Systolic Blood Pressure Intervention Trial (SPRINT) and Target Systolic Blood Pressure in Future Hypertension Guidelines

Brent M. Egan, Jiexiang Li, C. Shaun Wagner

Abstract—The Systolic Blood Pressure (SBP, mm Hg) Intervention Trial (SPRINT) showed that targeting SBP <120 mm Hg (intensive treatment, mean SBP: 121.5 mm Hg) versus <140 (standard treatment, mean SBP: 134.6 mm Hg) reduced cardiovascular events 25%. SPRINT has 2 implicit assumptions that could impact future US hypertension guidelines: (1) standard therapy controlled SBP similarly to that in adults with treated hypertension and (2) intensive therapy produced a lower mean SBP than in adults with treated hypertension and SBP <140 mm Hg. To examine these assumptions, US National Health and Nutrition Examination Survey 2009 to 2012 data were analyzed on 3 groups of adults with treated hypertension: group 1 consisted of SPRINT-like participants aged ≥50 years; group 2 consisted of participants all aged ≥18 years; and group 3 consisted of participants aged ≥18 years excluding group 1 but otherwise similar to SPRINT-like participants except high cardiovascular risk. Mean SBPs in groups 1, 2, and 3 were 133.0, 130.1, and 124.6, with 66.2%, 72.2%, and 81.9%, respectively, controlled to SBP <140; 68.3%, 74.8%, and 83.4% of the controlled subset had SBP <130. Mean SBPs in those controlled to <140 were 123.3, 120.9, and 118.9, respectively. Among US adults with treated hypertension, the SPRINT-like group had higher mean SBP than comparison groups, yet lower than SPRINT standard treatment group and (2) among groups 1 to 3 with SBP <140, SBP values were within <3 mm Hg of SPRINT intensive treatment. SPRINT results suggest that treatment should be continued and not reduced when treated SBP is <130, especially for the SPRINT-like subset. Furthermore, increasing the percentage of treated adults with SBP <140 could approximate SPRINT intensive treatment SBP without lowering treatment goals. (Hypertension. 2016;68:00-00. DOI: 10.1161/HYPERTENSIONAHA.116.07575.)

Key Words: adult blood pressure cardiovascular disease diabetes mellitus hypertension

The Systolic Blood Pressure (SBP) Intervention Trial (SPRINT) Research Group concluded that among patients at high risk for cardiovascular events but without diabetes mellitus, an SBP (mm Hg) target <120 rather than <140 reduced major cardiovascular events 25% and cardiovascular mortality 43%.1 The investigators stated that “SPRINT now provides evidence of benefits for an even lower SBP target than that currently recommended in most patients with hypertension.” This statement suggests that future guidelines should consider lowering the SBP goal to a value below <140 currently recommended for most hypertensives, for example, <130 or <120.

SPRINT’s impact on future hypertension guidelines reflects 2 implicit assumptions. The first assumption is that SPRINT standard treatment produced SBP values as low or lower than the SBP of US adults with treated hypertension. If SPRINT standard treatment did not attain SBP values as low as in US adults with treated hypertension, then the benefit of intensive treatment in the population could be overestimated. The second assumption is that SPRINT intensive treatment produced a lower mean SBP than in US adults with treated hypertension and SBP <140. If this is not the case, then the rationale for lowering the SBP target would be less compelling, whereas the basis for raising the percentage of treated adults with SBP <140 mm Hg would be enhanced.2

Our study addressed these 2 implicit assumptions using National Health and Nutrition Examination Survey (NHANES) data. First, mean SBP in 3 groups of NHANES adults with treated hypertension was compared to mean SBP achieved with SPRINT standard treatment. The 3 groups with treated hypertension included (1) a SPRINT-like group, (2) all adults ≥18 years, and (3) adults ≥18 years excluding the SPRINT-like group and others with SPRINT-like exclusions. Second, mean SBP in the same 3 groups of NHANES adults with treated hypertension and SBP <140 was compared to mean SBP with SPRINT intensive treatment.

