Multifaceted Intervention to Improve Medication Adherence and Secondary Prevention Measures (Medication Study) After Acute Coronary Syndrome Hospital Discharge

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Disclosures

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Background

- Adherence to cardiac medications in the year after ACS is poor
  - By 1 month, 1/3 stop at least 1 medication
  - By 1 year, only ~60% are taking statins
  - Adherence <60% even with no co-pay for cardiac medications
- Poor adherence is associated with adverse outcomes

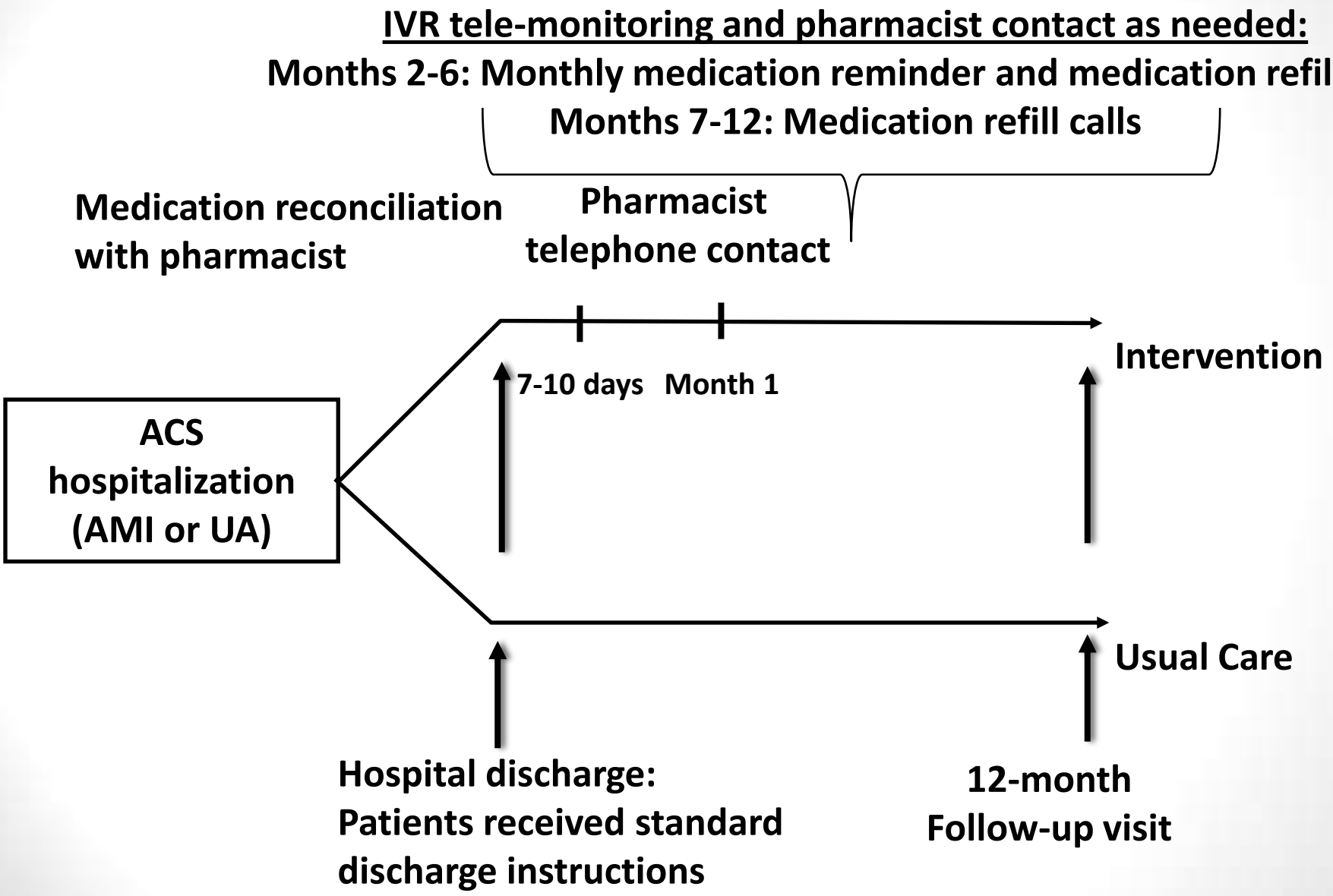
Objective

- To test whether a multi-faceted intervention in the year after ACS hospitalization improves adherence to cardiac medications
  - Medication reconciliation and tailoring
  - Patient education
  - Collaborative care
  - Voice messaging

