

ADULT HYPERTENSION CLINICAL PRACTICE GUIDELINES



MANAGING
HIGH BLOOD
PRESSURE

TABLE OF CONTENTS

- i. Introduction
- ii. Ambulatory Clinical Guidelines Committee
- iii. Hypertension Workgroup
 - 1 Blood Pressure Goals
 - 1 Hypertension Management Guidelines
 - 2 Additional Content
 - 3 Selected Hypertension Medicine
 - 4 Epic SmartSet
 - 9 Measuring Blood Pressure the Right Way
 - 10 Provider Resources
 - 12 Patient Resources
 - 13 References



INTRODUCTION

According to the Centers for Disease Control and Prevention, in 2013 more than 360,000 American deaths included high blood pressure as a primary or contributing cause – ALMOST 1000 DEATHS PER DAY. It is estimated 7 out of 10 people experiencing their first heart attack or stroke have high blood pressure. As of 2015 almost 30% of adults in Massachusetts have been diagnosed with hypertension with only 54% having their blood pressure under control despite available treatment options. Nationally for that same year the total costs directly related to hypertension were more than \$110 billion. Nearly all our payer contracts include controlling high blood pressure as a priority quality metric.

The 2017 American College of Cardiology/American Heart Association Hypertension Guidelines categorize blood pressure as either normal, elevated, or one of three escalating stages. Using these definitions, nearly half (46%) of all American adults may be identified as having hypertension and are at risk for major health challenges.

To enhance the quality of care for all patients with hypertension, Lahey Health is taking an important step to standardize hypertension management at our ambulatory practices. Created by an interdisciplinary team, Lahey Health has developed standardized blood pressure treatment and measurement protocols. By standardizing blood pressure treatment and measurement, Lahey will improve individual hypertension disease management, increase rates of population blood pressure control, and decrease morbidity and mortality due to hypertension, across the system.

Blood Pressure Categories			
BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

©American Heart Association heart.org/bplevels

AMBULATORY CLINICAL GUIDELINES COMMITTEE

The Ambulatory Clinical Guideline Committee (ACGC) purpose is to implement standardization across the Lahey Health network to improve performance in a population health environment; ensuring that all patients receive patient-centered, evidenced-based care at the appropriate time and place.

Chair	Leslie J. Sebba, MD President and Chief Medical Officer, Lahey Clinical Performance Network
Secretary	Christine McBrine, Director Quality and Performance Improvement, Lahey Clinical Performance Network
Unit Medical Directors	Joshua Berkowitz, MD, Lahey Accountable Care Unit Louis Dilillo, MD, Northeast PHO Joel Solomon, MD, Winchester PHO
Primary Care Representatives	Joshua Berkowitz, MD Gretchen Dietrich, MD Richard Kalish, MD Hilda Rock, MD Ryan Seibert, MD Joel Solomon, MD
Specialist Representatives Ancillary Services Representative EHR Informatics Representative Pharmacy	Christopher Ying, MD, FACP, FASH, FAHA Timothy Skelton, MD Ryan Seibert, MD Pamela Sherry, PharmD, BCACP, Director Network Pharmacy, Lahey Clinical Performance Network

