Original Research

Factors associated with medication adherence and persistence of treatment for hypertension in a Medicaid population

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Abstract

Background: Non-adherence with antihypertensive therapy is a significant problem. Prior research has generally focused upon one drug or one drug class. Current information across multiple antihypertensive drug classes is limited.

Objectives: To describe the initial treatment of recipients of Louisiana Medicaid with newly-diagnosed hypertension; evaluate differences in adherence and persistence rates among multiple antihypertensive drug classes; and test the association of drug classes, race, gender, age and comorbidity with adherence and persistence to drug therapy.

Methods: In a retrospective analysis of administrative claims data, initial therapy was described by type and drug class for 4544 Medicaid recipients with newly-diagnosed hypertension. Recipients were placed into cohorts based upon drug classes (diuretics, beta-blockers, angiotensin-II receptor blockers, angiotensin converting enzyme inhibitors, and calcium channel blockers). Persistence with drug therapy and Medication Possession Ratios (MPR) were calculated for 6-month and 12-month periods following diagnosis. Drug class and demographic variables were used as predictor variables in logistic regression analyses of persistence and MPR.

Results: Recipients in the study group were primarily female (66%) and Black (65%). Recipients initially were treated with monotherapy (33%), multiple drugs (11%), fixed combinations (8%) or no drugs (48%). After one year, 62% of recipients were not receiving drug therapy. Persistence rates by cohort ranged from 26% to 42% at 6-months following diagnosis, and 14%–28% at 12-months. The proportion of recipients by cohort with MPRs of 0.8 or above ranged from 43% to 60% at 6-months and 25%–42% at 12-months. Race, comorbidities, and initial drug therapy were significant predictors of both persistence and MPR.

Conclusions: Within this study group, adherence and persistence to medication therapy were less than optimal. Future efforts to improve compliance with medication therapy could be focused upon specific groups having poor adherence and/or persistence within the drug class cohorts analyzed in this study.
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Background

Hypertension, defined as an average systolic blood pressure of 140 mm Hg or above, or an average diastolic blood pressure of 90 mm Hg or above, is a chronic disease with significant morbidity.[1] Persons with hypertension have increased risk for coronary heart disease, stroke, congestive heart failure, renal failure, and peripheral arterial disease.[2] In the United States, hypertension affects approximately 32% of non-institutionalized adults over age 20, and about 67 million adults in total.[1] The prevalence of hypertension differs by age, gender, race and ethnicity. Prevalence estimates increase from 6.8% among those 18–39 years old to 66.7% for those aged 60 and above. Hypertension affects 29.4% of males and 27.5% of females as well as 26.1% of Hispanics, 27.4% of non-Hispanic Whites, and 40.4% of non-Hispanic Blacks.[3] It is estimated that direct costs for hypertension, including health care services and medications, were $69.9 billion in 2010, and that an additional $23.6 billion was spent for indirect costs of hypertension.[1]

In Louisiana, it is estimated that 32.1% of adults have hypertension.[1] Similar to national data, recent prevalence estimates differ by age, gender, and race. Although the reported age categories for the state differ from the national data, prevalence estimates increase from 8.2% among those 18–24 years old to 58.7% for those aged 65 and above. Hypertension affects approximately 31.7% of males and 32.4% of females, as well as 31% of Whites and 35.9% of blacks.[4] Estimates available from 2007 indicate that the annual medical cost of hypertension in Louisiana was $610 million, with expenditures of $256 million in the Medicaid population.[5]

Recommendations for the initial drug treatment of hypertension generally include five main drug classes. The Seventh Report of the Joint National Committee on Prevention, Evaluation and Treatment of High Blood Pressure (JNC-7) recommended diuretics, angiotensin converting enzyme inhibitors (ACEIs), angiotensin-II receptor blockers (ARBs), beta-blockers (BBs) or calcium channel blockers (CCBs) used as monotherapy or as combination therapy depending upon the stage of hypertension and certain compelling indications.[6] Recently released JNC-8 recommendations for initial antihypertensive therapy include the same drug classes with the exception of BBs, which are now recommended as secondary therapy.[7]

In the United States, approximately 55.8% of adults with hypertension have uncontrolled hypertension.[1] Uncontrolled hypertension is defined as an average systolic blood pressure of 140 mm Hg or above or an average diastolic blood pressure of 90 mm Hg or above that is either untreated or remains persistently in this range despite treatment with antihypertensive medications.[1] Among patients receiving antihypertensive medications, uncontrolled hypertension may be due to a failure to take the medications as prescribed.[8] The extent to which patients take medications according to prescribed dosage regimens is defined as adherence.[9] The problem of poor adherence is common in patients having a wide range of diseases,[10] but it has been reported as a particularly significant problem in chronic diseases such as hypertension, which often do not have noticeable symptoms.[8,11] As most forms of medication therapy are prescribed in order to provide continuous therapeutic action,[12] poor adherence to medication therapy may negatively impact patients' health status.[8] Patients with poor adherence to therapy with antihypertensive medications have increased cardiovascular risk that may lead to a number of health consequences, including a lack of improvement, worsening of symptoms,[8,10,13] organ damage, and stroke.[6,9,14,15]

A common method used to estimate adherence with drug therapy is the Medication Possession Ratio (MPR).[16] The MPR takes into account days' supply of medication along with gaps in therapy, which may occur due to missed doses or delayed refills, to calculate a rate of medication adherence during a defined period. The MPR is reported as a value between 0 and 1,[17] with 0.8 being a generally-accepted level indicating adherence with drug therapy.[18] A second measure used to evaluate patients' compliance with medication therapy is persistence. Persistence specifically addresses the length of therapy, and is defined as the duration of time from initiation to discontinuation of therapy.[19] Poor persistence with medication therapy is also a common problem, and may be due to not having prescriptions filled or discontinuing drug therapy too soon.[8] The problem of poor persistence is illustrated by studies