Targeting BP control

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Presenter Disclosure

- Relationships with commercial interests:
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2016
Hypertension Canada CHEP Guidelines for the Management of Hypertension

What's new in the treatment of hypertension?

What's still really important?

40 yo man, diabetes, out of office BP: 135/75

- A) no treatment
- B) Target ≤ 120/80
- C) Target ≤ 130/80
- D) Target ≤ 140/80

30 yo woman, Diabetes, Alb/creat 10, BP 125/70

- A) No Treatment
- B) Treat with ACEI or ARB
- C) Target 120 systolic

62 yo woman with CAD (prior ACS + stent), No Diabetes, BP 135/72

- A) Already well controled
- B) Target 120
- C) Target 130
- D) Target 140

75 yo man, No CAD, No Diabetes, BP 150/70

- A) No treatment
- B) Target 150
- C) Target 140
- D) Target 130
- E) Target 120

CHEP 2016 Guidelines

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 evaluation of patients with suspected secondary forms of hypertension (focus on primary hyperaldosteronism)
- ***Updating*** the treatment of patients with hypertension with concurrent coronary artery disease
- ***New*** recommendations on the diagnosis and management of hypertension in pediatric patients ***(NOT the focus of this presentation)***

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

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

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

Original Article

Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group

N Engl J Med
Volume 373(22):2103-2116
November 26, 2015

- Patients at increased cardiovascular risk but without diabetes were assigned to intensive treatment of systolic BP (target, <120 mm Hg) or standard treatment (target, <140 mm Hg).
- After a median of 3.26 years, the rate of cardiovascular events was significantly lower with intensive treatment.

Inclusion Criteria

1. At least 50 years old
2. Systolic blood pressure SBP: 130 – 180 mm Hg on 0 or 1 medication
   SBP: 130 – 170 mm Hg on up to 2 medications
   SBP: 130 – 160 mm Hg on up to 3 medications
   SBP: 130 – 150 mm Hg on up to 4 medications

3. There are no diastolic blood pressure (DBP) inclusion criteria, since risk is more related to SBP than DBP in the age and risk population anticipated for SPRINT. If a screenee is otherwise eligible for SPRINT but presents with a treated BP and/or number of medications that fall outside the SPRINT inclusion criteria, BP-lowering medications may be adjusted prior to the randomization visit to determine whether, with such adjustments, the screenee will meet eligibility criteria for SPRINT. A screenee who presents on no BP medications should have documentation of SBP ≥130 mm Hg on 2 visits within 3 months prior to the randomization visit in order to be eligible for the trial.

Risk (one or more of the following):

a) Presence of clinical* or subclinical** cardiovascular disease other than stroke

b) CKD, defined as eGFR 20 – 59 ml/min/1.73m2 based on the 4-variable Modification of Diet in Renal Disease (MDRD) equation and latest lab value, within the past 6 months. (If the serum creatinine is unstable within the last 6 months, enrollment into SPRINT could be delayed until the serum creatinine has been stabilized and the eGFR is still within the allowed range.)

c) Framingham Risk Score for 10-year CVD risk ≥ 15% based on laboratory work done within the past 12 months for lipids

d) Age ≥ 75 years.