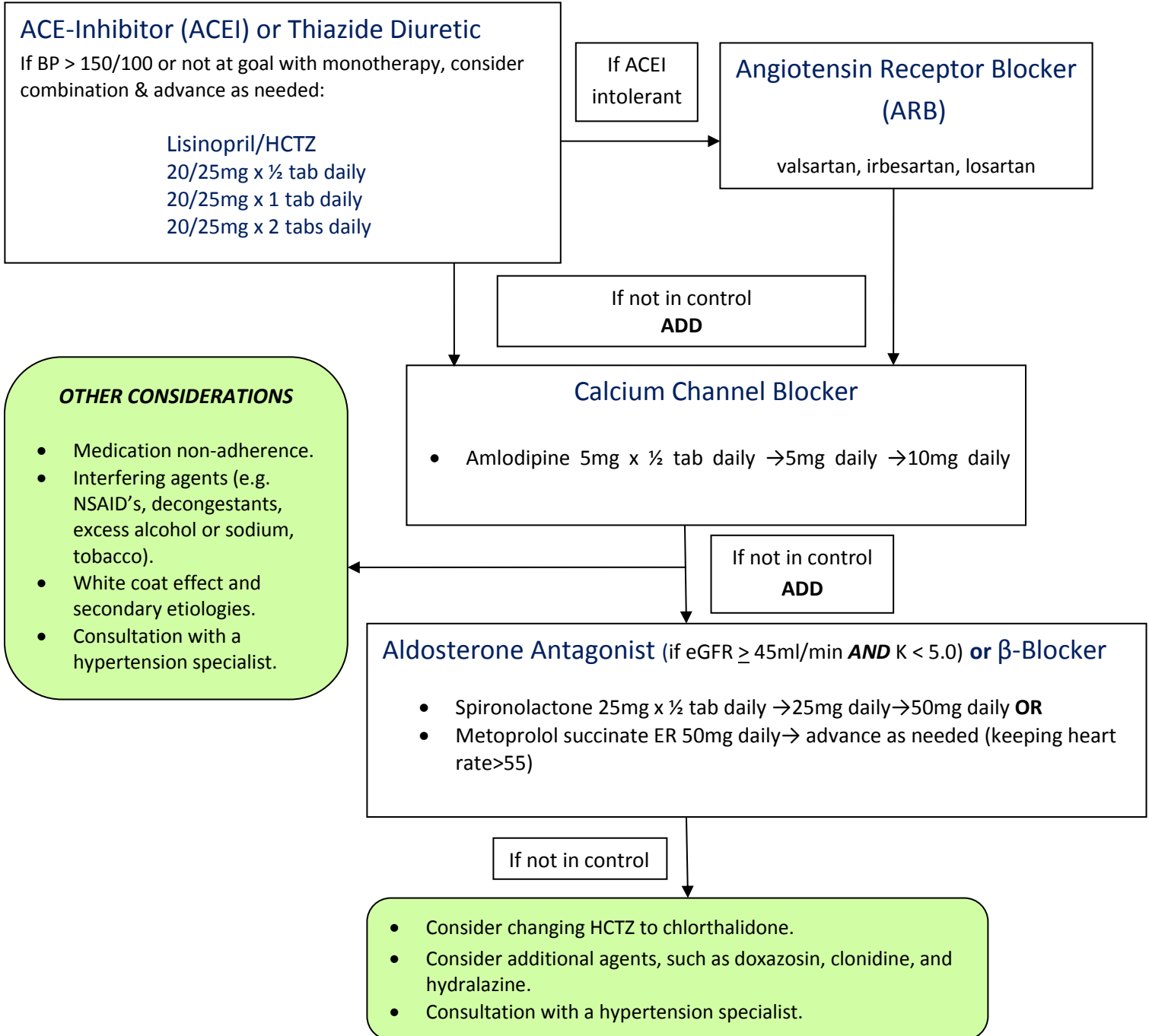
HYPERTENSION MANAGEMENT GROUP

Chair	Christopher Y. Ying, MD, FACP, FASH, FAHA
EHR Informatics Representative	Ryan Seibert, MD
Pharmacy	Pam Sherry, PharmD, BCACP, Director Network Pharmacy LCPN
Leadership Team	David Longworth, MD, CEO Lahey Hospital and Medical Center, Chair Department of Primary Care Andrew Villanueva, MD, CMO, Clinic, Department Pulmonary and Critical Care Medicine Guy Napolitana, MD, Chair Department Internal Medicine, Vice-Chair Department of Primary Care Joshua Berkowitz, MD, Vice-Chair Division of Primary Care Lahey Hospital and Medical Center
Specialist Representation Nephrology	Christopher Ying, MD, Chair Division of Nephrology Peter Soderland, MD Richard Thomas, MD Young-Soo Song, MD Parag Vohra, MD Eric Kerns, MD Adam Segal, MD, Chair Division of Nephrology Kristen Bilodeau, NP
Cardiovascular Medicine	Michael Levy, MD Jana Montgomery, MD Bartholomew Woods, MD
Endocrinology	Gary Cushing, MD, Chair Endocrinology, Diabetes Mellitus, and Metabolism
Anticoagulation Clinic	Cynthia Johnson, RN

Hypertension Management Guideline

BLOOD PRESSURE GOALS:

- < 140/90 for most adults ≥ 18 years old, including those with DM, CVA, or eGFR <20 mL/min
- Systolic BP < 130* for adults with clinical CVD, increased ASCVD risk calculation score** or CKD.
- Treatment decisions should be based on 2 or more readings taken on separate occasions.



*The SPRINT trial¹⁶ targeted Systolic BP < 120 (mean achieved 121.5) utilizing an automated BP device with patient resting alone, averaging 3 readings, corresponding to routine office Systolic BP target < 130.

**AHA ASCVD Risk Calculator²⁴ ≥ 10% or 10 yr Framingham Risk²⁵ ≥ 15%.

Clinicians should continue to tailor therapy based on individual patient needs and clinical circumstances.