Methods

The NHANES are repeated cross-sectional assessments over time of the health and nutritional status in a representative sample of the US civilian population. All adults provided written consent approved by the National Center for Health Statistics. Since 1960, National Health Examination Surveys have been used to assess hypertension prevalence, awareness, treatment, and control in the United States.3,4

Participants for this analysis included adults meeting SPRINT-like inclusion–exclusion criteria in NHANES 1999 to 2012. Inclusion
criteria for the SPRINT-like sample included one or more of the following: (1) history of myocardial infarction or angina, (2) chronic kidney disease with estimated glomerular filtration rate (mL/1.73 m²/min) of 20 to 59 or urine albumin/creatinine >600 mg/g creatinine, (3) 10-year Framingham cardiovascular disease risk ≥15%, or (4) age ≥75 years. Exclusion criteria were (1) age <50 years; (2) diagnosed and undiagnosed diabetes mellitus; (3) history of stroke; (4) history of heart failure; (5) SBP ≥180 mm Hg, ≥170 on >2 blood pressure (BP) meds; ≥160 on >3 BP meds; ≥150 on >4 BP meds; or (6) 0 to 1 health-care visits/ (proxy for nonadherence).

Analyses were also conducted on 2 additional groups. One group included all adults ≥18 years with treated hypertension. The second group included adults ≥18 years with hypertension who were excluded from SPRINT. Additional SPRINT-like exclusion criteria for this group included diagnosed and undiagnosed diabetes mellitus, estimated glomerular filtration rate <20, and in items (5) and (6) above, that is, factors associated with uncontrolled and treatment-resistant hypertension.1,4

All adults included in the analysis had at least one valid BP measured. BP (mm Hg) was measured by trained professionals using sphygmomanometry and appropriately sized arm cuffs in volunteers after 5 minutes of seated rest. The first BP was excluded in estimating mean systolic and diastolic values for individuals with more than one value as recommended in NHANES procedure manuals.4,7 Hypertension was defined as systolic BP ≥140 or diastolic BP ≥90 or both as a positive response to “Are you currently taking prescribed medication to lower your BP?”1,10 Treatment of hypertension was defined as the percentage of adults with prevalent hypertension reporting that they were taking prescription medication to lower BP. Hypertension control was defined as SBP <140 for all adults.4

Percentage of treated hypertension controlled was calculated as the number of adults on antihypertensive medications and with SBP <140 divided by the number with treated hypertension. Diabetes mellitus, which included individuals with diagnosed and undiagnosed disease, was defined as described.5

Cardiovascular disease included diagnosed or undiagnosed heart disease defined as described.6 Stroke was defined by affirmative response to “Has a doctor ever told you that you had a stroke?”1,10 Congestive heart failure was defined by affirmative response to “Has a doctor ever told you that you had congestive heart failure?”1,10

Estimated glomerular filtration rate (mL/1.73 m²/min) was estimated using the Modification of Diet in Renal Disease equation11 used in SPRINT.3

Data Analysis

SAS Enterprise Guide 7.1 (Cary, NC) survey procedures were used for within-survey analyses and appropriate weights accounting for unequal probabilities of selection, oversampling, and nonresponse. The population weight attributed to each individual in NHANES was produced SBP values at least as low as the SBP of adults in SPRINT-like exclusions, mean SBP was even lower at 124.6. In adults ≥18 years excluding the SPRINT-like subset and others with SPRINT-like exclusions, mean SBP was lower at 124.6. SPRINT-like adults in the United States attained a mean SBP of 133.0 (Table 1), which seems the investigators assumed that benefits of target SBP <120 extend to patients excluded from SPRINT. Our study was designed to evaluate 2 implicit assumptions in SPRINT that could lead to a lower SBP target and more intensive treatment for millions of adults with hypertension.