Methods

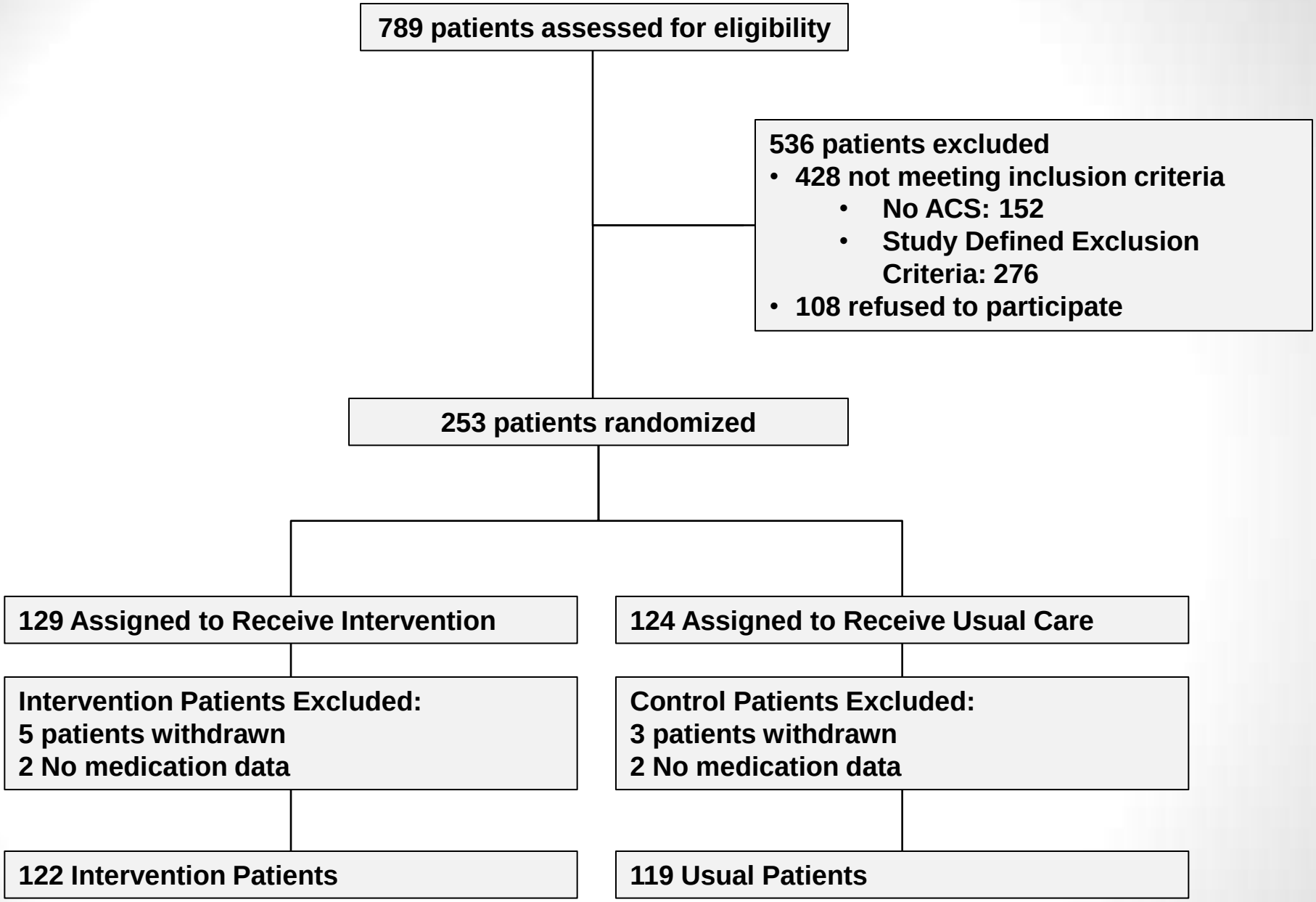
- 4 VA sites (Denver, Little Rock, Seattle, Durham)
- Inclusion criteria:
  - Admitted with ACS (biomarkers, symptoms, ECG)
  - Received usual care at VA
- Exclusion criteria:
  - Admitted with primary non-cardiac condition
  - Planned discharge to nursing home
  - Limited life expectancy
  - Lack of phone
  - Used of non VA pharmacy