ADDITIONAL CONSIDERATIONS

- **Lifestyle changes are recommended for all patients with hypertension**
 - DASH diet (low in fat, high in fruit, vegetables, and low-fat dairy products).
 - Sodium restriction (1500-2000 mg sodium daily).
 - Weight reduction if BMI \geq 25 kg/m².
 - Exercise (at least 30 min \geq 4 times per week).
 - Limit daily alcohol to no more than 1 drink (women) or 2 drinks (men).
 - Smoking cessation.
- **Office BP's are often higher than ambulatory or home BP's, so patients should be encouraged to monitor their own BP with a validated instrument.**
- **Prior to the start of medication(s), a baseline metabolic profile should be obtained.**
- **Medication up-titrations are recommended at 2 – 4 week intervals until control is achieved.**
- **Follow up labs (sodium, potassium, creatinine) within 2-3 weeks when starting or up-titrating ACEI, ARB, HCTZ, chlorthalidone, spironolactone, or eplerenone.**
- **ACEI or ARB should be considered as initial therapy for patients with CKD (GFR < 60ml/min/1.73m² or proteinuria including albuminuria > 30mg/g creatinine).**
- **ACEI/thiazide, thiazide or CCB should be considered as initial therapy in black patients. ACEI monotherapy may be less effective.**
- **ACEI or ARB indicated in patients with diabetes or congestive heart failure.**
- **ACEI and ARB should not be used together.**
- **Beta-blockers indicated in patients with congestive heart failure, s/p MI, and tachyarrhythmia.**
- **Verapamil or diltiazem rather than amlodipine should be considered for rate control or for patients with proteinuria.**
- **Caution using clonidine, verapamil, or diltiazem together with a beta blocker. These heart-rate slowing drug combinations may cause symptomatic bradycardia over time.**
- **Hypotension, syncope, AKI, and electrolyte disorders occurred more frequently in the intensive therapy group in the SPRINT trial. Lower blood pressure target, particularly in the elderly, should prompt careful monitoring for these side effects.**
- **If pregnant, discontinue ACEIs, ARBs, and spironolactone immediately. Refer to OB/GYN.**

SELECTED ANTIHYPERTENSIVE MEDICATION *

Drug Class	Examples	Usual Total Daily Dosage Range (Taken as a single daily dose, unless otherwise stated)
Thiazide-type Diuretics	Chlorthalidone (Hygroton) Hydrochlorothiazide (HCTZ, Esidrix)	12.5 – 25 mg 12.5 – 50 mg
Thiazide Combinations	Triamterene/HCTZ (Dyazide, Maxzide) Spironolactone/HCTZ (Aldactazide)	37.5/25, 50/25, 75/50 mg 25/25 mg
ACEI/Thiazide	Lisinopril/HCTZ (Prinzide)	10/12.5, 20/12.5, 20/25 mg
ARB/Thiazide	Irbesartan/HCTZ (Avalide)	150/12.5, 300/12.5, 300/25 mg
ACE Inhibitors (ACEI)	Lisinopril (Zestril, Prinivil) Benazapril (Lotensin) Enalapril (Vasotec)	2.5 – 40 mg 10-40 mg 5-40 mg
Angiotensin II Receptor Blockers (ARB)	Valsartan (Diovan) Losartan (Cozaar) Irbesartan (Avapro)	80-320 mg 25 – 100 mg 75-300 mg
Long-Acting Dihydropyridine Calcium Channel Blockers (CCB)	Amlodopine (Norvasc) Felodipine ER (Plendil) Nifedipine ER (Nifedipine XL)	2.5 – 10 mg 2.5 – 20 mg 30 – 90 mg
Long-Acting Non-Dihydropyridine Calcium Channel Blockers (CCB)	Verapamil SR (Calan SR, Verelan) Diltiazem LA (Cardizem CD, Cartia XT, Dilacor XR, Tiazac)	120-360mg 120-480mg
Aldosterone Antagonists	Spironolactone (Aldactone) Eplerenone (Inspra) <i>{consider if patient has gynecomastia on spironolactone}</i>	12.5 – 50 mg 25-100 mg
Beta-Blockers (BB)	Metoprolol succinate ER (Toprol XL) Atenolol (Tenormin) Carvedilol (Coreg) Metoprolol tartrate (Lopressor) Labetalol (Trandate)	25 – 200 mg 25 – 100 mg (taken qday or bid) 3.125 – 25 mg BID 25 – 100 mg BID 100-400mg BID
Alpha Blockers	Doxazosin (Cardura) Terazosin (Hytrin)	1 – 16 mg 1 – 20 mg
Alpha-2 Agonist	Clonidine (Catapres, Catapres-TTS)	0.1 mg – 0.3 mg BID or 0.1mg-0.6mg transdermal patch once weekly
Direct Vasodilators	Hydralazine (Apresoline) Minoxidil (Loniten)	25 – 100 mg BID 2.5 mg daily – 20 mg BID

*Please refer to Lexicomp for specific dosing adjustments in renal and hepatic impairment, adverse effects, contraindications, drug interactions, and monitoring parameters. If any of the above medications are not on Lahey Hospital & Medical Center Formulary, then patients, who are admitted to the hospital, will be converted to a Hospital Formulary agent.

Approved by:

