The M.A.P. Framework and Hypertension Control

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AMA AMERICAN MEDICAL ASSOCIATION

Objectives

- Understand the M.A.P. Framework
- Learn the importance of accurate blood pressure measurement
- Understand how to partner with patients and engage them in blood pressure self-measurement

The M.A.P. framework

Measure blood pressure accurately

Act rapidly to manage uncontrolled hypertension

Partner with patients, families and communities to promote self-management

Actionable data | Evidence-based tools | Adaptive change

Prototyping tools and resources

Partner: Johns Hopkins Medicine
- Armstrong Institute for Patient Safety and Quality (Dr. Peter Pronovost)
- Center to Eliminate Cardiovascular Health Disparities (Dr. Lisa Cooper)

Advisory group of national experts in HTN care

Patient and family advisory group

10 Diverse Practice Sites
- From solo practitioner to multispecialty practice with 14 physicians
- Diverse patient panels ranging from 95% African-American to 87% Latino, 60% Medicaid to 55% Medicare

Feedback on a framework, tools and resources and curriculum

Hypertension statistics

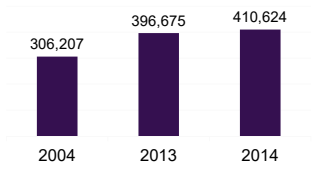
70 Million American Adults

1 in 3

46% uncontrolled
54% uncontrolled in Wisconsin*

2015 – Prevalence rate 33%
2030 – Prevalence rate 41% (projected)

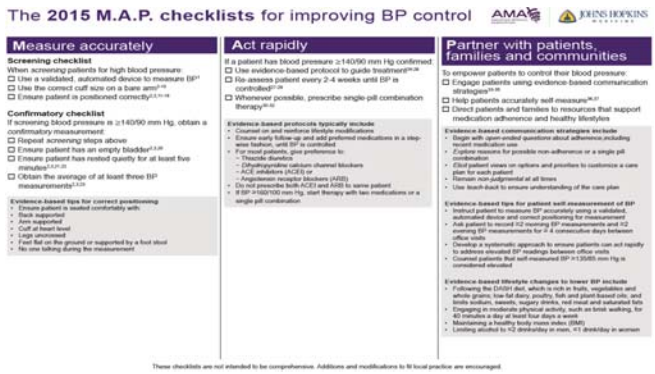
Annual deaths related to HTN



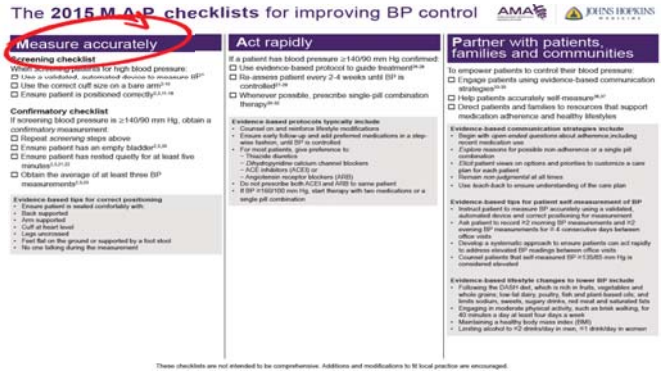
http://www.cdc.gov/bloodpressure/facts.htm
*MMWR, 09/07/2012; 81(35):703-709. Based on the National Health and National Evaluation Survey (NHANES)

Barriers to success

- Patient factors
  - Non-adherence
  - Financial
  - Literacy
- Physician factors
  - Time
  - Financial
  - Knowledge of evidence
- System factors
  - Quality reporting
  - Work flow
  - Management (buy-in)



SEE PAGES 9-10 OF HANDOUT



Why measuring blood pressure accurately is important

- Uncertainty of patients' true blood pressure is the leading cause for failure of a clinician to act on a high blood pressure in the office
- Significant BP variability exists in all patients
- Poor measurement technique decreases reliability of a patient's BP, which can lead to poor clinical decisions, adversely affecting the health of a patient

