

Improving Guideline Adherence for Cardiovascular Disease: Comparison of Patient Characteristics at 12 Months

BT Levy, PhD, MD^{1,3}; Y Xu, MS¹; BL Carter, PharmD²; B Gryzlak, MA³; C Moss, MS¹; CP Parker, PharmD²; R Finkelstein, PharmD²; T Gums, PharmD²

¹University of Iowa Department of Family Medicine ²University of Iowa College of Pharmacy ³University of Iowa College of Public Health

Introduction

- Patients at high risk for cardiovascular (CV) disease often do not receive guideline concordant therapy.
- Hypertension, dyslipidemia, obesity, and diabetes are among the most important preventable contributors to CV disease and death in the United States, leading to heart disease, stroke, and renal failure when not detected early and treated appropriately.

Purpose

- To assess whether a centralized CV risk service managed by clinical pharmacists will improve blood pressure (BP), low density lipoprotein cholesterol (LDL), HbA1c, and Guideline Advantage metrics for participants recruited into the ICARE (Improved Cardiovascular Risk Reduction to Enhance Rural Primary Care) intervention vs. a usual care control group.

Methods

- Prospective, cluster-randomized trial in 12 family medicine offices in Iowa.
- Offices were randomized to a centralized CV risk service or usual care.
- 302 family medicine patients recruited over 19 months.
- Recommendations were provided to patients in the intervention practices only after the patient's physician was consulted.
- Interventions were conducted by clinical pharmacists using regular telephone calls over 12 months.
- This poster reports on subjects who have completed 12-months of follow-up.
- The primary outcome is the Guideline Advantage adherence score; the secondary outcomes are blood pressure control, LDL levels, and HbA1c levels.

Inclusion criteria include:

- English speaking patients
- ≥ 50 years of age
- Seen at least once in the previous 24 months with a history of at least one of the following chronic medical conditions:
 1. Diabetes with HbA1c > 7.5%
 2. Hypertension
 3. Hypercholesterolemia



Statistical Analysis

- Standard descriptive statistics, mean for continuous or ordinal variables, and percent for categorical variables;
- The adherence score was calculated based on all of the Guideline Advantage criteria, as a percentage of applicable criteria met for each subject.

Results

Baseline Demographics (n=302)	Control group (n=153) Mean (± SD) or n (%)	Intervention group (n=149) Mean (± SD) or n (%)
Age (± SD)	64.1 (± 8.0)	63.7 (± 8.9)
Female	81 (52.9%)	69 (46.3%)
Married	81 (52.9%)	89 (59.7%)
Caucasian	144 (94.1%)	143 (96.0%)
High school or less	95 (62.1%)	93 (62.4%)
Insurance status		
Private	131 (85.6%)	117 (78.5%)
Medicare / Medicaid	20 (13.1%)	28 (18.8%)
No insurance	2 (1.3%)	4 (2.7%)
Annual income*		
< \$40,000	76 (49.7%)	63 (42.3%)
\$40,000 to < \$80,000	52 (34.0%)	46 (30.9%)
≥ \$80,000	11 (7.2%)	17 (11.4%)
Not reported	14 (9.2%)	23 (15.4%)

There were no statistically significant differences in baseline demographic characteristics between the two groups.

At the 12-month follow-up:

- The LDL in the intervention group was significantly lower than that in the control group (p=0.005).
- The HbA1c in the intervention group was borderline lower than that in the control group (p=0.054).
- There were no statistically significant differences between intervention and control groups for systolic BP or diastolic BP.
- The guideline adherence score in the intervention group was significantly better than that in the control group (p=0.001).

12-month Characteristics (n=262 to date)	Control group (n=134) Mean (± SD)	Intervention group (n=128) Mean (± SD)	P-values
Systolic blood pressure (mmHg)	132.2 (± 19.7)	131.3 (± 18.5)	0.701
Diastolic blood pressure (mmHg)	72.4 (± 12.0)	73.5 (± 10.8)	0.440
Total cholesterol (mg/dL)	173.0 (± 45.6)	162.4 (± 47.8)	0.068
HDL (mg/dL)	44.7 (± 13.1)	44.6 (± 14.0)	0.980
LDL (mg/dL)	95.5 (± 40.1)	81.0 (± 42.2)	0.005
Triglyceride (mg/dL)	187.7 (± 99.6)	191.6 (± 140.2)	0.798
HbA1c (%)	7.7 (± 1.7)	7.3 (± 1.4)	0.054
BMI (kg/m ²)	37.1 (± 8.3)	36.7 (± 7.4)	0.742
Number of medications	5.8 (± 2.5)	6.1 (± 2.4)	0.363
Number of chronic conditions	5.7 (± 2.2)	5.3 (± 2.2)	0.107
Guideline adherence score	62.5 (±14.2)%	67.8 (±13.0)%	0.001

Discussion

- After 12 months, patients with elevated CV risk factors randomized to a centralized CV risk service showed lower LDL levels and better Guideline Advantage metric scores than patients in control practices. There was a trend toward an improved A1c in the intervention group.
- These patients are a high-risk group with many CV risk factors.

Strengths

- Cluster-randomized multi-practice clinical trial conducted in the setting of a rural mid-western family medicine research network;
- Intervention pharmacists have access to the patient EMR to provide the comprehensive assessments for the intervention.

Conclusions

- A centralized CV risk service managed by clinical pharmacists shows promise in improving rural patients' risk for cardiovascular disease.

Funding

National Heart, Lung, and Blood Institute, R01HL116311 (Carter/Levy, PIs)
Institute for Clinical and Translational Science, U54TR001356 (Rosenthal, PI)