LH P&T Committee 2/8/2017, 4/11/2018

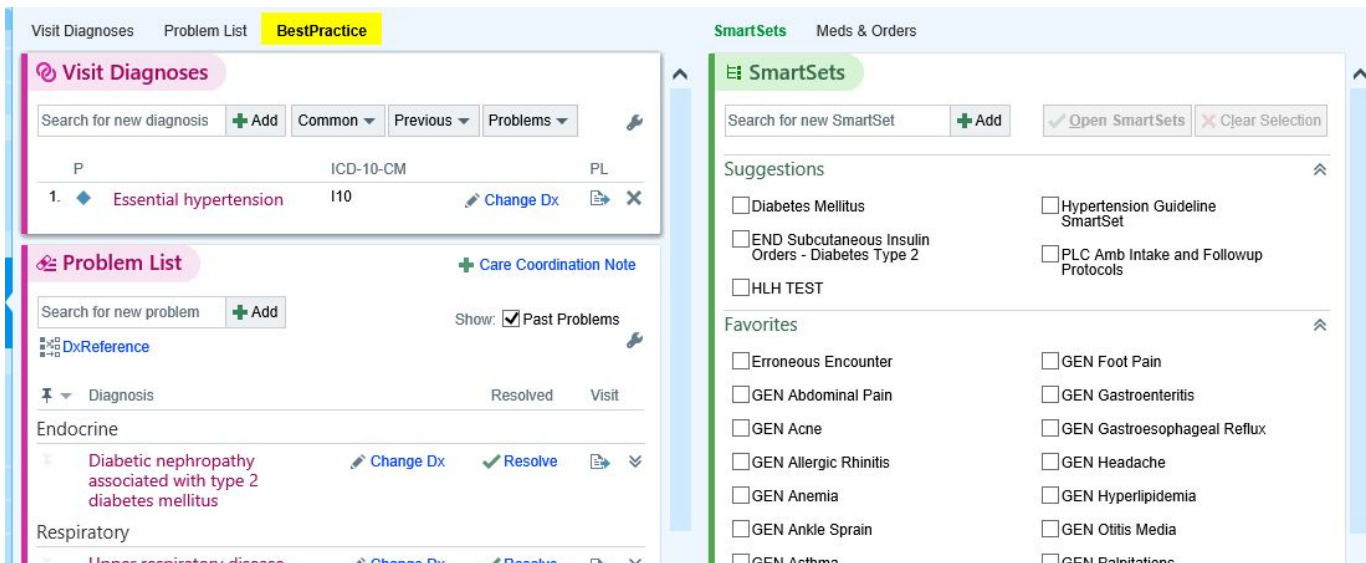
Clinical Content Committee 5/23/2017

Hypertension Guideline SmartSet

The Hypertension Guideline SmartSet was developed to facilitate use of the evidence-based Lahey Hypertension Guideline, updated in 2018. It is designed for use during the initial diagnosis of hypertension as well as chronic hypertension management at subsequent visits. Stepwise medication adjustments, lab ordering, and referrals to hypertension specialists are included. The SmartSet is currently available to providers in primary care, endocrinology, cardiology, and nephrology.

Try It Out

1. The SmartSet will be suggested in the following situations:
 - a. Hypertension = reason for visit
 - b. Hypertension = encounter diagnosis
 - c. Hypertension = active problem list
 - d. Systolic blood pressure ≥ 140 OR diastolic blood pressure ≥ 90 (for the current encounter)
 - i. Please note: Due to current limitations in Epic, additional rooming tab information (e.g. PHQ-9, Safe at Home, etc.) must be entered *after* entering the vitals to trigger the SmartSet based on blood pressure criteria.
2. Find the Hypertension Guideline SmartSet in the “Suggestions” section or use the SmartSet search bar to find it manually (right click to add to Favorites).



The screenshot displays the Epic EMR interface with two main panels. The left panel shows the 'Visit Diagnoses' and 'Problem List' sections. The 'Visit Diagnoses' section has a search bar and a list with one entry: 'Essential hypertension' (ICD-10-CM I10). The 'Problem List' section has a search bar and a list with one entry: 'Diabetic nephropathy associated with type 2 diabetes mellitus'. The right panel shows the 'SmartSets' section with a search bar and two sub-sections: 'Suggestions' and 'Favorites'. The 'Suggestions' section lists several SmartSets, including 'Hypertension Guideline SmartSet'. The 'Favorites' section lists several other SmartSets, including 'GEN Foot Pain', 'GEN Gastroenteritis', 'GEN Gastroesophageal Reflux', 'GEN Headache', 'GEN Hyperlipidemia', 'GEN Otitis Media', and 'GEN Pain/Itching'.