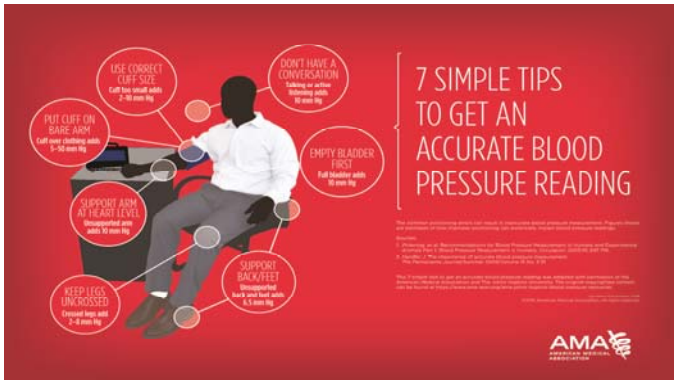
How does this impact clinicians in practice?

Kerr E et al. The Role of Clinical Uncertainty in the Treatment Decisions for Diabetic Patients with Uncontrolled Blood Pressure. *Annals of Internal Medicine* (148) Number 10 717-727

Why measuring blood pressure accurately is important

It's estimated that a 1 mm Hg rise in blood pressure above normal on average reduces life expectancy by one year

Summary report: National High Blood Pressure Education Program (NHBPEP)/NHLBI and AHA working meeting on blood pressure measurement. Bethesda: National Institutes of Health; 2002. Available at: http://www.nhlbi.nih.gov/health/prof/heart/hbp/bpmeasu.pdf



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Accurate methods of BP measurement for diagnosing HTN

24-Hour Ambulatory Blood Pressure Monitoring (ABPM)

Pros

- Most evidence for accurate diagnosis of HTN
- Best predictor of future events
- Rule-out white coat HTN
- Identifies patients with masked HTN
- Gives BP information during sleep

Cons

- Expensive
- Inconvenient for patients
- Hard to get one scheduled

Accurate methods of BP measurement for diagnosing HTN

Self-Measured Blood Pressure (SMBP) or Home Blood Pressure Monitoring

Pros
- Compares well to 24-hour ABPM for accuracy (not equal)
- Better predictor of future events than routine office BP
- Rule-out white coat HTN
- Identifies patients with masked HTN
- Inexpensive
- Convenient

Cons
- Requires the patient have a home monitor
- Requires clinical support for maximum benefit

Office blood pressure measurement

Pros
- Convenient
- Predicts future events, if done correctly
- Inexpensive

Cons
- Impacted by observer (person taking the BP), patient and environmental factors
- Many offices not set up for proper positioning
- Requires time (>5 minutes) to be done effectively–but can be accomplished
- Terminal digit preference
- Cannot rule-out white coat HTN
- Cannot identify patients with masked HTN
- Rarely performed correctly

Why use office BP measurement?

- Opportunity to obtain BPs
- Technology has improved measurement reliability (validated, automated machines → less human error)
- Protocols improve reliability, reduce variability and errors and can improve workflow efficiency
- Obtaining confirmatory measurements increases diagnostic accuracy and reduces misclassification of hypertension
- By reducing errors and increasing reliability of BP measurement, clinicians are less likely to hesitate when initiating or escalating treatment (clinical inertia)

Cuff size and cuff placement

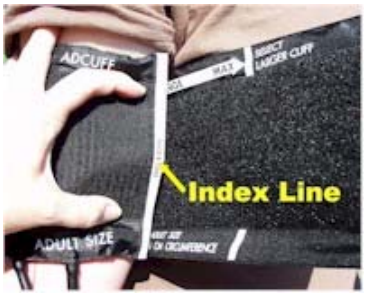
- Using the wrong size cuff is the most common error in BP measurement
- Wrist and finger cuffs are not recommended – use upper arm cuff
- Mid-arm, center the cuff bladder over brachial artery, at heart level

Adult Arm Circumference	Recommended cuff size - width x length
22 to 26 cm	12 × 22 cm
27 to 34 cm	16 × 30 cm (adult)
35 to 44 cm	16-17 × 36 cm (large adult)
45 to 52 cm	19-20 × 42 cm (adult thigh)

A properly-fitted cuff should have a bladder length that is at least 80-100 % of the circumference of the arm and a width that is at least 40% of the circumference of the arm, creating a length-to-width ratio of roughly 2:1.

Cuff size and cuff placement

The best way to know you have the correct cuff size is to use the guide markings on the cuff. The edge of the cuff when wrapped around the arm should fall between the lines for the "range".