Study overview



Analysis

- Primary outcome: Proportion of patients adherent (PDC>0.80)based on average PDC of cardiac medications at 12-months
  - PDC: number of days supplied over the number of days of follow-up
  - ß-blockers, statins, clopidogrel, ACE-I/ARB
- Secondary outcome: BP and LDL goals
- Tertiary outcome: MI, death, revascularization
- Sample size: 280 patients to have 80% power to detect 15% difference in proportion adherent


789 patients assessed for eligibility
536 patients excluded
• 428 not meeting inclusion criteria
• No ACS: 152
• Study Defined Exclusion Criteria: 276
• 108 refused to participate
253 patients randomized
129 Assigned to Receive Intervention
124 Assigned to Receive Usual Care
Intervention Patients Excluded:
5 patients withdrawn
2 No medication data
Control Patients Excluded:
3 patients withdrawn
2 No medication data
122 Intervention Patients
119 Usual Patients

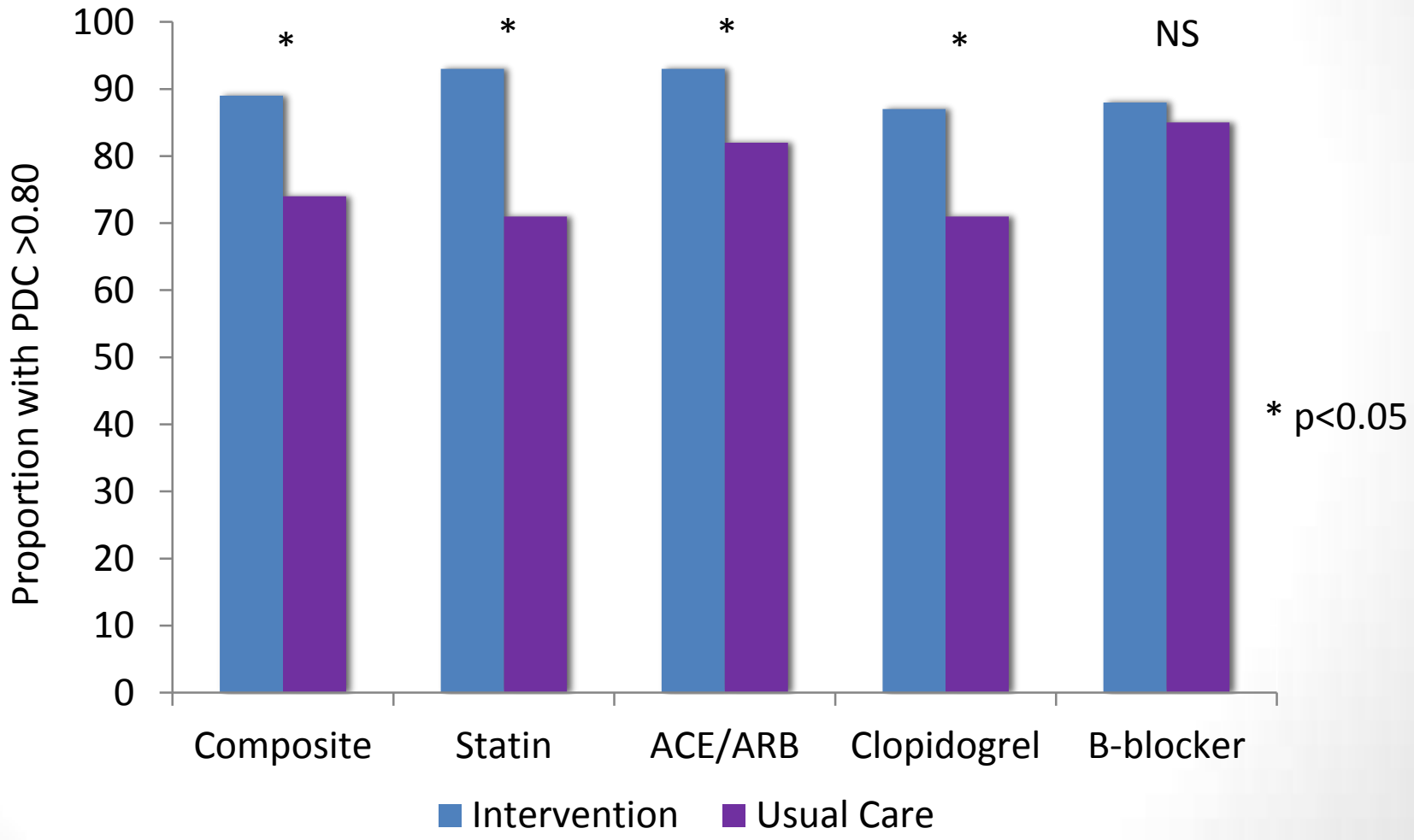
Baseline characteristics were comparable