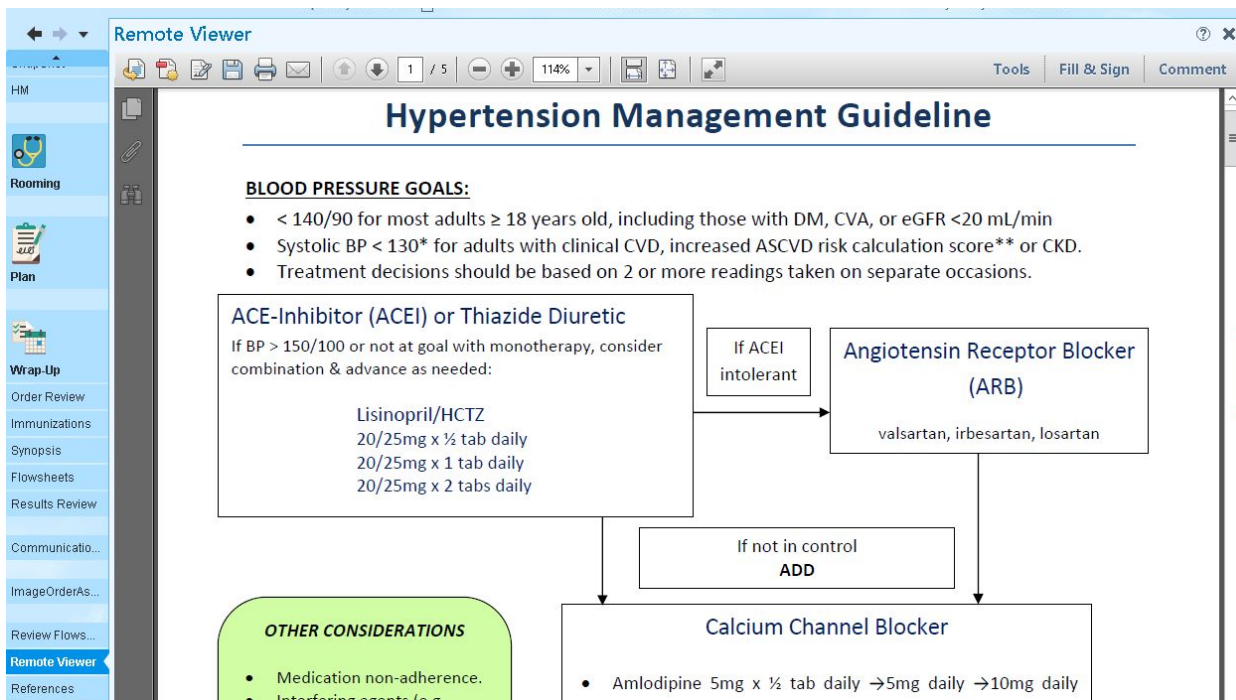
- Upon opening the SmartSet, hypertension diagnostic criteria and links to both the Lahey Hypertension Guideline document and an integrated AHA/ACC risk calculator are available.
- Stepwise medication options are recommended with the ACE inhibitor and thiazide diuretic sections automatically expanded to promote use of these first-line therapies.

The screenshot displays an EHR interface with three main panels:

- Visit Diagnoses:** Shows a search for new diagnosis and a list of current diagnoses. The first diagnosis is "Essential hypertension" (ICD-10-CM I10).
- Problem List:** Lists various medical conditions such as "Diabetic nephropathy associated with type 2 diabetes mellitus", "Upper respiratory disease", "Respiratory infection", and "Endometrial cancer".
- SmartSets:** A "Hypertension Guideline SmartSet" is active, providing diagnostic criteria and stepwise medication recommendations.
 - Diagnoses:** HTN diagnosis based on ≥ 2 readings on ≥ 2 visits. Goal <140/90 adults ≥ 18 y/o including: DM, CVA, eGFR <20 mL/min. Goal SBP <130 with clinical CVD, CKD, AHA ASCVD risk score $\geq 10\%$.
 - Step 1 (ACE Inhibitor AND/OR Thiazide):**
 - If BP >150/100 or not at target with monotherapy, consider combination ACEI/thiazide and advance as needed. For CKD, DM, CHF - ACEI or ARB preferred. For African-Americans - Avoid monotherapy with ACEI (consider thiazide or combination).
 - ACE Inhibitor (AVOID if pregnant or may become pregnant):**
 - Lisinopril 5 MG tablet - 1 tablet (5 mg) daily
 - Lisinopril 10 MG tablet - 1 tablet (10 mg) daily
 - Lisinopril 20 MG tablet - 1 tablet (20 mg) daily
 - Lisinopril 30 MG tablet - 1 tablet (30 mg) daily
 - Lisinopril 40 MG tablet - 1 tablet (40 mg) daily
 - Thiazide Diuretic:**
 - Hydrochlorothiazide 12.5 MG tablet - 1 tablet (12.5 mg) daily

The screenshot shows the "ASCVD Risk Estimator Plus" web application. The interface includes:

- Navigation:** "Estimate Risk", "Therapy Impact", and "Advice" tabs.
- Unit of Measure:** "US" and "SI" options.
- Disclaimer:** "App is intended for primary prevention patients (without ASCVD)."
- Input Fields:**
 - Current Age:** Input field with a note "Age must be between 20-79".
 - Sex:** Radio buttons for "Male" and "Female".
 - Race:** Radio buttons for "White", "African American", and "Other".
 - Systolic Blood Pressure (mm Hg):** Input field with a note "Value must be between 90-200".
 - Diastolic Blood Pressure (mm Hg):** Input field with a note "Value must be between 60-130".
 - Total Cholesterol (mg/dL):** Input field with a note "Value must be between 130 - 370".
 - HDL Cholesterol (mg/dL):** Input field with a note "Value must be between 20 - 100".
 - LDL Cholesterol (mg/dL):** Input field with a note "Value must be between 30-300".



- For escalating therapy, follow the “Steps” for evidence-based medication adjustments.
- Links to 24-hour ambulatory blood pressure monitoring and referrals to hypertension specialists are available starting in Step 3 and are also in the “Referrals/Procedures” section.
- Additional text is included under the section headers to provide further guidance and considerations..