Manual BP measurement technique tips

- Inflate cuff until you cannot feel radial pulse, then 10 mm Hg higher
- Deflate at 2 mm Hg / second. Record BP. Repeat.
- Repeat inflating 30 mm Hg higher than palpated pressure. If change between the first two pressures is > 5 mm Hg, take a 3rd BP
- Training required every six months to maintain skill

Terminal Digit Preference

- Rounding to 0 or 5 is extremely common (80-85% in some studies)
- Eliminated with automated devices

Rest and environment

- Rest for five minutes (if you cannot, take as last vital)
- No talking
- No listening (to music, no one talking to you, etc.)
- No texting, reading, writing
- BP device not mounted over exam table

Physiologic factors and stimulants

- Empty bladder
- No meal within at least 30 minutes
- No exercise within at least 30 minutes
- No smoking within at least 15 minutes
- No stimulants (caffeine, decongestants, etc.) within at least 2-3 hours
- Pain and anxiety are a factor

Validation, calibration and biomed stickers

Use a validated, automated machine (AAMI, BHS, ESH)

- www.dableducational.org
- Aneroid sphygmomanometer and automated clinic devices cannot be calibrated
- Aneroid devices, if out of alignment, need to be serviced by the manufacturer
- Automated devices, if tested and is not accurate, need to serviced by the manufacturer

Most biomed inspectors look for cracks in tubing and holes in bladders

- Most do not check for accuracy

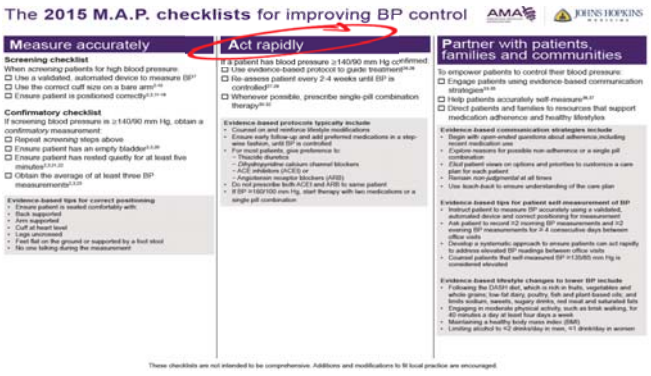
Automated Office Blood Pressure (AOBP)

- Validated, automated BP monitors with multiple cuff sizes
- Monitors can take 3-6 measurements with no clinical staff in the room
- Intervals can be set at 1-5 minutes between measurements
- The machines averages the BPs

How many errors in BP measurement do you see?

How many errors in BP measurement do you see?

1. Back is not supported
2. Arm is not supported near heart level
3. Cuff is over sweatshirt
4. Legs are crossed
5. Legs are not both flat on the stool
6. She is talking
7. She is listening



Most common factors contributing to uncontrolled hypertension

1. Clinicians miss opportunities to treat a patient with a BP ≥ 140/90
   - Fail to initiate or escalate therapy during an office visit
   - Fail to stress frequent follow up until BP is controlled

CLINICAL INERTIA

2. Patient non-adherence to treatment plan
   - Usually due to not taking medications as instructed

Factors leading to clinical inertia

CLINICIAN

- **Failure to initiate treatment**
- **Failure to titrate to goal**
- **Failure to recommend follow-up**
- Failure to set clear goals
- Underestimating patient needs
- Failure to identify and manage comorbid conditions
- Not enough time
- Insufficient focus or emphasis on goal attainment
- Reactive rather than proactive

Adapted from Milani RC et al *J Am Coll Cardiol. 2013; 62: 2185-2187*

Factors leading to clinical inertia

PATIENT

- **Medication side effects**
- **Failure to take meds**
- **Too many medications**
- **Cost of medications**
- Denial of disease
- Forgetfulness
- Perception of low susceptibility
- Absence of symptoms
- Poor communication
- Mistrust of clinician
- Mental illness
- Low health literacy

Adapted from Milani RC et al *J Am Coll Cardiol. 2013; 62: 2185-2187*

Factors leading to clinical inertia

HEALTH SYSTEM

- Lack of clinical guideline
- **Lack of care coordination**
- No visit planning
- Lack of decision support
- **Poor communication between office staff**
- No disease registry
- No active outreach

