

What's New in Hypertension?

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Canadian Hypertension Education Program

Highlights – 2016

| | |
|---------------------------------|--|
| Diagnosis and Assessment | Automated office BP (AOBP), taken without patient-health provider interaction using a fully-automated device, is now recommended as the preferred method of measuring in-office BP. (NEW) |
| Prevention and Treatment | <p>Increase in dietary potassium should be considered in individuals who are not at high risk for hyperkalemia as an effective way to reduce BP. (NEW)</p> <p>In selected high-risk patients, intensive BP reduction to target a systolic BP (SBP) 120 mm Hg should be considered to lower the risk of cardiovascular events. (NEW)</p> <p>In individuals with stable angina pectoris (but without previous heart failure, myocardial infarction, or coronary artery bypass), either a beta-blocker or calcium channel blocker (CCB) can be considered as equally acceptable choices for initial treatment (NEW)</p> |

Blood Pressure Measurement



Auscultation

Inaccurate - results vary by ~9/6mmHg depending on technique

Measurement using electronic (oscillometric) upper arm devices is preferred over auscultation (Grade C) - CHEP 2015

AOBP is the preferred method of performing in-office BP measurement (GRADE D) – CHEP 2016

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Blood Pressure Measurement



Office blood pressure
 Clinician present



Automated
 Office blood pressure
 Clinician not present

High BP: $\geq 140/90$

High BP: $\geq 135/85$

CHEP 2015

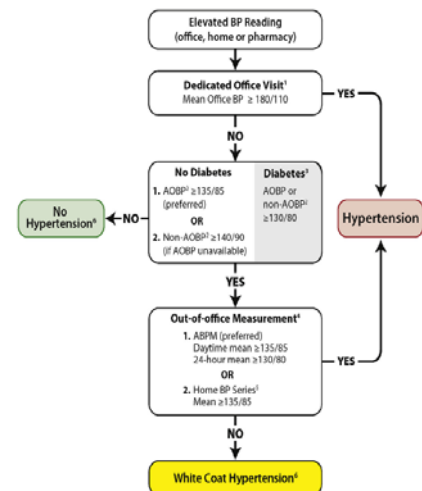
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Example: BpTRU (in office device)

- One button to operate
- Average of 5 BP measurements at 1-5 minute intervals
- Clinician absent
 - Minimizes white coat hypertension
 - Minimizes masked hypertension
- Approximates ambulatory monitoring



BMC Cardiovasc Disord. 2005;5(1):18.



CHEP 2016. Canadian Journal of Cardiology 2016; 32: 569-588



Usual Office BP Threshold Values for Initiation of Pharmacological Treatment

| Population | SBP | DBP |
|---|------|------|
| High Risk (SPRINT population) | ≥130 | NA |
| Diabetes | ≥130 | ≥80 |
| Moderate-to-high risk (TOD or CV risk factors)* | ≥140 | ≥90 |
| Low risk (no TOD or CV risk factors) | ≥160 | ≥100 |

TOD = target organ damage

*AOBP threshold ≥135/85

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2016



Recommended Office BP Treatment Targets

Treatment consists of health behaviour ± pharmacological management

| Population | SBP | DBP |
|-------------|-------|------|
| High Risk | ≤120 | NA |
| Diabetes | < 130 | < 80 |
| All others* | < 140 | < 90 |

* Target BP with AOBP < 135/85

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2016

The Evolution of Treatment Targets

| Population | Target BP (SBP/DBP mmHg) | Guidelines |
|---|--------------------------|--------------------------------------|
| General | <140/90 | All ^a |
| Elderly | | |
| ≥60 years | <150/90 | JNC 8 |
| ≥65 years | <150/90 | China |
| ≥80 years | <150/90 | ASH/ISH, ESH/ESC, France, NICE, CHEP |
| Diabetes | | |
| | <130/80 | CHEP, China, Taiwan |
| | <140/85 | ESH/ESC |
| CKD | | |
| | <130/80 | China, Taiwan, ESH/ESC ^b |
| Other high-risk patients e.g., with coronary disease, history of stroke | <130/80 | Taiwan, China ^c |