SmartSets Meds & Orders

▶ **Step 1 (ACE Inhibitor AND/OR Thiazide)**

▼ **Step 2 (Add Calcium Channel Blocker)**

▼ **Calcium Channel Blockers**

- Amlodipine 2.5 MG tablet - 1 tablet (2.5 mg) daily
Disp-30 tablet, R-2, Normal
- Amlodipine 5 MG tablet - 1 tablet (5 mg) daily
Disp-30 tablet, R-2, Normal
- Amlodipine 10 MG tablet - 1 tablet (10 mg) daily
Disp-30 tablet, R-2, Normal

▼ **Step 3 (Add Aldosterone Antagonist OR Beta Blocker)**

*Assess: Non-adherence, NSAID use, tobacco/alcohol use, sodium intake, decongestants
 Consider secondary etiologies and White Coat Hypertension
 Consider consultation with hypertension specialist*

- ▶ Aldosterone Antagonist (AVOID if pregnant or may become pregnant) [Click for more](#)
- ▶ Beta Blocker [Click for more](#)
- ▶ 24-hour Ambulatory BP Monitoring [Click for more](#)
- ▶ HTN Consultation [Click for more](#)

▼ **Step 4 (Add-on Therapy)**

*Consider changing HCTZ to chlorthalidone
 Consider additional agents: doxazosin, clonidine, hydralazine
 Consider consultation with hypertension specialist*

- ▶ Chlorthalidone (REPLACES HCTZ) [Click for more](#)
- ▶ Doxazosin [Click for more](#)
- ▶ Clonidine [Click for more](#)
- ▶ Hydralazine [Click for more](#)
- ▶ 24-hour Ambulatory BP Monitoring [Click for more](#)
- ▶ HTN Consultation [Click for more](#)

8. Recommended baseline labs and testing are included for the initial diagnosis of hypertension as well as a 2-week metabolic panel when initiating/adjusting medication.

SmartSets Meds & Orders

▼ Labs / Imaging

*Obtain baseline metabolic panel before initiating therapy
Repeat labs 2-3 weeks after starting/titrating ACEI, ARB, thiazide, spironolactone, eplerenone*

▼ Baseline Labs/Testing - Today

Perform all baseline labs/ECG at initial diagnosis of HTN

- Basic Metabolic Panel - Today ■
Routine, Expected: Today, Expires: 18 Months, Lab Collect
- CBC - Today ■
Routine, Expected: Today, Expires: 18 Months, Lab Collect
- Lipid Panel with Apo-B - Today ■
Routine, Expected: Today, Expires: 18 Months, Lab Collect
- Thyroid Profile (TSH) - Today ■
Routine, Expected: Today, Expires: 18 Months, Lab Collect
- Urinalysis with Sediment - Today ■
Routine, Expected: Today, Expires: 18 Months, Lab Collect
- ECG 12 lead - Today ■
Routine, Expected: Today, Expires: 18 Months
- ECG 12 lead (Community Group Practice only) - Today ■
Routine, Expected: Today, Expires: 18 Months

▼ Future Labs - 2 weeks

- Basic Metabolic Panel - 2 weeks ■
Routine, Expected: 2 Weeks, Expires: 18 Months, Lab Collect

▶ Additional Testing Click for more

▼ Referrals / Procedures

- ▶ 24-hour Ambulatory BP Monitoring Click for more
- ▶ HTN Consultation Click for more

9. Hypertension-related patient information sheets will automatically be added to the After Visit Summary upon signing the SmartSet. Spanish versions are available by expanding this section.
10. Complete the visit by entering the Follow-Up interval and Level of Service from within the SmartSet.

Meds & Orders SmartSets

▼ Referrals / Procedures

- ▶ 24-hour Ambulatory BP Monitoring Click for more
- ▶ HTN Consultation Click for more

▼ Patient Information / Instructions

Lifestyle recommendations: DASH diet, sodium restriction (1.5-2 gm/day), weight loss, exercise, limit daily alcohol intake (≤2 drinks for men; ≤1 drink for women), smoking cessation

- ▶ HTN Patient Handouts (AVS) Click for more
- High Blood Pressure, What is it? (ENGLISH)
- DASH Diet (ENGLISH)
- Taking your Blood Pressure (ENGLISH)

▼ Follow-Up

Consider 2-4 week follow-up visit if starting/titrating meds until controlled

▼ Follow-Up (Wrap Up)

- 2 Weeks
- 4 Weeks
- 3 Months
- 6 Months
- 1 Year
- Other Time Frame
- PRN

▶ Follow-Up (Orders) Click for more

▼ Level of Service

- ▶ Preventive Service - New Patient Click for more
- ▶ Preventive Service - Established Patient Click for more
- ▶ Office Visit - New Patient Click for more
- ▶ Office Visit - Established Patient Click for more

▼ Additional SmartSet Orders

Wrap-Up | References | Preview A/S | Print A/S


Patient Instructions | Charge Capture | Communications | LOS | Follow-up

Patient Instructions (F3 to enlarge) | Go to Clinical References

Tag

Insert SmartText

Eating Heart-Healthy Food: Using the DASH Plan



Charge Capture

Service Date: 9/11/2018 | Department: BSB GEN INT MED | Place of Service: LAHEY SOUTH BEDF