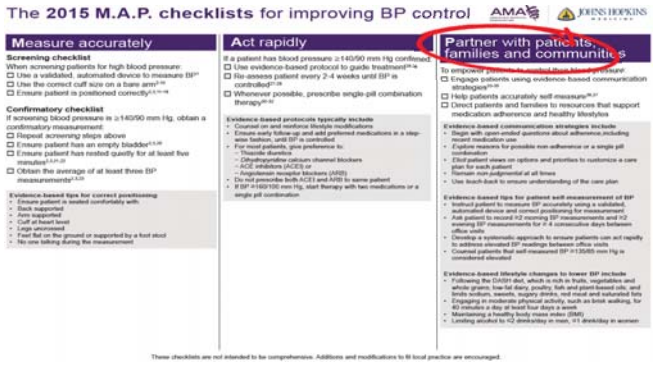
Adapted from Milani RC et al *J Am Coll Cardiol. 2013; 62: 2185-2187*

Why standardized treatment protocols are important

In patients with HTN with systolic BPs >150 mm Hg, increased risk of acute cardiovascular events or death can occur with

- Delays in medication intensification >6 weeks
- Delays in follow-up appointments >10 weeks after medication intensification

Xu et al. BMJ 2015;350:h158 doi: 10.1136/bmj.h158



Use evidence-based communication strategies

- Patient engagement is important if we expect patients to adhere to therapy
- When clinicians use this style of communicating – which is essentially talking less and listening more – we often learn important details that help us determine a preferred treatment approach
- When patients use this kind of communication, they are more engaged/committed, and as a result, are more likely to adhere
- Using these communication techniques does not lengthen visits (it actually shortens them), especially if all practice staff are using them

"Evidence indicates that in primary care clinics, brief physician motivational interviewing has a positive effect on weight loss attempts, exercise efforts, decreased substance use, and blood pressure control."

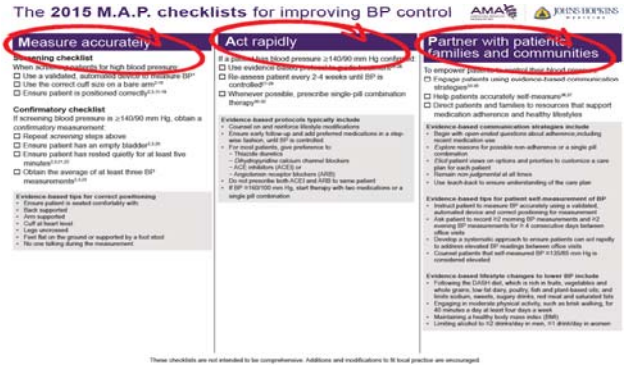
Searight, RH. Realistic approaches to counseling in the office setting. *Am Fam Physician*. 2009;79(4):277-284

Use evidence-based communication strategies

STRATEGY
Begin with open-ended questions about adherence, including recent medication use
Explore reasons for possible non-adherence
Elicit patient views on options and priorities to customize a care plan for each patient
Remain non-judgmental at all times
Use teach-back to ensure understanding of the care plan

Impact of lifestyle changes for improving blood pressure in patients with HTN

LIFESTYLE CHANGE	CAN LOWER SBP/DBP UP TO:
DASH diet, compared with typical American diet	11.6/5.3 mm Hg
Reduce sodium intake by average of 1150 mg/d	4/2 mm Hg
Average weight loss of 11 lbs	4.4/3.6 mm Hg
40 minutes of moderate intensity aerobic physical activity, 3–4 times a week	5/4 mm Hg



Why SMBP is clinically useful

SMBP better predicts CV morbidity and mortality than office BPs

- Reduces variability and provides more reliable BP measurement
- Provides better assessment of hypertension control
- Empowers patients to self manage their HTN
- May improves medication adherence

AMA-JHM SMBP monitoring program

- Provides a framework for practices and health centers to implement their own SMBP monitoring program
- Serves as a workbook for staff to design and implement their own SMBP monitoring program