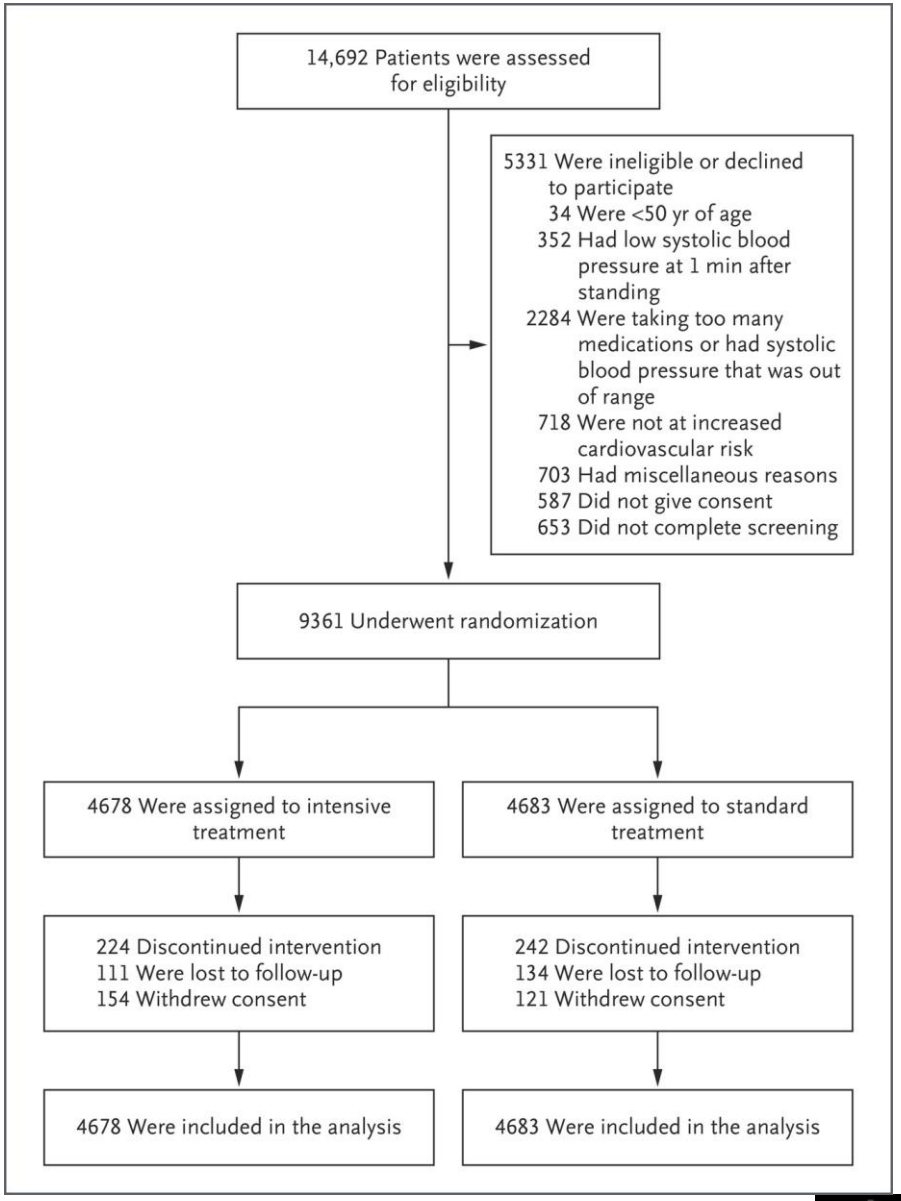
Clinical CVD (other than stroke)

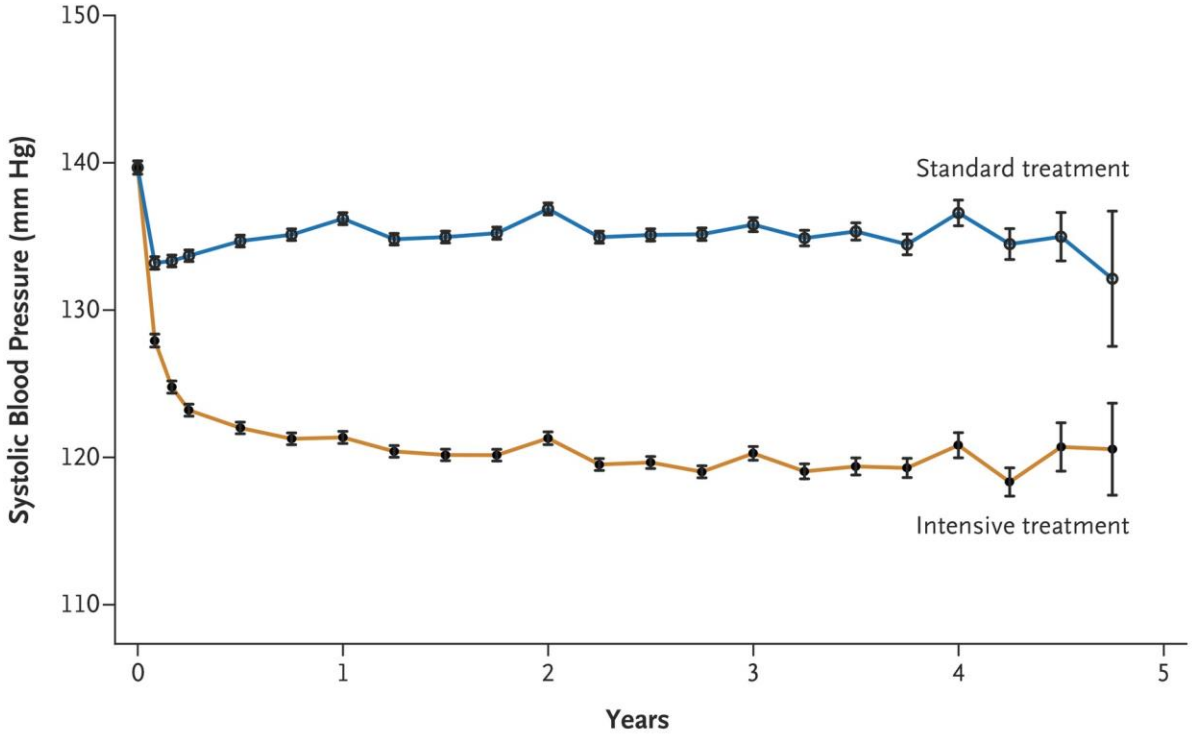
a) Previous myocardial infarction (MI), percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG), carotid endarterectomy (CE), carotid stenting
b) Peripheral artery disease (PAD) with revascularization
c) Acute coronary syndrome with or without resting ECG change, ECG changes on a graded exercise test (GXT), or positive cardiac imaging study
d) At least a 50% diameter stenosis of a coronary, carotid, or lower extremity artery
e) Abdominal aortic aneurysm (AAA) ≥5 cm with or without repair