Service Provider: Ryan Seibert, MD | Billing Provider: Ryan Seibert, MD | Referring Provider: Robert H Brew, MD
 Bill Area: Lahey Clinic Burlington | Diagnoses: Hypertension, unspecified type [I10 (ICD-10-CM)]

Search for new charge + Add

My Favorites

- Depression screen [G0444]
- PR DESTRUCTION OF BENIGN LESION OR PRE MALIGNANT LESION (17000- 17400) [17000]
- PR TOBACCO USE CESSATION INTERMEDIATE 3-10 MINUTES [99406 (CPT®)]
- PR CA SCREEN:PELVIC/BREAST EXAM [G0101]
- PR TOBACCO USE CESSATION INTENSIVE >10 MINUTES [99407 (CPT®)]
- PR DRAIN SKIN ABSCESS COMPLIC [10061 (CPT®)]
- PR ELECTROCARDIOGRAM, COMPLETE [93000 (CPT®)]
- PR DEBRIDEMENT OF NAILS, 6 OR MORE [11721 (CPT®)]

Communications | + New Communication | Send All

Level of Service

EST1	EST2	EST3	EST4	EST5
NEW2	NEW3	NEW4	NEW5	NPRES-11
NPRES12-17	NPRES18-39	NPRES40-64	NPRES65+	EPRES-11
EPRES12-17	EPRES18-39	EPRES40-64	EPRES65+	NC ADMIT
NC TRAN...	NC RESD...	TCM-14DAY	TCM-7DAY	

LOS: PR PREVENTIVE VISIT,EST,18-39 [99395]

Modifiers: GC GE 25 +

Billing area: Lahey Clinic Burlington

Follow-up

Return in: (from 9/11/2018) | 4 Weeks | 3 Months | 6 Months | 1 Year

4 | Days | Weeks | Months | Years

Return on: 10/9/2018 | Approximately

PRN:

For: Recheck Annual physical Next scheduled follow up

HTN

Collapse

Check-out note: | Insert SmartText

Measuring Blood Pressure

The Right Way

There are numerous activities that can affect a blood pressure reading. Did you know that not having the patient rest for 5 minutes before taking a BP can raise a blood pressure reading 10 to 20 mmHg or that not having the patient's back and feet supported can raise a blood pressure reading 5-15 mmHg? Using a cuff that is too small or applying a cuff over clothing can affect a BP by up to 40 mmHg!¹

Essentials for Accurate BP Measuring

1. Let patient rest 5 minutes before taking a BP (last in rooming sequence)
2. Use the correct size cuff on a bare arm
3. Place arm at heart level with palm of arm upright
4. Have patient's back supported with feet uncrossed and flat on the floor
5. Avoid having the patient talk while taking the BP
6. Record EXACT NUMBERS



STOP! Are you using the correct cuff size? Double check here

CUFF SIZES		
INDICATIONS	ARM CIRCUMFERENCE (INCHES)	ARM CIRCUMFERENCE (CM)
Small Adult	9-10	22-26
Standard Adult	11-13	27-34
Large Adult	14-17	35-44
Adult Thigh	18-21	45-52

Adapted from: HHC, New York Health and Hospitals Corporation

Patient Reminders:

- ⇒ No vigorous physical activity 30 minutes before visit
- ⇒ No caffeine, alcohol, or smoking 30 minutes before visit
- ⇒ Empty bladder

1. Centers for Disease Control and Prevention. *Hypertension Control Change Package for Clinicians*. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2015. Sharp Rees-Stealy Medical Group. Checking Blood Pressures Nursing Competency: <http://bit.ly/1ty6uaN>

Improving Medication Adherence Among Patients with Hypertension

A Tip Sheet for Health Care Professionals



Medication adherence is critical to successful hypertension control for many patients. However, only 51% of Americans treated for hypertension follow their health care professional's advice when it comes to their long-term medication therapy.¹

Adherence matters. High adherence to antihypertensive medication is associated with higher odds of blood pressure control, but non-adherence to cardioprotective medications increases a patient's risk of death from 50% to 80%.¹

As a health care professional, you can empower patients to take their medications as prescribed. Effective two-way communication is critical; in fact, it doubles the odds of your patients taking their medications properly. Try to understand your patients' barriers and address them honestly to build trust.