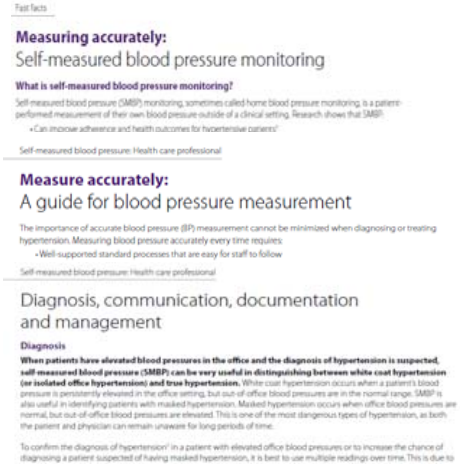
SMBP monitoring program

Table of contents delineates the documents by audience and the program type

		Audience			
Page	Name of document	Practice staff	Patient	Blood pressure monitor loaner program	Patient-owned blood pressure monitor
4	Measuring accurately: Self-measured blood pressure monitoring	X		X	X
6	Clinical competency: Patient self-measured blood pressure at home	X		X	X
8	Measure accurately: A guide for blood pressure measurement	X		X	X
9	How to check a home blood pressure monitor	X		X	X

Health care professional

Several documents are written to help the health care professional know how to accurately measure blood pressure and what to do with self-measured blood pressure readings


Measuring accurately:
Self-measured blood pressure monitoring

What is self-measured blood pressure monitoring?

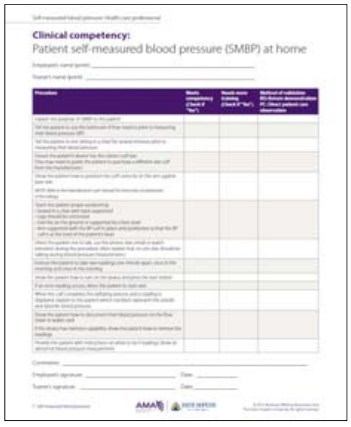
Measure accurately:
A guide for blood pressure measurement

Diagnosis, communication, documentation and management

Clinical competency

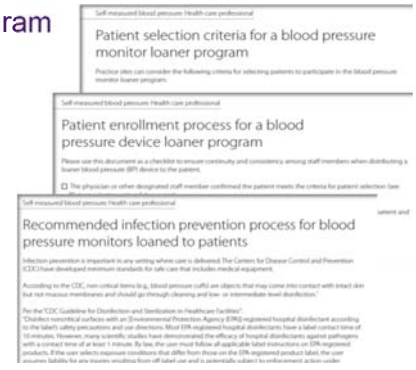
This clinical competency ensures your staff consistently teach the patient

- How to *properly* measure their blood pressure
- How to document the measurement
- Actions to take if readings are out of range


Clinical competency:
Patient self-measured blood pressure (SMBP) at home

Device loaner program

Guidance documents will help the practice or health center develop a program that will loan home blood pressure monitors to patients when short-term SMBP monitoring is useful

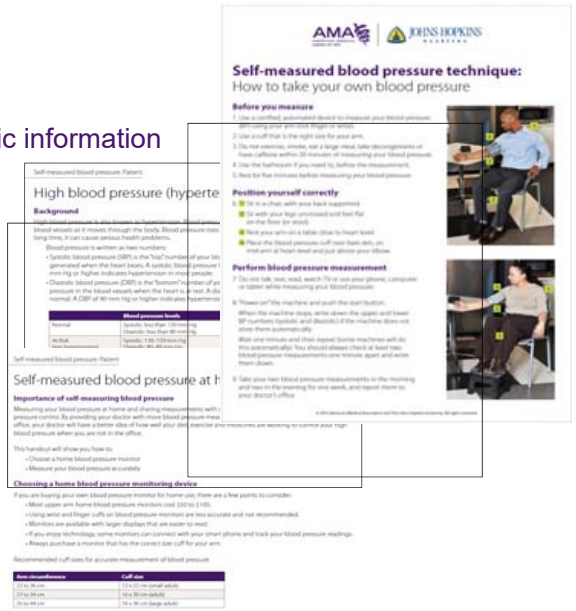

Patient selection criteria for a blood pressure monitor loaner program

Patient enrollment process for a blood pressure device loaner program

Recommended infection prevention process for blood pressure monitors loaned to patients

Patient-specific information

Patient-facing documents provide the patient with information on SMBP monitoring that are easy to understand (*also available in Spanish*)

