Physician/Pharmacist Collaboration to Improve Blood Pressure Control

A Guide for Physicians and Pharmacists
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The Collaborative Model to Improve BP Control

Thank you for participating in our BP management initiative, which pairs physicians and pharmacists into interdisciplinary teams in order to improve blood pressure control. This collaborative approach has proven its success when used among physicians and pharmacists in a clinical setting. In a recent NHLBI-funded study, the intervention achieved BP control in 89% of patients with hypertension, including 82% among patients with diabetes. The intent of the current program is to have teams of physicians and community-based pharmacists use a similar approach. Using the model, both physicians and the community pharmacists are encouraged to identify patients in their practices who have a blood pressure that is not at goal. You are encouraged to adopt this model for all of your patients who have hypertension. The major reason the intervention has been so effective is because it overcomes clinical inertia, sub-optimal regimens and poor medication adherence.

BP Management Process
- Enhanced communication between physicians and community pharmacists
- Goal-oriented hypertension management
- Creation of self-management and support
- Active, sustained follow-up

Outcome:
Improved & Sustained BP Control
What Support is there for the Physician/Pharmacist Model to Improve Blood Pressure Control?

1) “If BP continues to be elevated, clinicians should consider choosing one of the strategies proven effective … [including] management by a pharmacist in the follow-up and adjustment of medications to improve BP goal.”

Department of Veterans Administration, Department of Defense. 2004, Revision: July 2005

2) Our study of clinic-based teams found the following BP control rates in the intervention and control groups at 9 months:

<table>
<thead>
<tr>
<th></th>
<th>Control %</th>
<th>Intervention %</th>
<th>Adjusted OR</th>
<th>CI; P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>52.9%</td>
<td>89.1%</td>
<td>8.9</td>
<td>3.8-20.7; P&lt;0.001</td>
</tr>
<tr>
<td>Non-DM</td>
<td>62.8%</td>
<td>91.4%</td>
<td>10.2</td>
<td>3.4-29.9; P&lt;0.001</td>
</tr>
<tr>
<td>Diabetes</td>
<td>23.5%</td>
<td>81.8%</td>
<td>40.1</td>
<td>4.1-394.7; P=0.002</td>
</tr>
</tbody>
</table>


3) In an AHRQ-funded review of 63 controlled clinical studies, the mean systolic blood pressure reductions were:
   \( \Rightarrow \) Provider education (2.7 mm Hg)
   \( \Rightarrow \) Patient reminder systems (2.8 mm Hg)
   \( \Rightarrow \) Facilitated relay of clinical data to providers (4.5 mm Hg)
   \( \Rightarrow \) Provider reminder systems (6.8 mm Hg)
   \( \Rightarrow \) Patient education (8.1 mm Hg)
   \( \Rightarrow \) Organizational change (10.1 mm Hg)
   \( \Rightarrow \) **Specific organizational change that involved case management including those studies that utilized pharmacists (14.1 mm Hg)**
The goals of the collaborative model are to:

1) Establish a team approach to managing BP where the team includes a physician, clinic staff, a community pharmacist, and patients.
2) Overcome system barriers that impede BP control for patients with hypertension, including limited time, focus, and follow-up.
3) Utilize pharmacists to improve practitioner use of the JNC-7 hypertension guidelines.
4) Educate and empower patients in monitoring and self-management.
5) Achieve goal BP < 140/90 mm Hg (uncomplicated) or < 130/80 mm Hg for those with diabetes or chronic kidney disease.
6) Safely achieve BP control within 2-6 months, even in patients with long-standing poor control and in the elderly. Achieving BP goal in a timely manner is important because getting to goal within 6 months has been shown to significantly reduce the risk of cardiovascular events.¹


Infrastructure Development

1) A key component of this collaborative model will be pharmacist-conducted BP visits in the community pharmacy.
2) Communication between pharmacist and physician will be critical to the intervention. The best mode of communication should be determined through discussion among the providers on each team. Timely and frequent communication is very important.
3) In Iowa, collaborative practice agreements are allowed where pharmacists can make medication changes via protocol. Teams could use such agreements.
4) It is important to have staff properly trained to accurately measure BP and to interpret whether BP is at goal. Team care should continue until the patient is at goal.
Provider Training and Quality Control

- Studies have found that many BP measurements are performed incorrectly.\(^1,2\)
- Clinics and pharmacies should develop quality improvement strategies to ensure accurate BP so that patients are not misdiagnosed.
- BP measurements should follow AHA procedures for proper positioning and measurement.\(^3\)

(See pages 11-12 for proper technique.)

Managing the patient with uncontrolled blood pressure

The collaborative model follows JNC-7 guidelines and the findings from the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT).

Patient with uncontrolled BP

Baseline Pharmacy Visit
1. Pharmacist performs initial assessment, BP measurement, and history
2. Pharmacist educates patient and/or recommends changes to physician and implements the agreed upon plan.