Glossary:
AHA/ACC/CDC: American Hypertension Association/American College of Cardiology (US)
ASH/ISH: American Society of Hypertension/ISH Society of Hypertension
CHEP: Canadian Hypertension Education Program
ESH/ESC: European Society of Hypertension/European Society of Cardiology
JNC8: Eighth Joint National Committee (US)
NICE: National Institute for Clinical Excellence (UK)

Table from: Drugs 2014;74:2033-2051

CHEP 2016 Recommendation

- In high risk patients, aged ≥ 50 years, with SBP >130 mm Hg, intensive management to target an SBP < 120 mmHg should be considered.
- Intensive management should be guided by AOBP measurements.
- Patient selection is recommended and caution should be undertaken in certain high-risk groups (Grade B)

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Patient Selection

Consider in:

- Clinical or subclinical cardiovascular disease
- Chronic Kidney Disease
 - e.g. eGFR 20-50 ml/min/1.73 m²
- Estimated 10 year cardiovascular risk ≥15% (FRS)
- Age ≥75

Avoid in: "High Risk Groups"

- Limited or no evidence**
- HF (EF < 35%) or recent MI (3months)
 - Indication for, but no recently receiving a beta-blocker
 - Frail or institutionalized elderly
- Inconclusive evidence**
- Diabetes
 - Previous Stroke
 - eGFR <20 ml/min/1.73m²
- Contraindication**
- Patient unwilling or unable to adhere to multiple medications
 - Standing BP <110 mm Hg
 - Inability to measure SBP accurately
 - Known secondary cause of hypertension

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A Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group⁶

Intensive Treatment
Goal SBP < 120 mm Hg

Standard Treatment
Goal SBP < 140 mm Hg

SPRINT

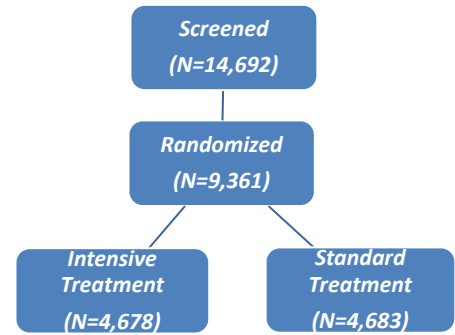
Inclusion

- Age ≥ 50 years
- Hypertension with SBP ≥130 mm Hg
- At least one risk factor for heart disease:
 - Presence of clinical or subclinical cardiovascular disease other than stroke
 - Chronic kidney disease, defined as estimated glomerular filtration rate (eGFR) 20-59 ml/min/1.73 m²
 - A Framingham Risk Score for 10-year cardiovascular disease risk ≥15%
 - Age >75 years

Exclusion

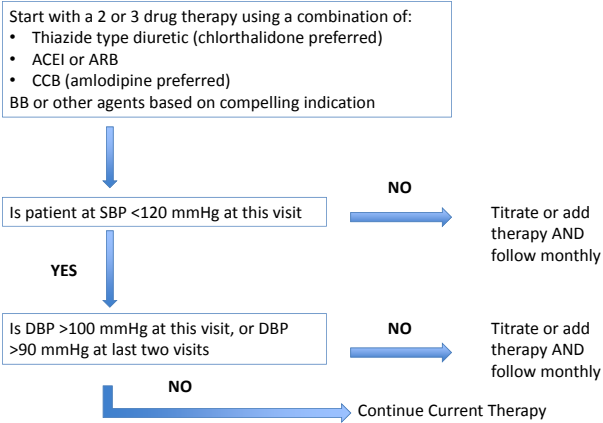
- Known secondary cause of hypertension
- One-minute standing SBP <110 mm Hg
- Stroke
- Diabetes mellitus
- Polycystic kidney disease
- Congestive heart failure (symptoms or EF < 35%)
- Proteinuria >1g/d
- CKD with eGFR < 20 mL/min/1.73m² (MDRD)
- Adherence concerns