The first assumption is that SPRINT standard treatment produced SBP values at least as low as the SBP of adults in the United States with treated hypertension. In 2009 to 2012, SPRINT-like adults in the United States attained a mean SBP of 133.0 (Table 1), which was lower than SPRINT standard therapy mean of 136.2 in the first year and 134.6 during the 3.26-year trial. Among all treated adults ≥18 years in the United States during this time period, mean SBP was lower at 130.1. In adults ≥18 years excluding the SPRINT-like subset and others with SPRINT-like exclusions, mean SBP was even lower at 124.6. SPRINT-like adults in the United States have mean SBP ≥3 mm Hg higher than all treated adults and ≥8 mm Hg above SBP values in adults ≥18 years excluding SPRINT-like adults and other SPRINT-like exclusion criteria. Yet, SPRINT-like adults in
The United States attained SBP values 3.2 mm Hg below SPRINT standard therapy participants at 1 year and 1.6 mm Hg lower than the 3.26-year mean. Thus, SPRINT standard therapy could lead to an overestimation of the benefits of SPRINT intensive therapy in the US population of adults with treated hypertension.

SPRINT participants rested 5 minutes alone in a room before BP was measured in triplicate with an automated device and averaged, a process termed "automated office" BP. The automated office BP protocol with 5 minutes of rest leads to SBP 6.9 mm Hg lower than daytime ambulatory values, which matches the difference between automated office SBP and daytime ambulatory SBP with SPRINT intensive treatment. SPRINT standard treatment led to automated office SBP values 3 mm Hg lower than daytime ambulatory values.

---

**Figure 1.** The process is shown for selecting Systolic Blood Pressure Intervention Trial (SPRINT)-like adults ≥50 y old. Both the National Health and Nutrition Examination Survey (NHANES) sample size (N) and the number of subjects represented in the US population (Pop n) based on sample weight assigned to each subject are shown. BP indicates blood pressure; HTN, hypertension; and SBP, systolic blood pressure.

The United States attained SBP values 3.2 mm Hg below SPRINT standard therapy participants at 1 year and 1.6 mm Hg lower than the 3.26-year mean. Thus, SPRINT standard therapy could lead to an overestimation of the benefits of SPRINT intensive therapy in the US population of adults with treated hypertension.

SPRINT participants rested 5 minutes alone in a room before BP was measured in triplicate with an automated device and averaged, a process termed "automated office" BP. The automated office BP protocol with 5 minutes of rest leads to SBP 6.9 mm Hg lower than daytime ambulatory values, which matches the difference between automated office SBP and daytime ambulatory SBP with SPRINT intensive treatment. SPRINT standard treatment led to automated office SBP values 3 mm Hg lower than daytime ambulatory values.

---

**Figure 2. Left.** The diagram depicts the process for selecting adults ≥18 y with treated hypertension (HTN) and the subset with exclusions. National Health and Nutrition Examination Survey (NHANES) sample sizes and the US population numbers represented are provided. BP indicates blood pressure; and SBP, systolic blood pressure.

**Figure 2. Right.** The process is shown for selecting adults ≥18 y with treated HTN excluding the Systolic Blood Pressure Intervention Trial (SPRINT)-like group and others with SPRINT-like exclusions. BP indicates blood pressure; and SBP, systolic blood pressure.
treatment participants would likely have been larger if com-
parable measurement methods were used.

The SPRINT standard treatment protocol contributed to
higher values than in US adults with treated hypertension.
The SBP goal for SPRINT standard treatment was 135 to 139
mm Hg.1,2 The SPRINT protocol specified reducing antihyp-
tensive medication on any single visit when SBP was <130
and when SBP was <135 on 2 consecutive visits. The majority
of US adults with treated hypertension controlled to <140
had SBP <130 (Table 2) and would have had their antihy-
tensive therapy reduced with SPRINT standard treatment.

