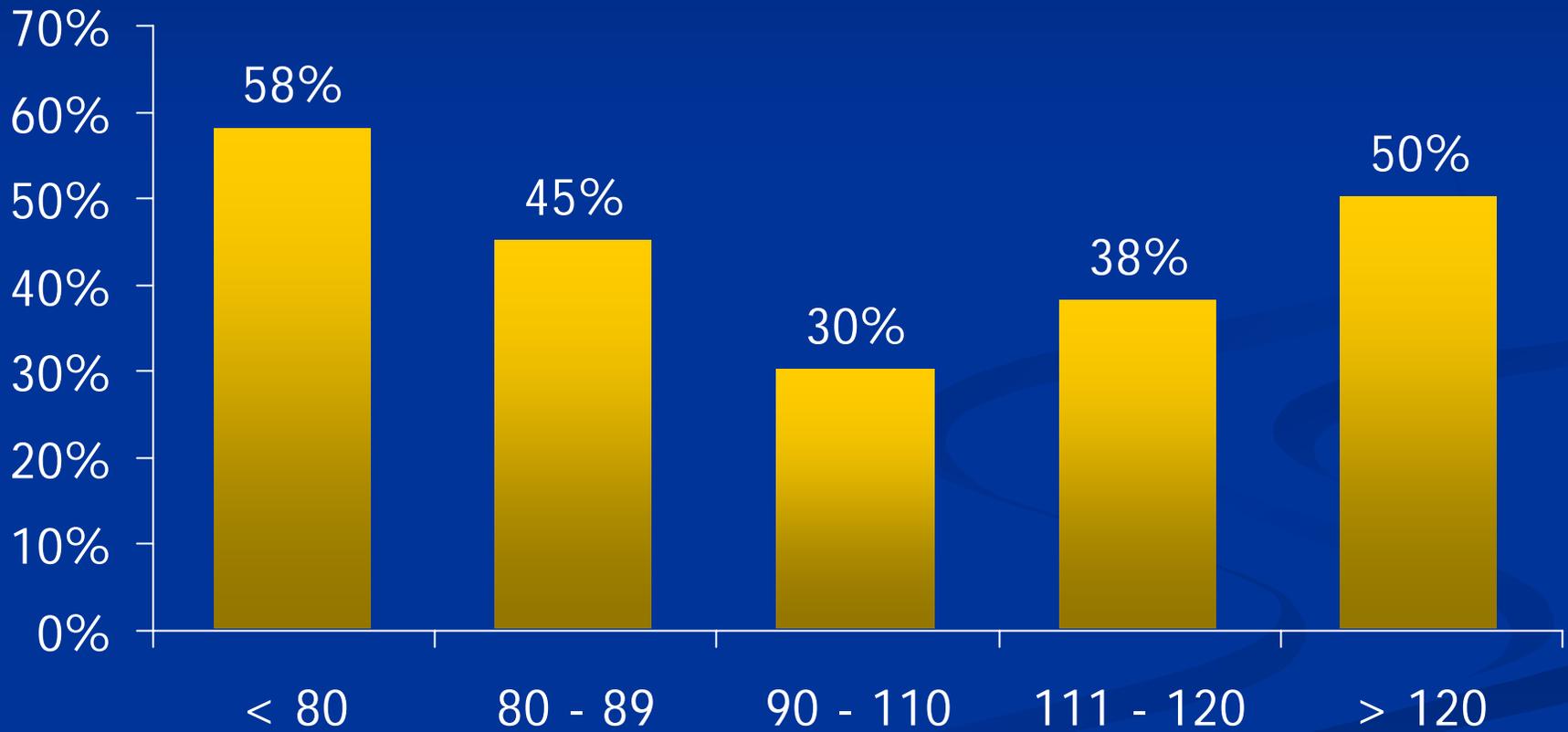
MEMS Percent Dose Taken by Group



Refill Percent Dose Taken by Group



Hospitalization by MPR



Correlation among age, education, and cognitive function (n=153 participants)

	Age	Education	Literacy	Listening Span	Speed of Processing
Age		-0.14	-0.18 *	-0.18 *	-0.47 ‡
Education			0.39 ‡	0.20 *	0.47 ‡
Literacy				0.45 ‡	0.51 ‡
Listening Span					0.44 ‡

* P < 0.05 † P < 0.01 ‡ P < 0.001

Knowledge and Adherence Correlations (n=153 participants)

	Indication	Dosing	When	MEMS Sched	MEMS Take
Indication		0.29 †	0.33 ‡	0.05	0.05
Dosing			0.76 ‡	0.26 †	0.18 *
When				0.29 †	0.24 †
MEMS Sched					0.70 ‡