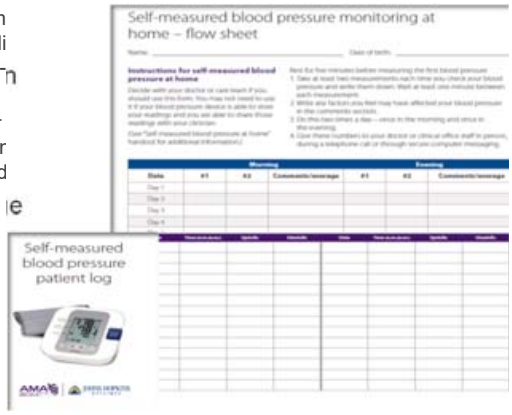

Self-measured blood pressure technique:
How to take your own blood pressure

High blood pressure (hyperte

Self-measured blood pressure at h

Documenting BP measurements

- Patients can docum their home BP readi a flow sheet or a tri- wallet card
- Guidance exists for clinician on how to r SMBP readings and them for treatment



Download resources

https://www.ama-assn.org/search/ama-assn/iho

- You will need to register to download any tools
- You don't need to be an AMA member or physician to do so

STEPS Forward: Improving blood pressure control

www.stepsforward.org

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The **2015 M.A.P. checklists** for improving BP control

Measure accurately

Screening checklist

When *screening* patients for high blood pressure:

- ☐ Use a validated, automated device to measure BP[1]
- ☐ Use the correct cuff size on a bare arm[2-10]
- ☐ Ensure patient is positioned correctly[2,3,11-19]

Confirmatory checklist

If screening blood pressure is ≥140/90 mm Hg, obtain a *confirmatory* measurement:

- ☐ Repeat *screening* steps above
- ☐ Ensure patient has an empty bladder[2,3,20]
- ☐ Ensure patient has rested quietly for at least five minutes[2,3,21,22]
- ☐ Obtain the average of at least three BP measurements[2,3,23]

Evidence-based tips for correct positioning

- Ensure patient is seated comfortably with:
- Back supported
- Arm supported
- Cuff at heart level
- Legs uncrossed
- Feet flat on the ground or supported by a foot stool
- No one talking during the measurement

Act rapidly

If a patient has blood pressure ≥140/90 mm Hg confirmed:

- ☐ Use evidence-based protocol to guide treatment[24-26]
- ☐ Re-assess patient every 2-4 weeks until BP is controlled[27-29]
- ☐ Whenever possible, prescribe single-pill combination therapy[30-32]

Evidence-based protocols typically include

- Counsel on and reinforce lifestyle modifications
- Ensure early follow-up and add preferred medications in a step-wise fashion, until BP is controlled
- For most patients, give preference to:
  - Thiazide diuretics
  - *Dihydropyridine* calcium channel blockers
  - ACE inhibitors (ACEI) or
  - Angiotensin receptor blockers (ARB)
- Do not prescribe both ACEI and ARB to same patient
- If BP ≥160/100 mm Hg, start therapy with two medications or a single pill combination

Partner with patients, families and communities

To empower patients to control their blood pressure:

- ☐ Engage patients using evidence-based communication strategies[33-35]
- ☐ Help patients accurately self-measure[36,37]
- ☐ Direct patients and families to resources that support medication adherence and healthy lifestyles

Evidence-based communication strategies include

- Begin with *open-ended questions* about adherence,including recent medication use
- *Explore* reasons for possible non-adherence or a single pill combination
- *Elicit* patient views on options and priorities to customize a care plan for each patient
- Remain *non-judgmental* at all times
- Use *teach-back* to ensure understanding of the care plan

Evidence-based tips for patient self-measurement of BP

- Instruct patient to measure BP accurately using a validated, automated device and correct positioning for measurement
- Ask patient to record ≥2 morning BP measurements and ≥2 evening BP measurements for ≥ 4 consecutive days between office visits
- Develop a systematic approach to ensure patients can act rapidly to address elevated BP readings between office visits
- Counsel patients that self-measured BP ≥135/85 mm Hg is considered elevated