The second implicit assumption in SPRINT is that inten-
sive treatment with target SBP <120 leads to lower SBP than in
controlled hypertensives with SBP <140. If this assumption is not
correct, then the rationale for lowering the SBP target to <120
or <130 for adults with treated hypertension is less compel-
ling, and the rationale for raising the percentage of adults with
hypertension controlled to <140 is strengthened.3 In NHANES,
66.2% of all SPRINT-like adults with treated hypertension were
treated with target SBP <120. Their mean SBP was 123.3, which
is 1.8 mm Hg higher than the SPRINT intensive treatment
mean, and 68.3% of them had SBP <130.4 Given BP measure-
ment differences between NHANES and SPRINT,3 SBP was
probably lower in the NHANES’ SPRINT-like group with SBP <140
than in SPRINT intensively treated subjects.

Among all treated adults with hypertension, 72.2% had SBP
<140, their mean SBP was 120.9, and 74.8% of the controlled
grand total had SBP <130. Among treated adults ≥18 years exclud-
ing the SPRINT-like group and others with SPRINT-like exclu-
sions, 81.9% had SBP <140, their mean SBP was 118.9, which
is 2.6 mm Hg below the SPRINT intensive-treatment mean, and
83.4% of the controlled subset also had SBP <130. Thus, US
adults with treated hypertension and SBP <140 have mean SBP
values similar to that in SPRINT intensive treatment.

Of importance, SPRINT results suggest that the mean SBP
values among US adults with treated hypertension and SBP <140
are not too low, especially for the SPRINT-like subset. SPRINT
results further suggest that the large proportion of adults treated
for hypertension who have SBP <130 are at lower risk for car-
diovascular events and that their antihypertensive medications
should not be reduced to raise SBP to 135 to 139. SPRINT pro-
vides important new data to a previous evidentiary review indi-
cating that the SBP target of <140 reflects expert opinion.4

### Table 1. Characteristics of 3 Groups of US Adults With
Treated Hypertension in NHANES 2009 to 2012

| Group Variable | SPRINT-Like Adults ≥50 y | Adults ≥18 y Without Exclusions | Adults ≥18 y With Exclusions*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample, N</td>
<td>684</td>
<td>2882</td>
<td>741</td>
</tr>
<tr>
<td>Population, N</td>
<td>12870 162</td>
<td>52070 137</td>
<td>15932 366</td>
</tr>
<tr>
<td>Age, y</td>
<td>68.1±0.2</td>
<td>61.8±0.1</td>
<td>55.4±0.2</td>
</tr>
<tr>
<td>Female, %</td>
<td>43.5±1.8</td>
<td>55.2±1.1</td>
<td>68.1±2.6</td>
</tr>
<tr>
<td>White, %</td>
<td>84.0±1.9</td>
<td>72.3±2.7</td>
<td>74.5±3.5</td>
</tr>
<tr>
<td>Black, %</td>
<td>7.8±1.1</td>
<td>14.6±1.9</td>
<td>15.7±2.7</td>
</tr>
<tr>
<td>Hispanic, %</td>
<td>5.0±1.3</td>
<td>8.1±1.6</td>
<td>6.2±1.3</td>
</tr>
<tr>
<td>SBP, mm Hg</td>
<td>133.0±0.9</td>
<td>130.1±0.5</td>
<td>124.6±0.7</td>
</tr>
<tr>
<td>SD SBP, mm Hg</td>
<td>17.2</td>
<td>19.4</td>
<td>16.0</td>
</tr>
<tr>
<td>SBP &lt;140, %</td>
<td>66.2±2.5</td>
<td>72.2±1.0</td>
<td>81.9±1.5</td>
</tr>
</tbody>
</table>

Data are presented as mean and standard error of the mean, CHF indicates chronic heart failure; eGFR, estimated glomerular filtration rate; NHANES, National Health and Nutrition Examination Survey; SBP, systolic blood pressure; and SPRINT, Systolic Blood Pressure Intervention Trial.

*Exclusions included adults in the SPRINT-like group and SPRINT exclusions in other individuals, for example, diabetes mellitus, eGFR <20 mL/1.73 m²/min or urine/albumin >600 mg/g creatinine, CHF, SBP, and number of medications shown in Figure 1, and 0–1 annual health-care visits.

