

Academic Detailing to Improve Antihypertensive Prescribing Patterns

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Several studies indicate that treatment of hypertension in the United States does not follow recommendations from expert bodies. We thus implemented a program using academic detailers to increase practitioner compliance with antihypertensive treatment guidelines. Five Veterans Affairs medical facilities including academic medical centers and community based outpatient clinics were chosen for the intervention. Pharmacists were trained as academic detailers, and the intervention included lectures, educational materials, provider profiling, and meetings with 25 to 50 providers each. After intervention, the proportion of hypertensives receiving calcium antagonists decreased from 43% to 38% ($P < .001$), whereas the proportion receiving a β blocker or thiazide diuretic increased from

58% to 64% ($P < .001$). For hypertensive subjects with diabetes mellitus or congestive heart failure, the proportion receiving an angiotensin converting enzyme inhibitor or angiotensin receptor blocker increased from 72% to 76% for the former and from 74% to 78% for the latter ($P < .001$ for both). Among hypertensive subjects with coronary artery disease an increase in β blocker use was noted after intervention ($P < .001$ for change from baseline). Prescribing patterns after academic detailing more closely followed national recommendations. Am J Hypertens 2003;16:508–511 © 2003 American Journal of Hypertension, Ltd.

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The need for physicians to remain up-to-date with regard to improvements in drug treatment, procedures, and diagnostics is of great importance. Yet, little is known about whether current efforts to promote changes in practice are successful. Several reports have raised serious concerns about the prescribing of medications, questioning the value of programs to influence medical practice. These include the underuse of anticoagulation in elderly stroke patients with atrial fibrillation,¹ the lack of lipid lowering treatment in the primary or secondary prevention of coronary artery disease,² the underuse of medications that have proven benefits on morbidity and mortality in patients with congestive heart failure (CHF),³ differences in prescribing patterns between generalists and specialists after myocardial infarction,⁴ and the lack of use of treatments to maintain renal function in hypertensives with diabetes mellitus (DM).⁵

Recent studies have indicated that recommendations from the The Fifth and Sixth Reports of the Joint National

Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC-V and JNC-VI), and from the Medical Advisory Panel for the Department of Veterans Affairs (VA),^{6–8} that thiazide diuretics and β blockers be used as first-choice antihypertensive agents in the absence of comorbidities, are not followed.^{9,10} Our objective was to develop a program using academic detailers that increased practitioner compliance with national hypertensive medication guidelines.

Methods

Five pharmacists were trained as academic detailers to promote antihypertensive medication treatment that was consistent with national guidelines. One pharmacist was assigned to each VA facility that consisted of one medical center and two to four outpatient clinics. Training, which lasted approximately 4 h, included effective communication techniques, discussions of national antihypertensive

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recommendations, and use of computer programs to extract and to format data. During the intervention, academic detailers met every 2 to 4 weeks, both face-to-face and via teleconference, to discuss effective interventions and to share information. Interventions included lectures, educational materials (article reprints, pocket cards, posters, computer screen sticker, and door hangers), provider profiling of prescribing patterns, and one-on-one and group meetings with providers. One-on-one meetings with primary care and resident physicians usually lasted 10 to 15 min and consisted of review of individual provider prescribing patterns, discussion of clinical literature and national recommendations, distribution of print materials, and a brief discussion focused on perceived barriers to changing practice to conform more closely to national guidelines. Intervention sites included academic medical centers as well as community clinics in both urban and rural settings.

For analysis of antihypertensive prescribing patterns by Veterans Integrated Service Networks (VISN) at both baseline and follow-up periods (March 1, 1998 to August 30, 1998 for baseline and March 1, 1999 to August 30, 1999 for follow-up), data were obtained from the VA Pharmacy Benefits Management office (Hines, IL) for all drugs categorized in the Cardiovascular Series. Each VISN corresponds to a contiguous US area and includes three to ten reporting stations. VISN 21 (the intervention VISN) is in northern California, Hawaii, and northern Nevada, whereas comparison VISN for local comparison are located in Washington, Oregon, Montana, Utah, New Mexico, Arizona, and southern California. Medication information includes number of prescriptions and total quantity of medication dispensed for all strengths of the following drugs: angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), β blockers, calcium antagonists, and diuretics.