Variable	Usual Care	Intervention
N Subjects	119	122
Age, Mean (SD)	64.0 (8.6)	63.8 (9.2)
Diabetes mellitus (%)	39.5%	50.8%
Prior Heart Failure (%)	10.9%	13.9%
Chronic Kidney Disease (%)	23.5%	23.0%
Chronic Lung Disease (%)	19.3%	20.5%
Prior CAD (%)	66.4%	64.8%

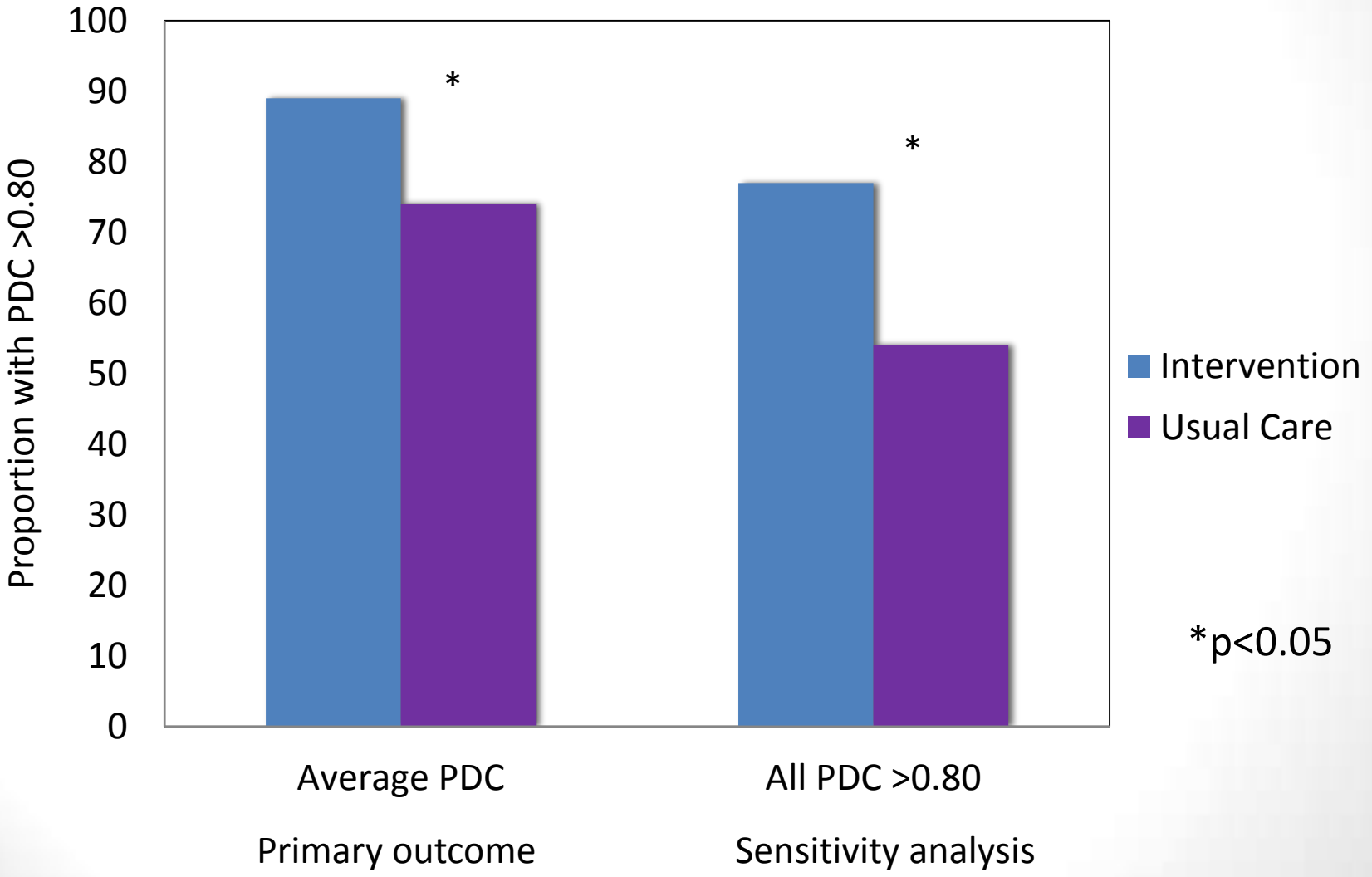
Type of ACS		
STEMI	12.6%	14.8%
NSTEMI	30.3%	28.7%
Unstable angina	57.1%	56.6%
In-hospital revascularization		
PCI (%)	39.8%	43.8%
Drug eluting stent(%)	84.1%	78.9%
CABG (%)	17.1%	6.7%*