### Table 2. Characteristics of 3 Groups of US Adults With
Treated Hypertension and SBP <140 in NHANES 2009 to 2012

| Group Variable | SPRINT-Like Adults ≥50 y | All Adults ≥18 y No Exclusions | Adults ≥18 y With Exclusions*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample, N</td>
<td>435</td>
<td>1979</td>
<td>584</td>
</tr>
<tr>
<td>Population, N</td>
<td>8519 127</td>
<td>37 583 372</td>
<td>13 056 966</td>
</tr>
<tr>
<td>Age, y</td>
<td>67.4±0.3</td>
<td>60.4±0.1</td>
<td>54.7±0.3</td>
</tr>
<tr>
<td>Female, %</td>
<td>37.0±2.4</td>
<td>54.7±1.5</td>
<td>68.1±2.8</td>
</tr>
<tr>
<td>White, %</td>
<td>85.9±1.9</td>
<td>73.6±2.6</td>
<td>76.5±3.4</td>
</tr>
<tr>
<td>Black, %</td>
<td>7.0±1.0</td>
<td>13.8±1.7</td>
<td>14.8±2.6</td>
</tr>
<tr>
<td>Hispanic, %</td>
<td>4.3±1.2</td>
<td>7.3±1.5</td>
<td>5.5±1.2</td>
</tr>
<tr>
<td>SBP, mm Hg</td>
<td>123.3±1.0</td>
<td>120.9±0.3</td>
<td>118.9±0.6</td>
</tr>
<tr>
<td>SBP &lt;135, %</td>
<td>88.3±1.6</td>
<td>89.8±0.7</td>
<td>93.6±1.0</td>
</tr>
<tr>
<td>SBP &lt;130, %</td>
<td>68.3±3.2</td>
<td>74.8±1.1</td>
<td>83.4±2.0</td>
</tr>
<tr>
<td>SBP &lt;125, %</td>
<td>47.7±3.9</td>
<td>58.0±1.4</td>
<td>68.4±2.4</td>
</tr>
<tr>
<td>SBP &lt;120, %</td>
<td>30.5±2.8</td>
<td>41.5±1.0</td>
<td>47.8±2.7</td>
</tr>
</tbody>
</table>

Data are presented as mean and standard error of the mean, CHF indicates chronic heart failure; eGFR, estimated glomerular filtration rate; NHANES, National Health and Nutrition Examination Survey; SBP, systolic blood pressure; and SPRINT, Systolic Blood Pressure Intervention Trial.

*Exclusions included adults in the SPRINT-like group and SPRINT exclusions in other individuals, for example, diabetes mellitus, eGFR <20 mL/1.73 m²/min or urine/albumin >600 mg/g creatinine, CHF, SBP, and number of medications shown in Figure 1, and 0–1 annual health-care visits.

### Table 3. The SD of SBP Affects Estimated SBP Required to
Control 88.1% of Treated Adults to <140 mm Hg

<table>
<thead>
<tr>
<th>SBP SD</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP, mm Hg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>123.5</td>
<td>122.3</td>
<td>121.1</td>
<td>119.9</td>
<td>118.8</td>
</tr>
<tr>
<td>SBP &lt;140, %</td>
<td>88.1</td>
<td>88.1</td>
<td>88.1</td>
<td>88.1</td>
<td>88.1</td>
</tr>
<tr>
<td>SBP &lt;135, %</td>
<td>79.5</td>
<td>80.1</td>
<td>80.7</td>
<td>81.2</td>
<td>81.7</td>
</tr>
<tr>
<td>SBP &lt;130, %</td>
<td>67.9</td>
<td>69.6</td>
<td>71.1</td>
<td>72.3</td>
<td>73.4</td>
</tr>
<tr>
<td>SBP &lt;125, %</td>
<td>54.3</td>
<td>57.1</td>
<td>59.6</td>
<td>61.7</td>
<td>63.6</td>
</tr>
<tr>
<td>SBP &lt;120, %</td>
<td>40.2</td>
<td>43.9</td>
<td>47.2</td>
<td>50.1</td>
<td>52.7</td>
</tr>
<tr>
<td>SBP &lt;115, %</td>
<td>27.2</td>
<td>31.3</td>
<td>35.1</td>
<td>38.6</td>
<td>41.7</td>
</tr>
</tbody>
</table>

