

## Modeling the Health and Budgetary Impacts of a Team-Based Hypertension Care Intervention That Includes Pharmacists

The following is a synopsis of "Modeling the Health and Budgetary Impacts of a Team-based Hypertension Care Intervention That Includes Pharmacists," published in November 2019 in *Medical Care*.



### What is already known on this topic?

The link between hypertension and cardiovascular disease is well-known, with uncontrolled systolic blood pressure being the greatest predictor of elevated cardiovascular disease risk among patients. Roughly half of all patients diagnosed with hypertension have their blood pressure under control, despite many having access to healthcare services and cardiovascular disease prevention medications. Programs designed to help patients reduce their blood pressure are important for improving individual and community health. Interdisciplinary team-based treatment programs have shown to be effective at helping patients manage and lower their blood pressure levels.

Team-based care that includes pharmacists have a known benefit to patients: previous studies have suggested that this could significantly improve cardiovascular health outcomes among patients with hypertension. If adopted nationwide, then in over ten years this could result in a 13% reduction in patients with uncontrolled blood pressure levels. Roughly 638,000 cardiovascular disease events could be prevented, saving not only lives, but also healthcare dollars. The purpose of this study was to establish the benefit of interventions involving a pharmacist to improve hypertension control and cost outcomes.

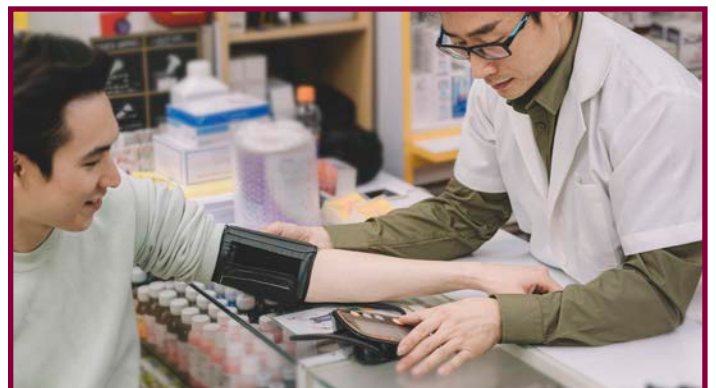
### What is added by this article?

This study used microsimulation modeling to assess how team-based treatment of hypertension with pharmacist involvement would potentially impact health and budgetary outcomes. This study builds on previous studies in four ways:

1. Assesses the impact a pharmacist has on a hypertension treatment team;
2. Applies the intervention to three different hypertensive patient groups to determine different outcomes;
3. Expands the time frame to include a five-year and twenty-year outcomes;
4. Conducts a break-even analysis was done to determine cost-neutrality.

### Impact on Patient Outcomes

The intervention was applied to three patient population to examine its impact on patient outcomes. Patients were assigned to one of three groups based on their blood pressure management and disease status. Patients assigned to Group 1 had newly diagnosed hypertension, group 2 had persistently uncontrolled blood pressure, and group 3 had treated but uncontrolled blood pressure. In five years, the intervention for group 1 reduced uncontrolled blood pressure by 22.9 million person-years, prevented 40.6 thousand heart attacks, 36.6 thousand strokes, and 63.4 thousand cardiovascular deaths when compared to no intervention. For group 2, the intervention reduced uncontrolled blood pressure by 36.8 million person-years, prevented 91.9 thousand heart attacks, 139.0 thousand



strokes, and 115.4 thousand cardiovascular deaths when compared to no intervention. For group 3, the intervention reduced uncontrolled blood pressure by 32.8 million person-years, prevented 87.8 thousand heart attacks, 134.5 thousand strokes, and 107.9 thousand cardiovascular deaths when compared to no intervention. Based on the results, group 2 experienced the greatest health benefit of the intervention for all disease outcomes, followed by groups 3 and 1. Group 1 was more likely to contain patients who were younger and less obese, reducing the intervention's capacity to reduce long-term cardiovascular events, because the patient population was already comparatively healthy. Furthermore, extending the model to 20 years of intervention did not change the intervention rankings in terms of impact on patient outcomes.

### Cost Analysis and Budgetary Impacts

Within five years, the cost of the intervention was greater than the disease costs averted by all payer groups, but excluding patients aged over 75 years. The intervention was most costly for groups 2 and 3 (patients with uncontrolled hypertension) than for group 1. To achieve cost neutrality, the best approach may be to offer the intervention at a lower cost. This study assumed each intervention cost



\$525 per patient per year, and for cost neutrality, the intervention cost needed to be approximately \$335 for Medicare, \$35 for Medicaid, and \$180 for private insurance payers for patients in group 1. For patients in group 2, cost neutrality was achieved at \$585 for Medicare, \$70 for Medicaid, and \$220 for private insurance payers. Group 3 achieved cost neutrality at \$585 for Medicare, \$55 for Medicaid, and \$230 for private insurance payers.

### What are the implications of these findings?

This study modeled the intervention before the release of the 2017 American Heart Association/American College of Cardiology hypertension guidelines, which lowered the threshold at which medication should be initiated. Prior to 2017, blood pressures greater than 140/90 mmHg warranted medication use, and the new guidelines indicate therapy should be started at blood pressures greater than 130/80. This change could expand the patient population who would benefit from a pharmacist-involved team-based treatment. It is difficult to convince payer systems to commit to an intervention that can generate net savings only in the longer term of 20 years or more, but possible to make the investment case if an intervention can be cost-neutral within 5 years. Targeting specific demographics within the hypertension patient population might be successful. Reducing the cost of the intervention would allow for an expanded service.

This study did not differentiate how a pharmacist could be involved within a care team. The interventions studied included pharmacists involved as autonomous providers within a clinic setting, pharmacists working as providers with consent of the primary care provider, and community pharmacists working under a collaborative practice agreement. It is important for pharmacists to be involved in team-based approaches to chronic disease treatment because pharmacists play multiple roles that contribute to a patient's success. Pharmacists are trained in comprehensive medication management and education on proper administration of medication regimens, and they provide additional opportunities for patient screenings and assessments, all of which make pharmacists a critical partner in interdisciplinary team-based approach to treatment.

### Resources:

1. Centers for Disease Control and Prevention: [Hypertension Resources for Health Professionals](#):
2. American Heart Association: [Hypertension Guideline Resources](#)
3. Centers for Disease Control and Prevention: [Using the Pharmacists' Patient Care Process to Manage High Blood Pressure: A Resource Guide for Pharmacists](#)

### Citation

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