** Subclinical CVD

a) Coronary artery calcium score ≥ 400 Agatston units within the past 2 years. b) Ankle brachial index (ABI) ≤0.90 within the past 2 years.

c) Left ventricular hypertrophy (LVH) by ECG (based on computer reading), echocardiogram report, or other cardiac imaging procedure report within the past 2 years.


14,692 Patients were assessed for eligibility
5331 Were ineligible or declined to participate
34 Were <50 yr of age
352 Had low systolic blood pressure at 1 min after standing
2284 Were taking too many medications or had systolic blood pressure that was out of range
718 Were not at increased cardiovascular risk
703 Had miscellaneous reasons
587 Did not give consent
653 Did not complete screening
9361 Underwent randomization
4678 Were assigned to intensive treatment
4683 Were assigned to standard treatment
224 Discontinued intervention
111 Were lost to follow-up
154 Withdrew consent
242 Discontinued intervention
134 Were lost to follow-up
121 Withdrew consent
4678 Were included in the analysis
4683 Were included in the analysis



No. with Data										
Standard treatment	4683	4345	4222	4092	3997	3904	3115	1974	1000	274
Intensive treatment	4678	4375	4231	4091	4029	3920	3204	2035	1048	286
Mean No. of Medications										
Standard treatment	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
Intensive treatment	2.3	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.0

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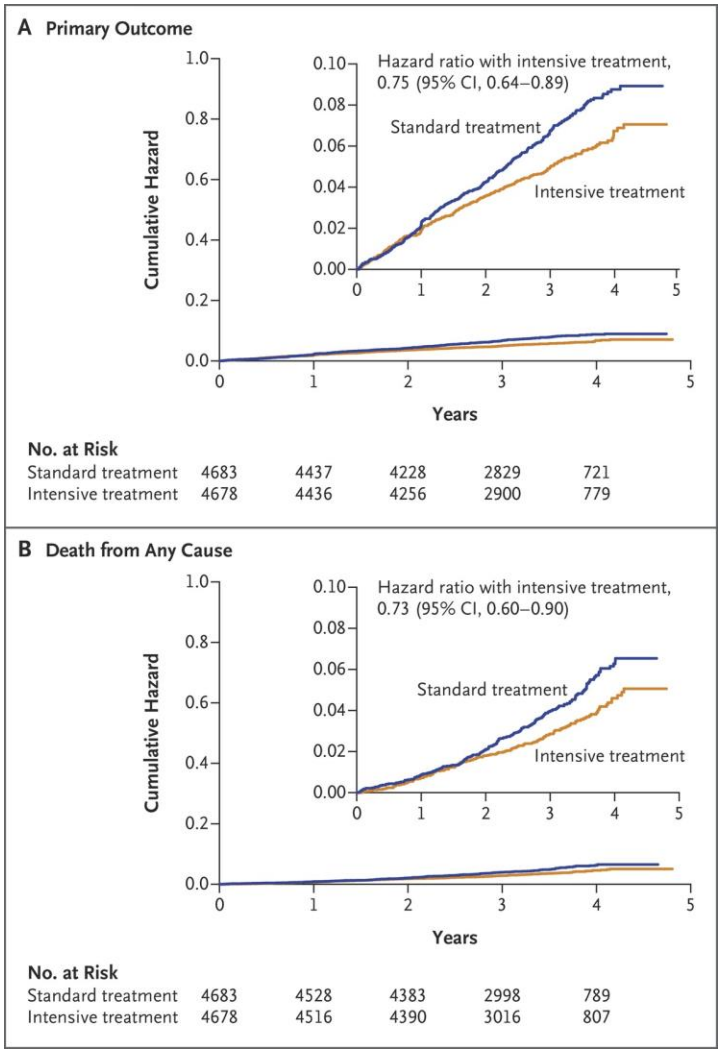
A Primary Outcome
Cumulative Hazard
Years
Hazard ratio with intensive treatment, 0.75 (95% CI, 0.64–0.89)
Standard treatment
Intensive treatment
No. at Risk
Standard treatment 4683 4437 4228 2829 721
Intensive treatment 4678 4436 4256 2900 779
B Death from Any Cause
Cumulative Hazard
Years
Hazard ratio with intensive treatment, 0.73 (95% CI, 0.60–0.90)
Standard treatment
Intensive treatment
No. at Risk
Standard treatment 4683 4528 4383 2998 789
Intensive treatment 4678 4516 4390 3016 807