* $p<0.05$

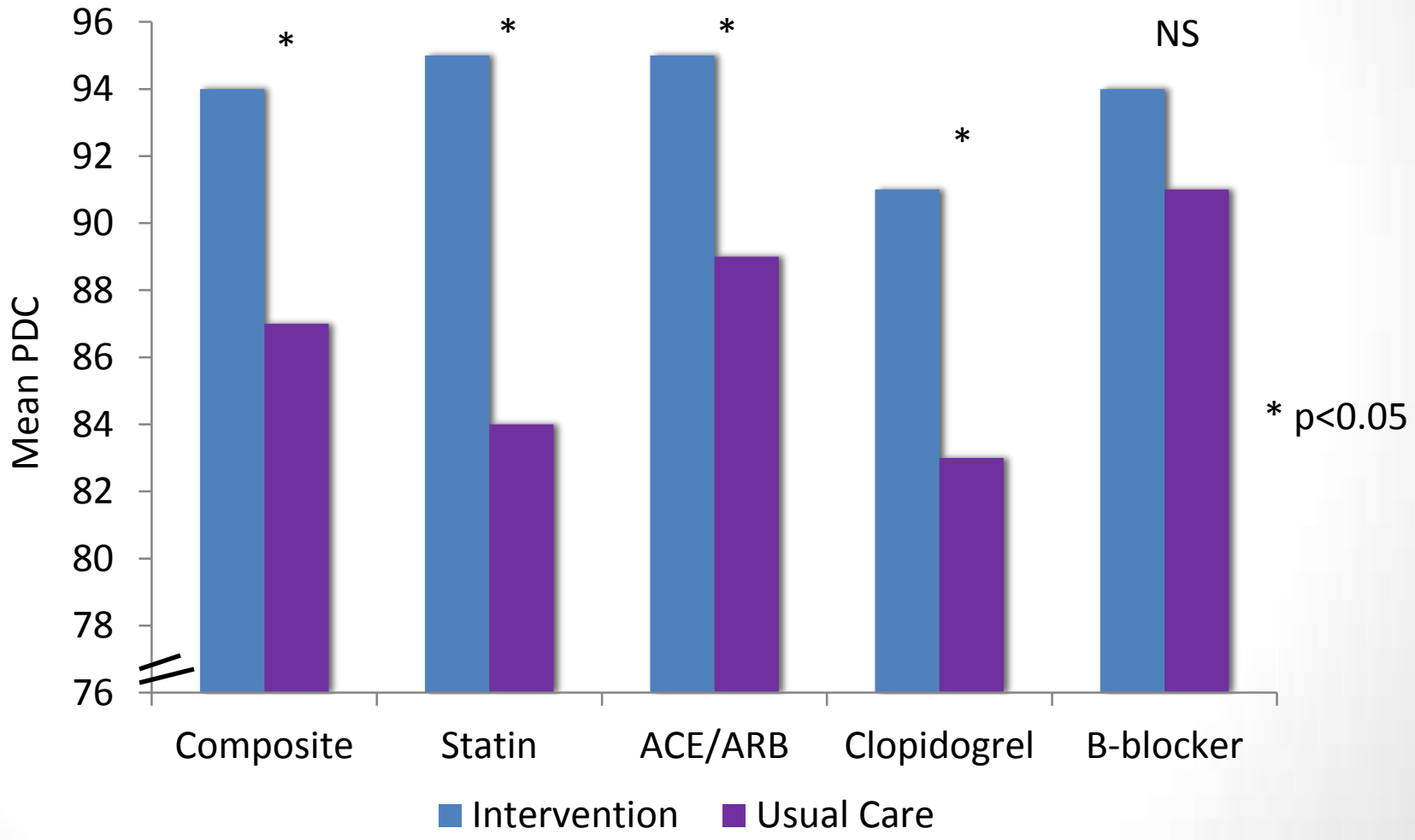
Primary outcome: Higher adherence in intervention
Proportion with average PDC >0.80