Follow-up Pharmacy Visits
Every 2-4 Weeks until BP is controlled. Continue to monitor BP, provide patient education and recommend drug therapy changes as needed until at goal.

If needed, telephone follow-up in 1-2 weeks to evaluate medication tolerability.

Once BP is Controlled
Follow-up visits can occur at 3-6 month intervals.
1. The pharmacist conducts a complete medication history, including over-the-counter and herbal therapies.

2. The pharmacist measures BP.

3. The patient is assessed for adherence problems, adverse reactions and drug-drug and drug-herbal interactions.

4. The pharmacist assesses other potential reasons for poor BP control, including sub-optimal regimen, lack of adherence to follow-up appointments or other barriers.

5. The pharmacist determines the degree to which the regimen adheres to the JNC-7 guidelines.

6. If BP is not at goal, the most important thing to do at the baseline visit (besides education) is to add a medication or increase the dose.

Good communication and coordination between the pharmacist and physician drives this care model. The goal is to achieve blood pressure control in a timely fashion (generally 3-6 months).

### BASELINE PHARMACY VISIT

<table>
<thead>
<tr>
<th>PROBLEM OR ACTIVITY</th>
<th>INTERVENTION DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>Program description/ initiate lifestyle</td>
<td>Describe purpose and structure of the care model, provide educational materials from NHLBI (e.g. “Your Guide to Lowering Blood Pressure”, etc.) or other agencies, using materials included in your team-building session folder. Counsel patient about lifestyle modification goals, based on patient’s readiness and willingness. (Lifestyle change counseling may pertain to weight loss, low salt/fat/calorie diet, exercise, moderation of alcohol, and/or smoking cessation.) Provide patient with clear and written goal BP.</td>
</tr>
<tr>
<td>Measure BP</td>
<td>Measure BP using proper positioning and measurement technique and educate the patient about technique.</td>
</tr>
<tr>
<td>Self-monitoring</td>
<td>Encourage patient to use a home BP monitor and teach him/her how to use the device, as needed. For patients who measure home BP, review values based on the prior 2-4 weeks. Educate the patient that home BP levels are generally 5 mm Hg lower than clinic BP goals.</td>
</tr>
<tr>
<td>Unintentional medication Non-adherence</td>
<td>Provide patients who forget to take their medications with cues and strategies, including social support and/or a pill container.</td>
</tr>
<tr>
<td>Intentional medication Non-adherence</td>
<td>Address issues of intentional non-adherence through motivation and educational approaches.</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Counsel patient about strategies to reduce minor side effects. The regimen can be altered for side effects that cause poor adherence or are intolerable.</td>
</tr>
<tr>
<td>Medication titration</td>
<td>Working with a physician and a patient, the pharmacist will develop a care plan to titrate or add medications if BP is not controlled unless adherence is poor.</td>
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### PATIENT FOLLOW-UP PROCEDURES

| For Uncontrolled BP                   | Schedule in-pharmacy BP readings every 2-4 weeks until BP is controlled. If needed, telephone call in 1-2 weeks for interim assessment and titration.                                                                                                                             |
| For Controlled BP                     | When BP is at goal, follow up with a phone call at months 3, 9, 15, etc. and schedule a pharmacy BP measurement at months 6, 12, 18, etc. If BP has slipped from goal, initiate “for uncontrolled BP” procedures.                                                                                     |
| All follow-up visits and calls        | Titrate medications any time BP is not at goal. Continue to reinforce lifestyle modifications, medication adherence, and social support. Review the NHLBI materials and medications to assess and support patient knowledge of hypertension, purpose of each medication and goal BP. |
Suggested Timeline to optimize multi-drug antihypertensive regimens

If BP < 20/10 mm Hg

Over goal

Chlorthalidone 12.5 mg preferred, titrate to 25 mg/d in 2 weeks

Chlorthalidone 25 mg/d plus ACE or ARB then titrate to moderate or high dose ACE or ARB¹

Add CCB and titrate to moderate to high dose

Optimize combinations as follows: A or B¹+C+D

Add spironolactone 12.5-25 mg/day

If blood pressure remains uncontrolled, adjust regimen to include:

2 CCBs (different classes) OR Alpha-blocker or alpha/beta blocker OR Centrally-acting (e.g. reserpine, clonidine)

Add vasodilator (e.g. hydralazine)

If BP ≥ 20/10 mm Hg

Over goal or Diabetes

Chlorthalidone 12.5 mg plus ACEI or ARB

Chlorthalidone 25 mg/d plus ACEI or ARB then titrate to moderate or high dose ACE or ARB