Subgroup	Intensive Treatment	Standard Treatment	Hazard Ratio (95% CI)	P Value for Interaction
	no. of patients with primary outcome/total no. (%)			
Overall	243/4678 (5.2)	319/4683 (6.8)	0.75 (0.64–0.89)	
Previous CKD				0.36
No	135/3348 (4.0)	193/3367 (5.7)	0.70 (0.56–0.87)	
Yes	108/1330 (8.1)	126/1316 (9.6)	0.82 (0.63–1.07)	
Age				0.32
<75 yr	142/3361 (4.2)	175/3364 (5.2)	0.80 (0.64–1.00)	
≥75 yr	101/1317 (7.7)	144/1319 (10.9)	0.67 (0.51–0.86)	
Sex				0.45
Female	77/1684 (4.6)	89/1648 (5.4)	0.84 (0.62–1.14)	
Male	166/2994 (5.5)	230/3035 (7.6)	0.72 (0.59–0.88)	
Race				0.83
Black	62/1454 (4.3)	85/1493 (5.7)	0.77 (0.55–1.06)	
Nonblack	181/3224 (5.6)	234/3190 (7.3)	0.74 (0.61–0.90)	
Previous cardiovascular disease				0.39
No	149/3738 (4.0)	208/3746 (5.6)	0.71 (0.57–0.88)	
Yes	94/940 (10.0)	111/937 (11.8)	0.83 (0.62–1.09)	
Systolic blood pressure				0.77
≤132 mm Hg	71/1583 (4.5)	98/1553 (6.3)	0.70 (0.51–0.95)	
>132 to <145 mm Hg	77/1489 (5.2)	106/1549 (6.8)	0.77 (0.57–1.03)	
≥145 mm Hg	95/1606 (5.9)	115/1581 (7.3)	0.83 (0.63–1.09)	

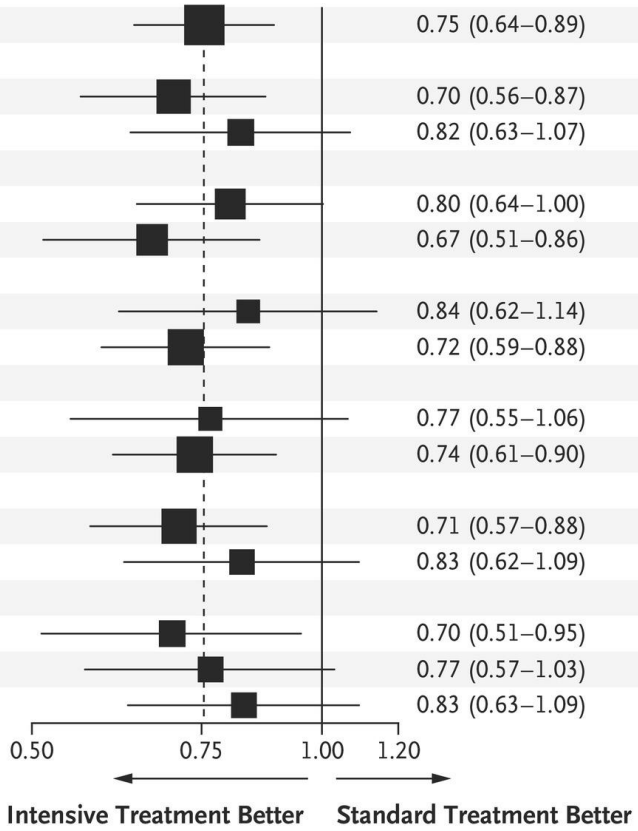

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Table 1. Baseline Characteristics of the Study Participants.*