Sensitivity analysis: Adherence higher in intervention PDC >0.80 for all medications



Sensitivity analysis: Adherence higher in intervention Mean PDC



No difference in clinical outcomes at 12-months
(BP, LDL, revascularization, MI and death)

Outcome	Usual Care	Intervention	p-value
Achieved BP goal (%)[a]	49%	59%	0.23
LDL <100 mg/dl[b]	83%	72%	0.14
Mortality %	7.6%	9.0%	0.86
MI (%)	4.2%	6.6%	0.60
Revascularization (%)	17.6%	11.5%	0.24

BP goal: BP<140/90 mm Hg and <130/80 mm Hg for DM and CKD
a: 94% had BP data
b: 63% had LDL data

Modest intervention costs and similar total costs at 12-months

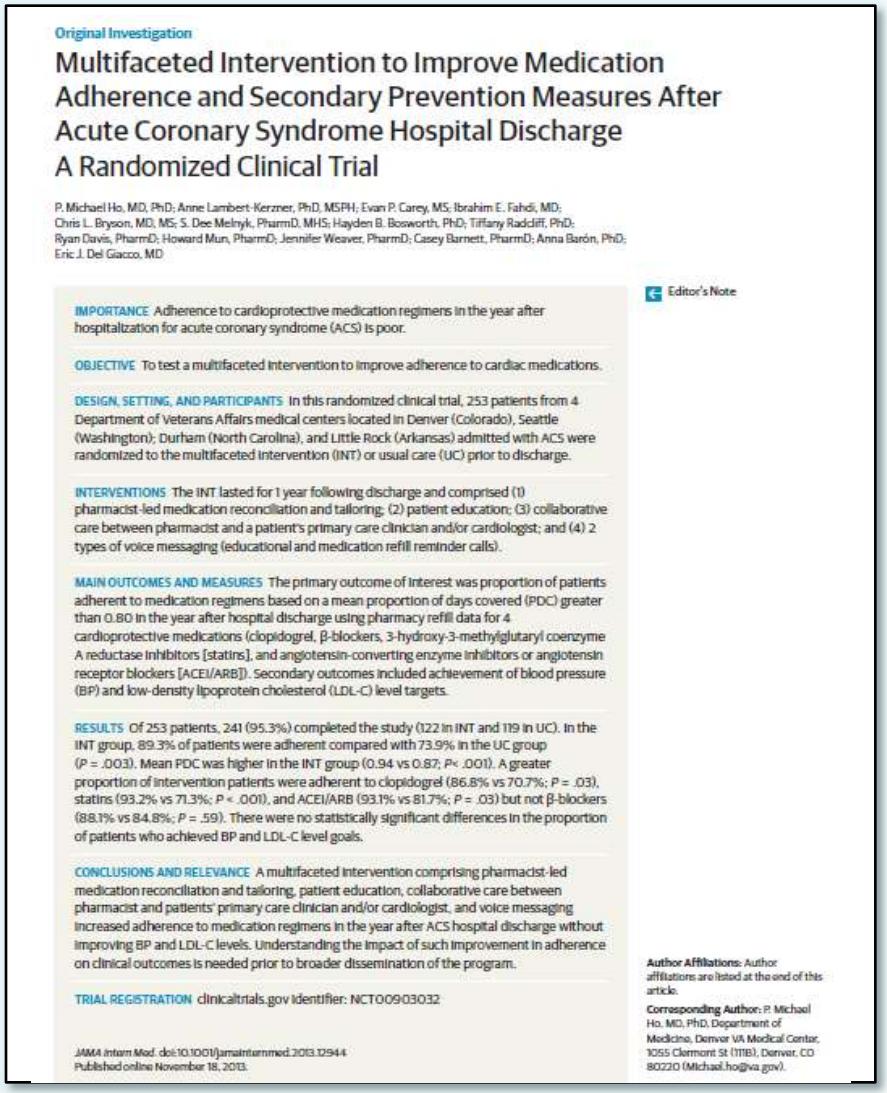
Costs	Usual Care	Intervention	P-value
Intervention	$0	**$360**	
Cardiac medications	$663	$722	0.70
Total medications	$2,724	$2,887	0.43
Total outpatient	$11,691	$13,086	0.53
Total inpatient	$14,287	$11,294	0.68
Total (intervention, medication, outpatient, and inpatient)	**$19,989**	**$19,901**	**0.56**