For VISN 21-specific analysis, a customized program extracted both ICD-9 codes from encounter forms and antihypertensive prescription data. The ICD-9 codes identified patients with hypertension, DM, CHF, coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), and asthma. Prescribing patterns for hypertension with and without comorbid conditions were determined by relating the ICD-9 database to prescriptions for β blockers, calcium antagonists, ACEIs, ARBs, and thiazide diuretics (alone or with a potassium sparing diuretic) over two 6-month periods (March 1, 1998 to August 30, 1998 for baseline and March 1, 1999 to August 30, 1999 for follow-up).

Blood pressures (BPs) recorded on 308 randomly chosen patients of the study providers from all sites during the baseline period were compared with BPs recorded during follow-up. The BP taken at the most recent visit during each study time frame was included; when BP was taken more than once, the average value was used.

Statistical analysis of treatment day frequencies for drug classes used the χ^2 test. Comparisons of BP were

made using the Student *t* test. A statistical software program (Crunch version 4.0, Crunch Software Corporation, Oakland, CA) computed statistical tests, with an α value ≤ 0.05 predefined as statistically significant.

Results

Changes in provider prescribing patterns between baseline and after academic detailing reflected increased use of diuretics and β blockers and decreased use of calcium antagonists (Table 1). Of 15,467 hypertensive subjects at baseline without CHF or DM, the proportion receiving a drug class were calcium antagonist (43%), ACEIs/ARBs (43%), and β blocker or thiazide diuretic (58%). After intervention, of 18,284 hypertensive subjects, the proportion receiving a drug class were calcium antagonist (38%), ACEIs/ARBs (43%), and β blocker or thiazide diuretic (64%) ($P < .001$ for calcium antagonist and β blocker or thiazide diuretic change).

Of 7805 hypertensive subjects with DM and 3794 with CHF, 72% of the former and 74% of the latter received an ACEI/ARB before intervention. After intervention, of 8970 hypertensive patients with DM and 3804 hypertensive patients with CHF, 76% of the former and 78% of the latter received an ACEI/ARB ($P < .001$ for change from baseline for both).

At baseline, of hypertensive subjects with CAD who did not have COPD, asthma, DM, or CHF, 48% received a β blocker. After intervention, of this group of hypertensive patients, 53% received a β blocker ($P < .001$ for change from baseline).

Our change in antihypertensive prescribing patterns was compared with those of VA facilities nationwide and within our geographic area (Fig. 1). The percent increase in thiazide diuretic use in our study group was 10% compared with 7% for VA nationwide and 6% for surrounding VA medical facilities ($P < .001$ for both comparisons). For β blocker use, our study group increased 7% compared with 6% for both VA nationwide and for surrounding VA facilities. For calcium antagonists, our study group decreased 12% compared with a decrease of 5% for both VA nationwide and for surrounding VA medical facilities ($P < .001$ for both comparisons). The change in the use of ACEIs/ARBs was small and similar.

Average baseline systolic and diastolic BP of randomly chosen patients of the study health care providers was 141 ± 18 mm Hg and 77 ± 12 mm Hg, respectively, compared with 140 ± 19 mm Hg ($P = .27$) and 76 ± 12 mm Hg ($P = .30$) recorded during follow-up.

Discussion

Despite recommendations from expert national panels, calcium antagonists, and ACEIs were the most commonly dispensed antihypertensive medications by both retail pharmacies and VA medical facilities for 1995.^{9,10} Our intervention resulted in an increase in use of thiazide

Table 1. Antihypertensive treatment before and after intervention

	Baseline n (%)	Follow-Up n (%)	Change %
Hypertension without congestive heart failure and diabetes mellitus			
β Blocker or thiazide diuretic	8911 (58)	11,677 (64)	11*
Calcium antagonist	6593 (43)	6954 (38)	-11*
ACEI or ARB	6642 (43)	7824 (43)	0
Total patients	15,467	18,284	
Hypertension and coronary artery disease			
β Blocker	4543 (48)	5617 (53)	11*
Calcium antagonist	4193 (44)	4343 (41)	-7*
ACEI or ARB	5423 (57)	6141 (58)	1
Total patients	9485	10,594	
Hypertension and congestive heart failure			
β Blocker or thiazide diuretic	1938 (51)	2063 (54)	6†
Calcium antagonist	1450 (38)	1368 (36)	-6†
ACEI or ARB	2809 (74)	2977 (78)	6*
Total patients	3794	3804	
Hypertension and diabetes mellitus			
β Blocker or thiazide diuretic	3650 (47)	4689 (52)	12*
Calcium antagonist	3246 (42)	3390 (38)	-9*
ACEI or ARB	5637 (72)	6781 (76)	5*
Total patients	7805	8970	

ACEI = angiotensin converting enzyme inhibitor, ARB = angiotensin receptor blocker.