* P < 0.05

† P < 0.01

‡ P < 0.001

Vision and Adherence Correlations (n=153 participants)

	Snellen	Label Reading	Letter Comparison	Literacy	MEMS Take
Snellen		0.10	0.29 ‡	0.09	- 0.08
Label Reading			0.27 †	0.59 ‡	0.12
Letter Comparison				0.48 ‡	0.12
Literacy					0.22 †

* P < 0.05

† P < 0.01

‡ P < 0.001

Hearing and Adherence Correlations (n=153 participants)

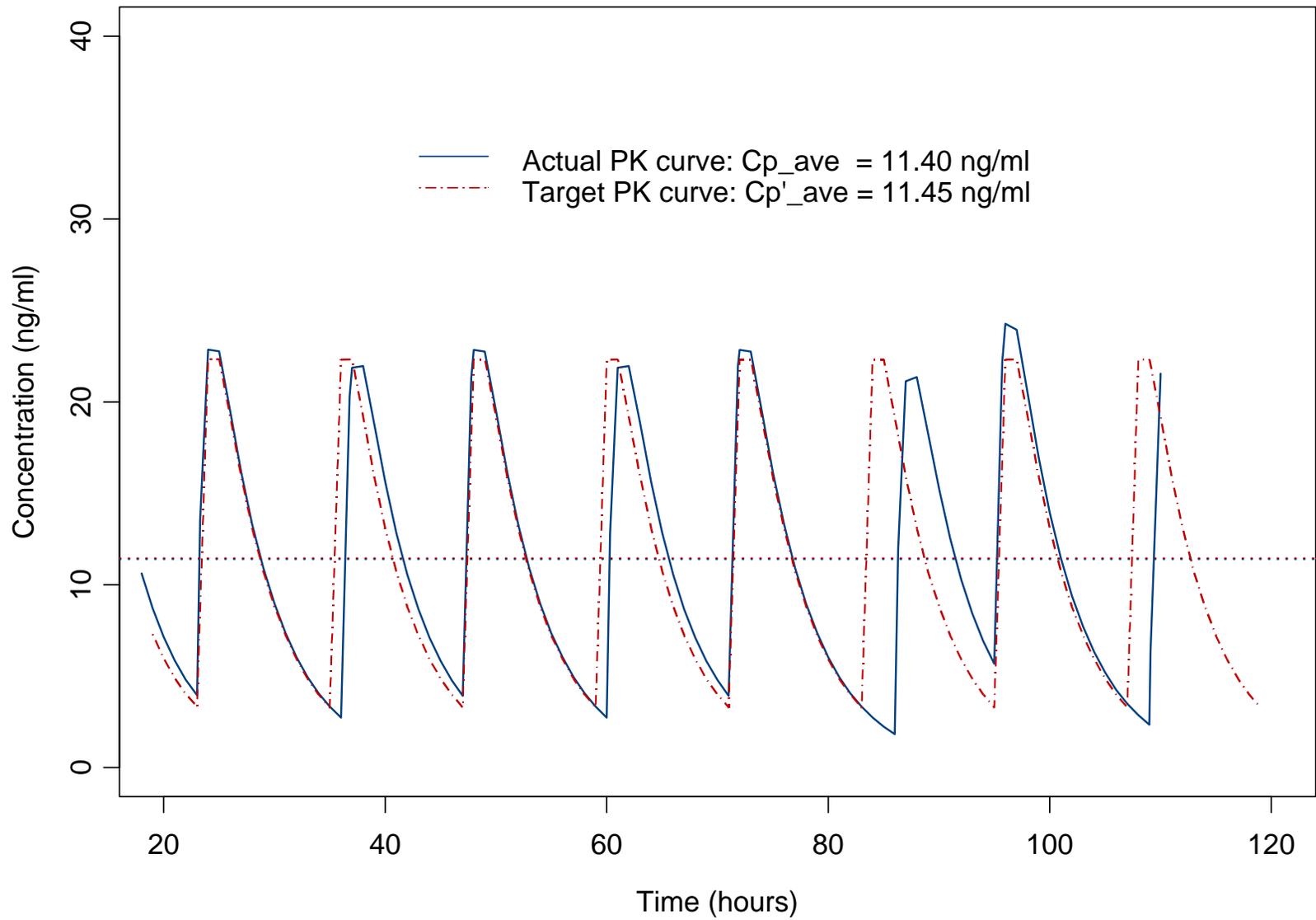
	Listening Span	Speech Discrim	RTT	Literacy	MEMS Take
Listening Span		0.10	0.30 ‡	0.45 ‡	0.29 †
Speech Discrim			0.19 *	0.15	-0.03
RTT				0.36 ‡	0.17 *
Literacy					0.22 †