Characteristic	Intensive Treatment (N=4678)	Standard Treatment (N=4683)
Criterion for increased cardiovascular risk — no. (%)†		
Age ≥75 yr	1317 (28.2)	1319 (28.2)
Chronic kidney disease‡	1330 (28.4)	1316 (28.1)
Cardiovascular disease	940 (20.1)	937 (20.0)
Clinical	779 (16.7)	783 (16.7)
Subclinical	247 (5.3)	246 (5.3)
Framingham 10-yr cardiovascular disease risk score ≥15%	2870 (61.4)	2867 (61.2)
Female sex — no. (%)	1684 (36.0)	1648 (35.2)
Age — yr		
Overall	67.9±9.4	67.9±9.5
Among those ≥75 yr of age	79.8±3.9	79.9±4.1
Race or ethnic group — no. (%)§		
Non-Hispanic black	1379 (29.5)	1423 (30.4)
Hispanic	503 (10.8)	481 (10.3)
Non-Hispanic white	2698 (57.7)	2701 (57.7)
Other	98 (2.1)	78 (1.7)
Black race§¶	1454 (31.1)	1493 (31.9)
Baseline blood pressure — mm Hg		
Systolic	139.7±15.8	139.7±15.4
Diastolic	78.2±11.9	78.0±12.0
Distribution of systolic blood pressure — no. (%)		
≤132 mm Hg	1583 (33.8)	1553 (33.2)
>132 mm Hg to <145 mm Hg	1489 (31.8)	1549 (33.1)
≥145 mm Hg	1606 (34.3)	1581 (33.8)
Serum creatinine — mg/dl	1.07±0.34	1.08±0.34
Estimated GFR — ml/min/1.73 m^2		
Among all participants	71.8±20.7	71.7±20.5
Among those with estimated GFR ≥60 ml/min/1.73 m^2	81.3±15.5	81.1±15.5
Among those with estimated GFR <60 ml/min/1.73 m^2	47.8±9.5	47.9±9.5
Ratio of urinary albumin (mg) to creatinine (g)	44.1±178.7	41.1±152.9
Fasting total cholesterol — mg/dl	190.2±41.4	190.0±40.9
Fasting HDL cholesterol — mg/dl	52.9±14.3	52.8±14.6
Fasting total triglycerides — mg/dl	124.8±85.8	127.1±95.0
Fasting plasma glucose — mg/dl	98.8±13.7	98.8±13.4
Statin use — no./total no. (%)	1978/4645 (42.6)	2076/4640 (44.7)
Aspirin use — no./total no. (%)	2406/4661 (51.6)	2350/4666 (50.4)
Smoking status — no. (%)		
Never smoked	2050 (43.8)	2072 (44.2)
Former smoker	1977 (42.3)	1996 (42.6)
Current smoker	639 (13.7)	601 (12.8)
Missing data	12 (0.3)	14 (0.3)
Framingham 10-yr cardiovascular disease risk score — %	20.1±10.9	20.1±10.8
Body-mass index‖	29.9±5.8	29.8±5.7
Antihypertensive agents — no./patient	1.8±1.0	1.8±1.0
Not using antihypertensive agents — no. (%)	432 (9.2)	450 (9.6)

* Plus–minus values are means ±SD. There were no significant differences (P<0.05) between the two groups except for statin use (P=0.04). To convert the values for creatinine to micromoles per liter, multiply by 88.4. To convert the values for cholesterol to millimoles per liter, multiply by 0.02586. To convert the values for triglycerides to millimoles per liter, multiply by 0.01129. To convert the values for glucose to millimoles per liter, multiply by 0.05551. GFR denotes glomerular filtration rate, and HDL high-density lipoprotein.

† Increased cardiovascular risk was one of the inclusion criteria.

‡ Chronic kidney disease was defined as an estimated glomerular filtration rate of less than 60 ml per minute per 1.73 m^2 of body-surface area.

§ Race and ethnic group were self-reported.