SPRINT Eligibility & Randomization



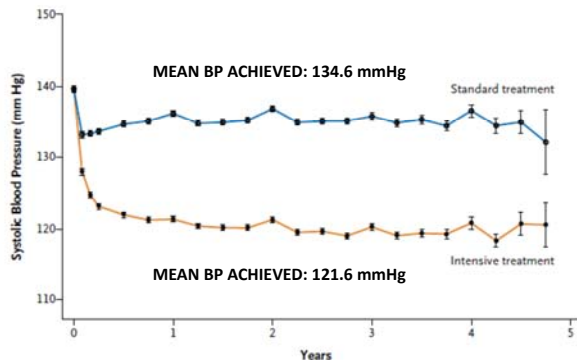
NEJM 2015;373:2103-16

SPRINT Treatment Algorithm



Population

| | |
|---|------------------------|
| Age | 67.9 |
| Female | 36% |
| Race or ethnic group | |
| White | 60% |
| African American | 30% |
| Hispanic | 11% |
| Baseline Blood Pressure | 139.7mmHg 78.2 mmHg |
| Criterion for increased CV risk | |
| Age >75 | 28% |
| CKD | 28% |
| Cardiovascular Disease | 20% |
| Clinical | 17% |
| Subclinical | 5% |
| Framingham >15% | 61% |
| Mean 10 year Framingham Risk Score | 20% |
| Mean number of BP meds at baseline | 1.8 |



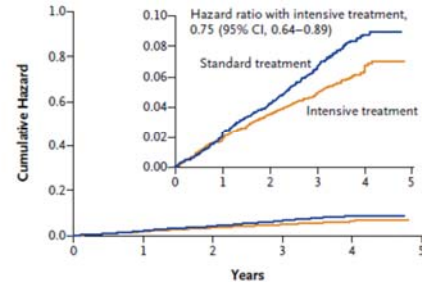
Mean Number of Medications: 3.0 vs. 1.9

Average Follow-up: 3.3 years (planned 5 years)



NEJM 2015;373:2103-16

Primary Outcome



Composite Primary outcome: myocardial infarction, acute coronary syndrome, stroke, acute decompensated heart failure, or death from cardiovascular causes

5.2% vs. 6.8%, p<0.001

| Outcome | <120 | <140 | P value |
|-----------------------------|-------------|-------------|--------------|
| Myocardial infarction | 2.1% | 2.5% | NSS |
| Acute Coronary Syndrome | 0.9% | 0.9% | NSS |
| Stroke | 1.3% | 1.5% | NSS |
| Heart Failure | 1.3% | 2.1% | 0.002 |
| Death from CV causes | 0.8% | 1.4% | 0.005 |
| Death from any cause | 3.3% | 4.5% | 0.003 |

Are the benefits worth the harms?



Composite Primary outcome:
myocardial infarction, acute coronary syndrome, stroke, acute decompensated heart failure, or death from cardiovascular causes

NNT: 63 (5.2% vs. 6.8%)



Serious adverse events possibly or definitely related to the intervention

NNH: 46 (4.7% vs. 2.5%)

Are the benefits worth the harms?



Composite Primary outcome:
myocardial infarction, acute coronary syndrome, stroke, acute decompensated heart failure, or death from cardiovascular causes

NNT: 63 (5.2% vs. 6.8%)



Serious adverse events possibly or definitely related to the intervention

NNH: 46 (4.7% vs. 2.5%)

| | SBP <120 | SBP <140 | |
|---|----------|----------|-----------------|
| Hypotension | 2.4% | 1.4% | NNH:100 |
| Syncope | 3.5% | 2.4% | NNH: 91 |
| Electrolyte abn. | 3.1% | 2.3% | NNH: 125 |
| Acute Kidney Injury of Renal Failure | 4.1% | 2.5% | NNH: 63 |

Questions

- What does the “perfect” patient profile most suited for intensive management look like?
- How does this information impact treatment targets for elderly patient (e.g. 75+)?

Hypertension 2016 Key Messages

What’s new?

- **New thresholds and targets for high risk patients (SPRINT)**
- **Assessing** clinic blood pressures using **automatic electronic** (oscillometric) monitors
- **Adopting** healthy behaviours is integral to the management of hypertension (focus on potassium supplementation)
- **Updating** the treatment of patients with hypertension with concurrent coronary artery disease



CHEP 2016 Guidelines

What’s still important?

- The diagnosis of hypertension should be based on **out-of-office** measurements
- The management of hypertension is all about global cardiovascular risk management and vascular protection
- The most important step in prescription of antihypertensive therapy is achieving patient “buy-in” and adherence