

Discontinuation of Vascular Medications Among Patients at Risk for Vascular Disease in the Primary Care Setting

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BACKGROUND

- Long-term persistence with vascular medications is necessary to prevent vascular events; however, patients and/or their physicians may prematurely discontinue these medications before the full benefit can be realized
- Physicians may intend to follow evidence-based guidelines for prescribing vascular medications but there are barriers that may preclude them from continuing these medications long term
- Chronic disease management programs and computerized clinical decision support systems, by providing patient education and interventions to improve guideline adherence, may prevent inappropriate discontinuation of vascular medications

OBJECTIVES

- To provide pharmacosurveillance data on the frequency and reasons for discontinuing vascular medication among primary care patients with vascular risk
- To determine the effect of an electronic vascular management program on rates of vascular medication discontinuation

METHODS

Study Design

- Sub-study of COMPETE III (Computerization of Medical Practice for the Enhancement of Therapeutic Effectiveness)
- COMPETE III was a large, multi-center randomized controlled trial comparing a multifaceted, electronic vascular disease management program with usual care on the quality of vascular disease care

Setting

- 50 family physician practices in 18 sites in Southern Ontario (Hamilton, Niagara, Kitchener-Waterloo, Toronto & Ottawa regions)

Subjects

- Physicians using electronic health records (EHRs)
- Patients ≥ 55 years with vascular disease (heart disease, stroke, peripheral vascular disease) or ≥ 1 vascular risk factor (hypertension, high cholesterol, diabetes)

Study intervention

- Web-based (and paper) individualized vascular tracker shared by patient & physician (outlines whether lab results & vascular risk factors are controlled or not and provides evidence-based clinical advice at point of care)
- Clinical care coordinators (nurse or pharmacist providing patient education, goal-setting, and follow-up, linkage to resources and clinical decision support to physicians)
- Automated telephone reminders
- Educational resources

Data Collection (12-month follow-up)

Data sources:

- Patient telephone interview
- Family physician electronic medical record (EMR) and paper chart

Information collected on vascular medications:

- Date of most recent Rx (quantity prescribed, directions for use)
- Date of discontinuation (if applicable)
- Reasons for discontinuation

METHODS (continued)

Study outcomes

- Number of medications discontinued out of the total number of medications prescribed during the study period.
- Frequency of discontinuation by reason for discontinuation, within each medication class, and for individual medications

Data Analysis

Descriptive statistics

- Mean (SD) number of medications discontinued
- Frequency of medication discontinuation overall and within each sub-group

Inferential statistics

- Difference in discontinuation rates between intervention and control group
- Independent samples t-test

RESULTS

Patient and physician characteristics

Physicians (n=50)

- Mean age = 48 years, mean 21 years in practice
- Mean # patients seen per day = 33

Patients (n=1102)

- Mean age = 69 years, 53.4% female
- 56.3% completed at least high school
- 26.5% had previous vascular event, 18.6% diabetes, 53.1% high cholesterol, 68% hypertension
- Mean number of vascular medications = 8.5 ± 5.0

Medication discontinuation rates

- 757 discontinuations out of 7646 medications prescribed
- Mean (\pm SD) # medications discontinued = $0.7 (\pm 1.0)$
- 40.4% of patients had ≥ 1 medication discontinuation
- Mean discontinuation rate = $11.7\% (\pm 22.7\%)$
- 12.4% in intervention group vs. 10.8% in control group ($p=0.01$)

Reasons for medication discontinuation (n=738 Rx)

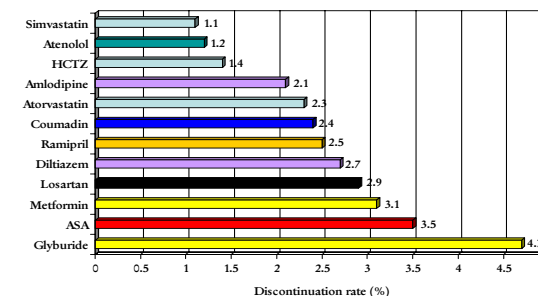
Reason	# of discontinuations	Rate
Intolerance	198	26.8%
Suspected Allergy	8	1%
Allergy	15	2%
Stopped by patient	60	8.1%
Stopped by another prescriber	90	12.2%
No longer needed	82	11.1%
Not effective	91	12.3%
On hold pending further assessment	35	4.7%
Rx expired	41	5.6%
Other	32	4.3%
Unknown	86	11.7%

RESULTS (continued)

Discontinuation by medication class

Drug class	Total # prescribed	Total # discontinued	Rate
ACE inhibitors	1256	33	2.6%
Angiotensin receptor blockers (ARBs)	371	10	2.7%
Beta-blockers	729	9	1.2%
Calcium channel blockers	668	14	2.1%
Thiazide diuretics	882	13	1.5%
Loop diuretics	166	3	1.8%
Anti-thrombotics	1102	33	3.0%
Statins	1336	28	2.1%
Other lipid lowering agents	150	1	0.7%
Insulin	108	4	3.7%
Oral hypoglycemics	479	16	3.3%

Medications with highest discontinuation rates



DISCUSSION

- Discontinuation of vascular medications was not uncommon, even among patients with high vascular risk.
- Medications that were discontinued included aspirin, statins, ACE-inhibitors and ARBs, which have been shown to improve outcomes in cardiovascular primary & secondary prevention trials
- Medications were discontinued for both appropriate and inappropriate reasons
 - Adverse effects, allergy, and lack of effectiveness were all reasons where a risk-benefit assessment by the prescriber may have led to appropriate discontinuation
 - In cases where the patient stopped a medication on their own, it was stopped by another prescriber, or a prescription had expired and was not refilled, there are opportunities to ensure that patients remain on the right medication by providing patient education or improving continuity of care
- Patients in the intervention group had a higher rate of medication discontinuation than those in the control group. Closer follow-up and surveillance of patients who were part of the intervention's vascular management program may have led to greater detection of discontinued medications which would have otherwise gone unnoticed
- The reasons for discontinuation are helpful in explaining why physicians are not able to always adhere to evidence-based guidelines for prescribing vascular medications.
- To better assess the quality of prescribing, more information is needed about whether patients were restarted on medications or switched to medications in the same therapeutic class after a medication was discontinued