¶ Black race includes Hispanic black and black as part of a multiracial identification.

‖ The body-mass index is the weight in kilograms divided by the square of the height in meters.

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Table 2. Primary and Secondary Outcomes and Renal Outcomes.*

Outcome	Intensive Treatment		Standard Treatment		Hazard Ratio (95% CI)	P Value
	no. of patients (%)	*% per year*	*no. of patients (%)*	*% per year*		
All participants	**(N=4678)**		**(N=4683)**			
Primary outcome†	243 (5.2)	1.65	319 (6.8)	2.19	0.75 (0.64–0.89)	<0.001
Secondary outcomes						
Myocardial infarction	97 (2.1)	0.65	116 (2.5)	0.78	0.83 (0.64–1.09)	0.19
Acute coronary syndrome	40 (0.9)	0.27	40 (0.9)	0.27	1.00 (0.64–1.55)	0.99
Stroke	62 (1.3)	0.41	70 (1.5)	0.47	0.89 (0.63–1.25)	0.50
Heart failure	62 (1.3)	0.41	100 (2.1)	0.67	0.62 (0.45–0.84)	0.002
Death from cardiovascular causes	37 (0.8)	0.25	65 (1.4)	0.43	0.57 (0.38–0.85)	0.005
Death from any cause	155 (3.3)	1.03	210 (4.5)	1.40	0.73 (0.60–0.90)	0.003
Primary outcome or death	332 (7.1)	2.25	423 (9.0)	2.90	0.78 (0.67–0.90)	<0.001
Participants with CKD at baseline	**(N=1330)**		**(N=1316)**			
Composite renal outcome‡	14 (1.1)	0.33	15 (1.1)	0.36	0.89 (0.42–1.87)	0.76
≥50% reduction in estimated GFR§	10 (0.8)	0.23	11 (0.8)	0.26	0.87 (0.36–2.07)	0.75
Long-term dialysis	6 (0.5)	0.14	10 (0.8)	0.24	0.57 (0.19–1.54)	0.27
Kidney transplantation	0		0			
Incident albuminuria¶	49/526 (9.3)	3.02	59/500 (11.8)	3.90	0.72 (0.48–1.07)	0.11
Participants without CKD at baseline‖	**(N=3332)**		**(N=3345)**			
≥30% reduction in estimated GFR to <60 ml/min/1.73 m^2§	127 (3.8)	1.21	37 (1.1)	0.35	3.49 (2.44–5.10)	<0.001
Incident albuminuria¶	110/1769 (6.2)	2.00	135/1831 (7.4)	2.41	0.81 (0.63–1.04)	0.10

* CI denotes confidence interval, and CKD chronic kidney disease.
† The primary outcome was the first occurrence of myocardial infarction, acute coronary syndrome, stroke, heart failure, or death from cardiovascular causes.
‡ The composite renal outcome for participants with CKD at baseline was the first occurrence of a reduction in the estimated GFR of 50% or more, long-term dialysis, or kidney transplantation.
§ Reductions in the estimated GFR were confirmed by a second laboratory test at least 90 days later.
¶ Incident albuminuria was defined by a doubling of the ratio of urinary albumin (in milligrams) to creatinine (in grams) from less than 10 at baseline to greater than 10 during follow-up. The denominators for number of patients represent those without albuminuria at baseline.
‖ No long-term dialysis or kidney transplantation was reported among participants without CKD at baseline.

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Table 3. Serious Adverse Events, Conditions of Interest, and Monitored Clinical Events.