SBP indicates systolic blood pressure.
Although control rates to SBP <140 in our report may seem high, hypertension control to <140/<90 among all US adults improved from 23.9% in 1988 to 1994 to 53.8% in 2009–2010.19 During this time, the proportion of adults treated for hypertension who were controlled to <140/<90 rose from 50.6% to 70.4%. Thus, the comparatively high rates of control to SBP <140 among adults with treated hypertension in this study are consistent with previous reports.4,19

These observations suggest that increasing the percentage of US adults with treated hypertension controlled to SBP <140 could approximate values observed with SPRINT intensive treatment without lowering target SBP. In this regard, Healthy People 2020 aims to control hypertension in 61.2% of all adults with hypertension by treating 69.5% of them.2 The implied control rate among treated adults is 88.1%, that is, 0.695 treated×0.881 controlled/treated=0.612 or 61.2% controlled. This estimate excludes untreated adults with nonhypertensive BP. When the update to Healthy People 2020 was published, the SBP target was <140 mm Hg, which included adults with diabetes mellitus and chronic kidney disease.4

Mean SBP values in all treated US adults were estimated assuming that 88.1% were controlled to <140. The estimates included a credible range of interindividual SDs for SBP (Table 1) recognizing the SD of SBP typically declines as mean SBP falls. The results suggest that mean SBP values similar to that in SPRINT intensive treatment would be attained if 88.1% of adults were controlled to SBP <140. Of note, because SBP values in treated adults are skewed toward higher values,20 median SBP is less than mean. In other words, >50% of patients have BP values below the mean. Thus, actual control rates to <140 and the other targets shown would be higher than estimates provided.

There are potential risks of lowering target SBP. The Hypertension Optimal Treatment (HOT) Study experience may be instructive.22 HOT investigators reported that a diastolic (DBP) goal <80 mm Hg reduced cardiovascular events ≈50% compared with a goal <90 in adults with hypertension and diabetes mellitus. DBP achieved in HOT was 81 for the <80 target group and 85 for the <90 target group. Guideline committees cited HOT when setting a DBP goal <80 for adults with hypertension and diabetes mellitus.23,24 Health-care quality metrics were developed and implemented to score physicians and health systems on success at controlling DBP to <80 in adults with diabetes mellitus. Collectively, these changes likely contributed to mean treated DBP values well below the 81 mm Hg mean linked with benefit in HOT.22,25

The potential risk is that an analogous sequence of events occur with SBP goals <120 or <130 and lead to mean SBP values in treated hypertensive patients below the mean associated with benefit with SPRINT intensive treatment. This is not a declaration that mean DBP <80 in adults with diabetes mellitus and hypertension or mean SBP <120 in nondiabetic adults with high-risk hypertension lack benefit or are harmful. Rather, evidence-based medicine as translated in clinical guidelines, health-care quality metrics, and performance incentives can get ahead of the evidence with potential downside risk. In fact, lower SBP targets in SPRINT (hypotension, acute kidney injury) and ACCORD (Action to Control Cardiovascular Risk in Diabetes) were associated with more adverse events.1,26