* $P < .001$; † $P < .05$.

diuretics and β blockers and a decrease in calcium antagonist use to more closely follow national guidelines.

The prescribing of medication is a complex phenomenon. It is assumed that the skills needed to prescribe medication are acquired during medical training and are sustained during clinical practice by effective continuing medical education. It is hypothesized that scientifically based prescribing patterns are based, at least in part, on the publication, interpretation, and application of results from scientifically sound clinical trials, attendance at CME meetings, or recommendations from expert medical orga-

nizations or panels that are then applied to individual patients. There is little evidence that these efforts are successful.

Expert recommendations may have little impact on antihypertensive prescribing patterns because of lack of successful dissemination of guidelines, the effectiveness of pharmaceutical promotion practices, or the attractiveness of using new therapies so that practitioners are considered up-to-date. Of these, the role of pharmaceutical promotion practices, including face-to-face sales activities and pharmaceutical advertisements, has probably had the greatest impact. Misinformation about the role of drugs may stem from inaccurate drug advertisements or statements and the intense promotional efforts of pharmaceutical companies.^{11,12} Requests by physicians to add drugs to hospital formularies are strongly associated with physicians' interactions with companies manufacturing these drugs.¹³ In hypertension, there is a strong positive association between experts' published positions on the safety of calcium antagonists and their financial relationships with pharmaceutical manufacturers.¹⁴

What can be done to improve patterns of medication use? One approach would be to improve how guidelines are formatted, organized, and disseminated,¹⁵ but this is unlikely to have a major impact. A review of 99 studies of methods to change medical practice concluded that educational materials alone and formal conferences, without enabling or practice-reinforcing strategies, had little impact.¹⁶ The most frequently effective single-method interventions were outreach visits, including academic

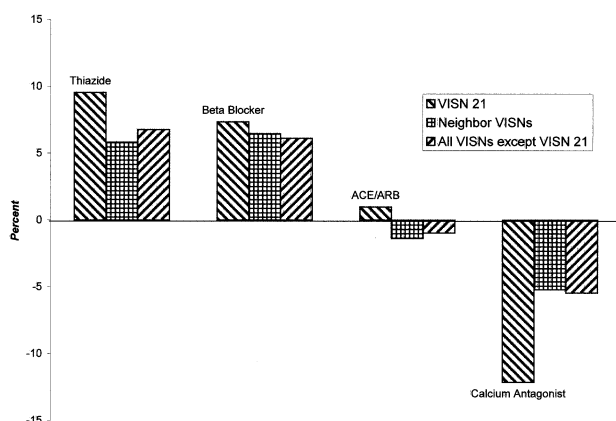


FIG. 1. Comparison of antihypertensive prescribing patterns in VISN 21 and other Department of Veterans Affairs medical facilities. ACE = angiotensin converting enzyme; VISN = Veterans Integrated Service Network; ARB = angiotensin receptor blocker.

detailing, patient reminders and educational materials, and physician reminders.

Academic detailing, originally developed in the early 1980s, was termed "counter-detailing" to indicate promotion of medicines to counter the pharmaceutical industry's promotion of other drugs.¹⁷⁻¹⁹ Academic detailing involves face-to-face meetings of providers with typically a pharmacist or other health care provider. At the meeting, often of just a few minutes duration, the detailer explains the specific area of promotion and leaves written materials as reference for the provider. There is evidence that academic detailing is successful in improving prescribing practices and compliance with practice guidelines.¹⁶⁻²⁰

A limitation of our study is its quasiexperimental design because of the lack of a randomized comparison. The changes in prescribing patterns may have resulted from factors other than the intervention. We believe that it is likely that the intervention was, at least in part, responsible for the changes noted because comparisons with other VA facilities, both nationally and in our region, indicate that our patterns of use changed substantially more than other VA medical facilities to be in greater compliance with national recommendations.

Methods to improve prescribing patterns exist. Following guidelines by expert national panels will improve both the quality as well as the economy of antihypertensive treatment. Given the resources of the pharmaceutical industry in promoting their products—at times at odds with national guidelines—the use of established interventions aimed at countering their influence are sorely needed.

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