Month 1-3

Month 3-4

Month 4-6

Month 6-8

Month 9+

Therapy Timeline

A=ACEI or ARB, B=Beta Blocker, C=CCB, D=diuretic. ¹All agents should be prescribed generically when possible to eliminate or minimize co-pays. ²ARB should be reserved for intolerance to ACE. ³Beta Blocker should usually be reserved for patients with ischemic heart disease and/or heart failure and may be considered earlier in such patients. Adapted from: Trewet and Ernst, Resistant hypertension: identifying causes and optimizing treatment regimens. South Med J. Feb 2008;101(2):166-173.
Important Points

**Therapy Management Points:**
- Following each visit, until at goal, the patient should be contacted within 2-4 weeks to evaluate the progress towards BP goals. It is frequently the case that low doses are initiated to avoid side effects, so it may be possible to make a dosage titration in 1-2 weeks. For most patients, BP goal can be achieved within 2-4 months but some patients require a longer period of time.
- When a patient has a BP that is not controlled, the most effective strategy is to make a medication dose increase and/or add a medication.
- According to many studies, most patients will require 2-4 medications to achieve BP control. Do not hesitate to continue adding medications in the proper combinations unless side effects are clearly medication-related. Educate the patient to expect the need for multiple medications.
- Studies that used chlorthalidone have all reduced cardiovascular outcomes and no agent has proven superior to chlorthalidone, thus, chlorthalidone is a viable alternative to HCTZ. Chlorthalidone dose should be 12.5-25 mg daily.
- If the patient is not taking a thiazide, it should be added unless contraindicated.¹²

**Patient Management Points:**
- Your progress note should indicate whether or not the BP is at goal, and include the goal BP. Inform patient of the goal BP.
- If needed, provide the patient with a visit reminder card, and include: today’s BP, their goal BP, and your telephone number.
- Ensure that pharmacy staff members scheduling follow-up visits are aware of the importance of these visits, to increase the chances patients will return on the schedule you desire.
- When a patient does not show up for a pharmacy follow-up BP visit, we encourage pharmacists or staff to immediately contact him or her to reschedule.
- When a significant issue or barrier to BP control is identified, including non-adherence, continue to address that problem at subsequent contacts until resolved.
- If a need for improved social support is identified, suggest a family member attend visits and/or include other resources in the community including referral to a nutritionist, smoking cessation therapy, group sessions or exercise classes.


Resistant Hypertension

1. Resistant Hypertension should be considered if patients are taking adequate doses and proper combinations of 3 or more BP medications. The regimen should include a diuretic and a particularly effective regimen is chlorthalidone plus an ACE inhibitor.

2. The most common reason for “resistant hypertension” is that combinations or doses are not adequate.

3. Always consider medication non-adherence even if the patient claims high adherence. Consider refill history and estimate adherence.

4. If the above issues are corrected, consider unconventional combinations such as combining a dihydropyridine CCB (e.g. amlodipine, nifedipine) with a non-dihydropyridine CCB (e.g. diltiazem, verapamil) which can be very effective.\textsuperscript{1,2}

5. Many studies have found that spironolactone is very effective in low dose even for patients with normal aldosterone levels. Can use doses of 25-50 mg daily.\textsuperscript{3}

6. If BP remains poorly controlled, the physician should consider a workup for secondary hypertension. (e.g. sleep apnea)

Proper Procedure for Measuring Blood Pressure

Many studies have found that BP is measured incorrectly. The following section describes the proper technique for using digital blood pressure monitors.

Proper patient positioning and cuff placement are critical for any device being used.

Patient Positioning

Measurements should be taken following at least a 5 minute period of rest:

- The patient should be seated with his or her arm resting on a table at heart level, or supported by your hand
- In a quiet, relaxed setting
- Not immediately after caffeine or smoking (record these if so)
- No talking during the measurement by the patient or the person performing the BP
- Legs should be uncrossed and resting flat on the floor
- The patient’s back should be supported against the back of a chair or wall
For all BP devices, it is extremely important that the BP cuff is the proper size. Cuffs that are too small lead to falsely elevated BP readings. If the cuff is not marked with proper sizes, you should measure the patient’s arm.

- Select the proper cuff size.
  ⇒ There are various sizes (pediatric, adult, large, extra large)
  ⇒ Two options:
    - Measure the patient’s arm circumference and match the proper cuff size, or
    - Ensure that the index bar on the cuff is within the cuff reference range when it is secured on the arm

- Place the cuff over bare skin.

- Locate and palpate the **brachial pulse** (usually in the center of the fold of the arm.)

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**Taking a Digital Reading**

- Put the cuff about 1 inch (2.5 cm) above the elbow. Wrap the cuff snugly around the arm. The blood pressure reading may not be correct if the cuff is too loose.
- Turn on the blood pressure monitor and follow the directions that come with the monitor.
- Write down the patient’s BP, the date, the time, and which arm was used to take the BP. Let the air out of the cuff. Turn off the monitor and take off the BP cuff.

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