Several limitations of our report are noteworthy. First, NHANES is an observational, cross-sectional assessment at one time point, whereas SPRINT intervened on a cohort of patients with repeated assessments over time. Yet, NHANES is used as a proxy for hypertension treatment and control in the United States.14 Second, BP values in SPRINT and NHANES are not directly comparable given major methodological differences in measurement as discussed. In fact, BP values in NHANES participants likely would have been significantly lower if measured using SPRINT methods.14,17,27,28 Third, unlike SPRINT, our NHANES analysis did not include individuals with untreated SBP 130 to 139, because the Seventh Joint National Committee defined hypertension in untreated adults as an SBP ≥140 during 2003–2013,29 which includes the time period of our NHANES analysis. Adults with diabetes mellitus comprised the largest group of patients with an SBP <140 (goal <130),29 and they were excluded from SPRINT.15 Fourth, we included only adults with treated hypertension, because SPRINT participants were treated for hypertension. Fifth, ≈10% of participants in the SPRINT intensive treatment group had automated office SBP ≥140, whereas our comparison group of treated and controlled hypertensive adults excluded individuals with SBP ≥140 mm Hg. We addressed this limitation by estimating mean SBP values in all treated adults if Healthy People 2020 control targets were attained. Finally, we attempted to select a SPRINT-like sample from NHANES participants, but precise matching was impossible. For example, heart failure in NHANES was defined by self-report. SPRINT excluded adults with heart failure in the previous 6 months or ejection fraction <55%.

In summary, SPRINT standard treatment led to higher mean SBP than in US adults with treated hypertension. SPRINT intensive treatment led to mean SBP comparable to that in adults with treated hypertension controlled to <140. SPRINT results indicate that the large proportion of adults with SBP <140 who also achieve SBP <130 are benefiting and should not have treatment withdrawn. SPRINT fills a gap in prior guidance for goal SBP <140 based on expert opinion.18

**Perspectives**

US adults with treated hypertension and SBP <140 attain mean SBP similar to that in SPRINT intensive treatment and most of them have SBP <130. Estimates suggest that mean SBP values similar to the values in SPRINT intensive treatment would also occur in all treated adults if the implied Healthy People 2020 goal of controlling 88.1% of them to SBP <140 mm Hg is attained. The potential benefits and risks of lowering the SBP target should be considered in future hypertension guidelines. Future guidelines should also recognize that SPRINT measured automated office BP after 5 minutes of rest, which leads to BP values below daytime ambulatory readings.

**Sources of Funding**

This work was supported in part by contracts from the Centers for Disease Control and Prevention through the South Carolina Department of Health and Environmental Control.

**Disclosures**

During the previous 3 years, B.M. Egan received grants from the CDC, Medtronic, NIH, and Quintiles and honoraria as a consultant to AstraZeneca, Medtronic, Merck, Novartis, the University of Iowa,
and Valencia and royalties from UpToDate. The other authors report no conflicts.

References


Novelty and Significance

What is New?

- Adults with treated hypertension in the United States are achieving lower systolic blood pressure (SBP) than Systolic Blood Pressure Intervention Trial (SPRINT) standard treatment participants, and the subset with SBP <140 is attaining mean SBP comparable to SPRINT intensive therapy.

- Estimates suggest that raising the percentage of treated adults with SBP <140 to 88.1%, a Healthy People 2020 goal, would also lead to mean SBP in all treated adults comparable to SPRINT intensive treatment.

What is Relevant?

- The majority of US adults with treated hypertension controlled to <140 also have SBP <130. SPRINT suggests these individuals are deriving cardiovascular benefit from lower SBP and should not have treatment reduced to raise their SBP to 135 to 139 mm Hg.

Summary

SPRINT results support the Healthy People 2020 goal of increasing hypertension control to SBP <140 from current levels of ≈72.2% to 88.1% of treated adults. Recommendations to lower target SBP values to <140 should consider benefits and risks.
Systolic Blood Pressure Intervention Trial (SPRINT) and Target Systolic Blood Pressure in Future Hypertension Guidelines
Brent M. Egan, Jiexiang Li and C. Shaun Wagner

Hypertension. published online June 27, 2016;
Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2016 American Heart Association, Inc. All rights reserved.
Print ISSN: 0194-911X. Online ISSN: 1524-4563

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://hyper.ahajournals.org/content/early/2016/06/27/HYPERTENSIONAHA.116.07575

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Hypertension can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Hypertension is online at:
http://hyper.ahajournals.org//subscriptions/