Variable	Intensive Treatment (N=4678)	Standard Treatment (N=4683)	Hazard Ratio	P Value
	no. of patients (%)			
Serious adverse event*	1793 (38.3)	1736 (37.1)	1.04	0.25
Conditions of interest				
Serious adverse event only				
Hypotension	110 (2.4)	66 (1.4)	1.67	0.001
Syncope	107 (2.3)	80 (1.7)	1.33	0.05
Bradycardia	87 (1.9)	73 (1.6)	1.19	0.28
Electrolyte abnormality	144 (3.1)	107 (2.3)	1.35	0.02
Injurious fall†	105 (2.2)	110 (2.3)	0.95	0.71
Acute kidney injury or acute renal failure‡	193 (4.1)	117 (2.5)	1.66	<0.001
Emergency department visit or serious adverse event				
Hypotension	158 (3.4)	93 (2.0)	1.70	<0.001
Syncope	163 (3.5)	113 (2.4)	1.44	0.003
Bradycardia	104 (2.2)	83 (1.8)	1.25	0.13
Electrolyte abnormality	177 (3.8)	129 (2.8)	1.38	0.006
Injurious fall†	334 (7.1)	332 (7.1)	1.00	0.97
Acute kidney injury or acute renal failure‡	204 (4.4)	120 (2.6)	1.71	<0.001
Monitored clinical events				
Adverse laboratory measure§				
Serum sodium <130 mmol/liter	180 (3.8)	100 (2.1)	1.76	<0.001
Serum sodium >150 mmol/liter	6 (0.1)	0		0.02
Serum potassium <3.0 mmol/liter	114 (2.4)	74 (1.6)	1.50	0.006
Serum potassium >5.5 mmol/liter	176 (3.8)	171 (3.7)	1.00	0.97
Orthostatic hypotension¶				
Alone	777 (16.6)	857 (18.3)	0.88	0.01
With dizziness	62 (1.3)	71 (1.5)	0.85	0.35

* A serious adverse event was defined as an event that was fatal or life-threatening, that resulted in clinically significant or persistent disability, that required or prolonged a hospitalization, or that was judged by the investigator to represent a clinically significant hazard or harm to the participant that might require medical or surgical intervention to prevent one of the other events listed above.

† An injurious fall was defined as a fall that resulted in evaluation in an emergency department or that resulted in hospitalization.

‡ Acute kidney injury or acute renal failure were coded if the diagnosis was listed in the hospital discharge summary and was believed by the safety officer to be one of the top three reasons for admission or continued hospitalization. A few cases of acute kidney injury were noted in an emergency department if the participant presented for one of the other conditions of interest.

§ Adverse laboratory measures were detected on routine or unscheduled tests; routine laboratory tests were performed at 1 month, then quarterly during the first year, then every 6 months.

¶ Orthostatic hypertension was defined as a drop in systolic blood pressure of at least 20 mm Hg or in diastolic blood pressure of at least 10 mm Hg at 1 minute after the participant stood up, as compared with the value obtained when the participant was seated. Standing blood pressures were measured at screening, baseline, 1 month, 6 months, 12 months, and yearly thereafter. Participants were asked if they felt dizzy at the time the orthostatic measure was taken.

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- Among patients at high risk for cardiovascular events but without diabetes, targeting a systolic blood pressure of less than 120 mm Hg, as compared with less than 140 mm Hg, resulted in lower rates of fatal and nonfatal major cardiovascular events and death from any cause, although significantly higher rates of some adverse events were observed in the intensive-treatment group.

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New thresholds/targets for the high risk patient post-SPRINT: *who does this apply to??*

- Clinical or sub-clinical cardiovascular disease

  OR

- Chronic kidney disease (non-diabetic nephropathy, proteinuria <1 g/d, *estimated glomerular filtration rate 20-59 mL/min/1.73m^2)

  OR

- †Estimated 10-year global cardiovascular risk ≥15%

  OR

- Age ≥ 75 years

Patients with one or more clinical indications should consent to intensive management.

* Four variable MDRD equation

† Framingham Risk Score, D'Agastino, Circulation 2008

New thresholds/targets for the high risk patient post-SPRINT: *who does this NOT apply to??*

Limited or No Evidence:

- Heart failure (EF <35%) or recent MI (within last 3 months)
- Indication for, but not currently receiving a beta-blocker
- Frail or institutionalized elderly

Inconclusive Evidence:

- Diabetes mellitus
- Prior stroke
- eGFR < 20 ml/min/1.73m2

Contraindications:

- Patient unwilling or unable to adhere to multiple medications
- Standing SBP <110 mmHg
- Inability to measure SBP accurately
- Known secondary cause(s) of hypertension

New Guideline post-SPRINT

New 2016

For high-risk patients, aged ≥ 50 years, with systolic BP levels >/=130 mm Hg, intensive management to target a systolic BP </=120 mm Hg should be considered.

Intensive management should be guided by automated office BP measurements.

Patient selection for intensive management is recommended and caution should be taken in certain high-risk groups.