Limitations

- Predominantly males within an integrated health care system
- Highly adherent patients
- Relatively short duration of follow-up

Conclusions

- Multi-faceted intervention improved adherence to cardiac medication after ACS
- No difference in the clinical outcomes
- Modest cost of the intervention over the 1 year period
- Important to understand impact of improvement in adherence on clinical outcomes



Original Investigation

Multifaceted Intervention to Improve Medication Adherence and Secondary Prevention Measures After Acute Coronary Syndrome Hospital Discharge
A Randomized Clinical Trial

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IMPORTANCE Adherence to cardioprotective medication regimens in the year after hospitalization for acute coronary syndrome (ACS) is poor.

OBJECTIVE To test a multifaceted intervention to improve adherence to cardiac medications.

DESIGN, SETTING, AND PARTICIPANTS In this randomized clinical trial, 253 patients from 4 Department of Veterans Affairs medical centers located in Denver (Colorado), Seattle (Washington), Durham (North Carolina), and Little Rock (Arkansas) admitted with ACS were randomized to the multifaceted intervention (INT) or usual care (UC) prior to discharge.

INTERVENTIONS The INT lasted for 1 year following discharge and comprised (1) pharmacist-led medication reconciliation and tailoring; (2) patient education; (3) collaborative care between pharmacist and a patient's primary care clinician and/or cardiologist; and (4) 2 types of voice messaging (educational and medication refill reminder calls).

MAIN OUTCOMES AND MEASURES The primary outcome of interest was proportion of patients adherent to medication regimens based on a mean proportion of days covered (PDC) greater than 0.80 in the year after hospital discharge using pharmacy refill data for 4 cardioprotective medications (clopidogrel, β-blockers, 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors [statins], and angiotensin-converting enzyme inhibitors or angiotensin receptor blockers [ACEI/ARB]). Secondary outcomes included achievement of blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C) level targets.

RESULTS Of 253 patients, 241 (95.3%) completed the study (122 in INT and 119 in UC). In the INT group, 89.3% of patients were adherent compared with 73.9% in the UC group ($P = .003$). Mean PDC was higher in the INT group (0.94 vs 0.87; $P < .001$). A greater proportion of intervention patients were adherent to clopidogrel (86.8% vs 70.7%; $P = .03$), statins (93.2% vs 71.3%; $P < .001$), and ACEI/ARB (93.1% vs 81.7%; $P = .03$) but not β-blockers (88.1% vs 84.8%; $P = .59$). There were no statistically significant differences in the proportion of patients who achieved BP and LDL-C level goals.

CONCLUSIONS AND RELEVANCE A multifaceted intervention comprising pharmacist-led medication reconciliation and tailoring, patient education, collaborative care between pharmacist and patients' primary care clinician and/or cardiologist, and voice messaging increased adherence to medication regimens in the year after ACS hospital discharge without improving BP and LDL-C levels. Understanding the impact of such improvement in adherence on clinical outcomes is needed prior to broader dissemination of the program.

TRIAL REGISTRATION clinicaltrials.gov Identifier: NCT00903032

Editor's Note

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