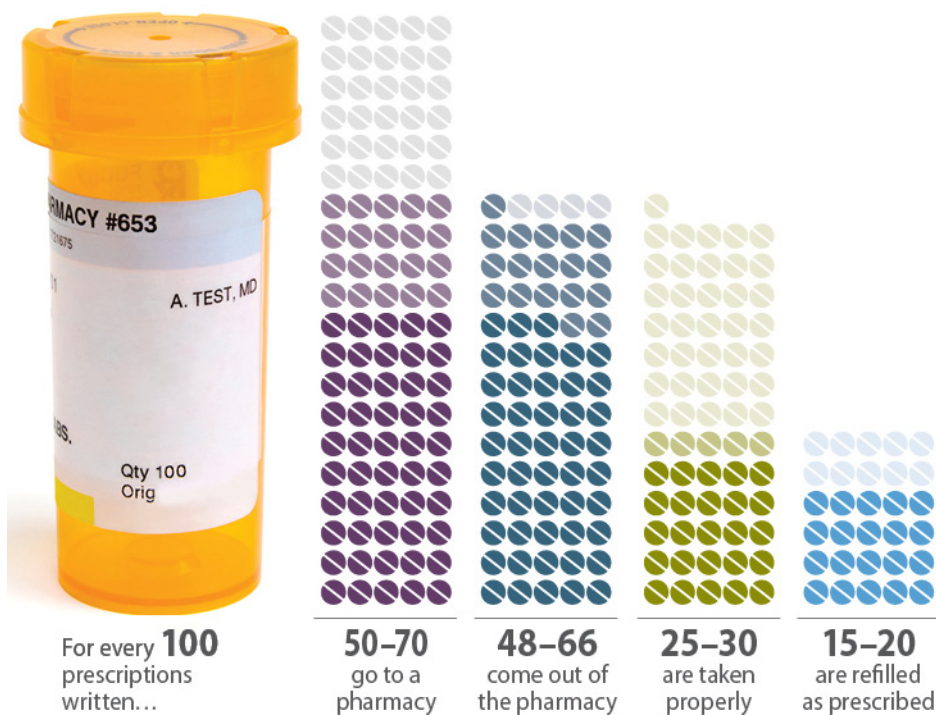
Predictors of Non-Adherence

When discussing medications, be aware if your patient:

- ▶ Demonstrates limited English language proficiency or low literacy.
- ▶ Has a history of mental health issues like depression, anxiety, or addiction.
- ▶ Doesn't believe in the benefits of treatment.
- ▶ Believes medications are unnecessary or harmful.
- ▶ Has a concern about medication side effects.
- ▶ Expresses concern over the cost of medications.
- ▶ Says he or she is tired of taking medications.

These can all be predictors of a patient who may struggle with adherence to medication.

Medication Adherence by the Numbers*



*This data applies to all medication types, not only hypertension medication.

¹Ho PM, Bryson CL, Rumsfeld JS. Medication adherence: its importance in cardiovascular outcomes. *Circulation*. 2009;119:3028-3035.



As a health care professional, you can empower patients to take their medications as prescribed. Effective two-way communication is critical; in fact, it doubles the odds of your patients taking their medications properly.

Use the SIMPLE method to help improve medication adherence among your patients

Simplify the regimen

- ▶ Encourage patients to use adherence tools, like day-of-the-week pill boxes or mobile apps.
- ▶ Work to match the action of taking medication with a patient's daily routine (e.g., meal time or bed time, with other medications they already take properly).

Impart knowledge

- ▶ Write down prescription instructions clearly, and reinforce them verbally.
- ▶ Provide websites for additional reading and information—find suggestions at the [Million Hearts®](#) website.

Modify patients' beliefs and behavior

- ▶ Provide positive reinforcement when patients take their medication successfully, and offer incentives if possible.
- ▶ Talk to patients to understand and address their concerns or fears.

Provide communication and trust

- ▶ Allow patients to speak freely. Time is of the essence, but research shows that most patients will talk no longer than 2 minutes when given the opportunity.
- ▶ Use plain language when speaking with patients. Say, "Did you take all of your pills?" instead of using the word "adherence."
- ▶ Ask for patients' input when discussing recommendations and making decisions.
- ▶ Remind patients to contact your office with any questions.

Leave the bias

- ▶ Understand the predictors of non-adherence and address them as needed with patients.
- ▶ Ask patients specific questions about attitudes, beliefs, and cultural norms related to taking medications.

Evaluate adherence

- ▶ Ask patients simply and directly whether they are sticking to their drug regimen.
- ▶ Use a medication adherence scale—most are available online:
 - ▷ Morisky-8 (MMAS-8)
 - ▷ Morisky-4 (MMAS-4 or Medication Adherence Questionnaire)
 - ▷ Medication Possession Ratio (MPR)
 - ▷ Proportion of Days Covered (PDC)

Source: <http://www.acpm.org/?MedAdhereTTProviders>

Find and download additional materials to help your patients control hypertension at the [Million Hearts®](#) website.

Patient Resources

Million Hearts

<https://millionhearts.hhs.gov/>

American Heart Association

<https://www.heart.org/>

Family Doctor

<https://familydoctor.org/>

Health Finder

<https://healthfinder.gov/>



References

1. Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial Collaborative Research Group. Diuretic versus alpha-blocker as first-step antihypertensive therapy: final results from the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (**ALLHAT**). *Hypertension*. 2003;42(3):239-246.
2. Beckett NS, Peters R, Fletcher AE, et al. **HYVET** Study Group. Treatment of hypertension in patients 80 years of age or older. *N Engl J Med* 2008;358:1887-98.
3. Brenner BM, Cooper ME, de Zeeuw D, et al; **RENAAL** Study Investigators. Effects of losartan on renal and cardiovascular outcomes in patients with type 2 diabetes and nephropathy. *N Engl J Med*. 2001;345(12):861-869.
4. Chapman N, Dobson J, Wilson S, et al. Effect of spironolactone on blood pressure in subjects with resistant hypertension. *Hypertension* 2007; 49(4):839-845.
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