Evidence-based lifestyle changes to lower BP include

- Following the DASH diet, which is rich in fruits, vegetables and whole grains; low-fat dairy, poultry, fish and plant-based oils; and limits sodium, sweets, sugary drinks, red meat and saturated fats
- Engaging in moderate physical activity, such as brisk walking, for 40 minutes a day at least four days a week
- Maintaining a healthy body mass index (BMI)
- Limiting alcohol to ≤2 drinks/day in men, ≤1 drink/day in women

These checklists are not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

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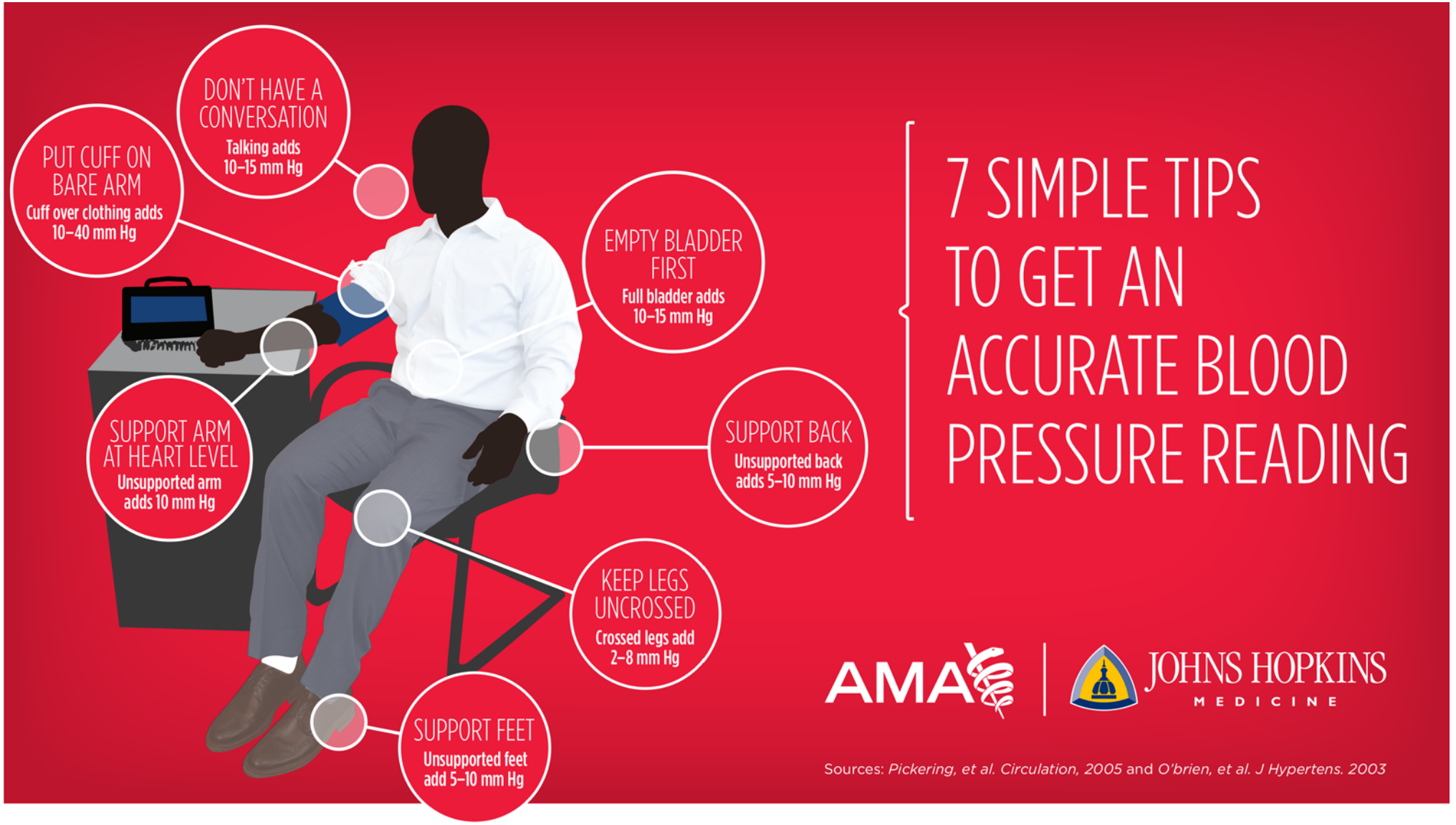

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