* P < 0.05

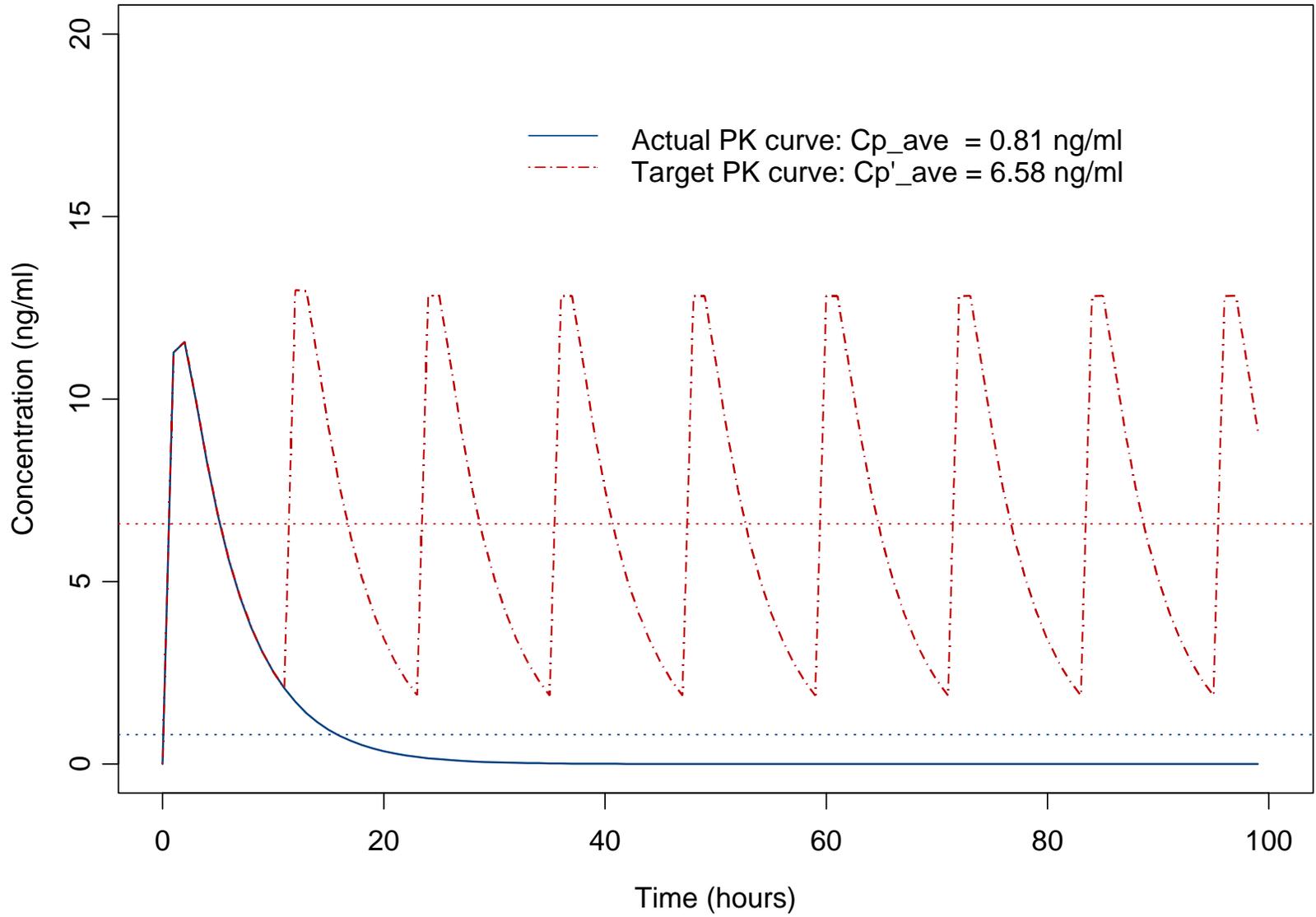
† P < 0.01

‡ P < 0.001

Subject ID=9



Subject ID=5



Problems

- Recruitment
- Baseline interview appointment failure and other followup (sending reminders)
- MEMS lid returns
- Patients using pill boxes and not MEMS lids (documenting)
- New pharmacy copayment began October 1, 2003