Hypertension Guidelines

- 2013 European Hypertension Guidelines
  - 140/90
- American Guidelines
  - 140/90

CHEP 2016 Guidelines

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 evaluation of patients with suspected secondary forms of hypertension (focus on primary hyperaldosteronism)
- ***Updating*** the treatment of patients with hypertension with concurrent coronary artery disease
- ***New*** recommendations on the diagnosis and management of hypertension in pediatric patients ***(NOT the focus of this presentation)***

Office BP Measurement Methods

Office (attended):

- Auscultatory (mercury, aneroid) – not recommended
- Non-automated oscillometric (electronic)

Automated office (unattended): AOBP

- Oscillometric (electronic)

2015 Recommendation on BP Measurement

New 2015

AOBP:

- Measurement using electronic (oscillometric) devices in the upper arm
- Provider outside the room/area (mitigates white coat effect)
- Multiple readings
- Mean automatically calculated

New 2016 Recommendation
BP Measurement

- Automated office blood pressure (AOBP) is the preferred method of performing in-office BP measurement.

Automated Office (unattended, AOBP)

Oscillometric (electronic)

Comparison of Automated Office, Ambulatory and Pharmacy BP measurements

AOBP is Not Affected by the Setting in Which BP is Recorded

- Readings recorded in an ABPM unit or in an office waiting room are similar to AOBP recorded in a physician's examination room

Myers MG, et al. Blood Press Monit 2009;14:108-11
Greiver M, et al. Blood Press Monit 2012;17:137-8
Armstrong D, et al. Blood Press Monit 2015;20:204-8

- AOBP results obtained in the pharmacy were comparable with AOBP results from the physician's office

Chambers LW, et al. CMAJ Open 2013;1:E37-42

Comparisons of blood pressure readings obtained in clinical settings using different methods of blood pressure measurement

	Mean blood pressure* (mmHg)		
	Centre for Studies in Primary Care[1]	ABPM referral unit[2]	CAMBO trial[3]
Routine manual office BP	151/83	152/87	150/81
Automated office BP	140/80	132/75	135/77
Awake ambulatory BP	142/80	134/77	133/74

***** *The automated office blood pressure (BP) and awake ambulatory BP were similar, and both were lower than the routine manual BP obtained in community practice.*

1. *Beckett L et al , BMC Cardiovasc. Disord. 2005; 5: 18.* ***2.*** *Myers MG et al, J. Hypertens. 2009; 27: 280.* ***3.*** *Myers MG, et al. BMJ 2011; 342: d286.*

Predictive value of AOBP

AOBP predicts end-organ damage

- Systolic AOBP correlates with **LVMI** similarly to awake ABPM
- AOBP and 24-h ABPM have similar predictive ability for **microalbuminuria**
- AOBP is more strongly associated with **cIMT** (compared to OBPM)

cIMT: Carotid Intima Media Thickness
LVMI: Left Ventricular Mass Index

Campbell NRC, et al. J Hum Hypertens 2007;21:588-90; Andreadis EA, et al. Am J Hypertens 2011;24:661-6; Andreadis EA, et al. Am J Hypertens 2012;25:969-73.

Predictive Value of AOBP
The CHAP Study

AOBP Predicts Cardiovascular Events

- 3627 community-dwelling residents, aged >65 yrs, untreated for hypertension – part of the CHAP trial
- BpTRU® device in community pharmacies
- f/u 4.9 ± 1.0 yrs for **fatal and non-fatal CV events**

Myers MG, et al. Hypertension 2015;66:489-95. Kaczorowski J, et al. 2008 Preventive Medicine 46: 537–544

Predictive Value of AOBP

Cardiovascular Events

Systolic Blood Pressure

Systolic BP	Hazard Ratio
< 110	1.35 (0.8-2.3)
110-119 (referent)	1.00
120-129	1.08 (0.7-1.7)
130-139	1.30 (0.9-2.0)
135-144	1.66 (1.1-2.5)
140-149	1.79 (1.2-2.8)
150-159	1.96 (1.2-3.2)
160+	2.06 (1.3-3.4)

Diastolic Blood Pressure

Diastolic BP	Hazard Ratio
< 60	1.06 (0.6-1.9)
60-69 (referent)	1.00
70-79	1.15 (0.8-1.6)
80-89	1.72 (1.2-2.5)
90 +	2.07(1.3-3.2)

Myers MG, et al. Hypertension 2015;66:489-95.

Conclusions

- The diagnosis of hypertension should be based on **out-of-office** measurements
- AOPM should be used
- Assessing cardiovascular risk to Target BP Control

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

40 yo man, diabetes, out of office BP: 135/75

- A) no treatment
- B) Target ≤ 120/80
- C) Target ≤ 130/80
- D) Target ≤ 140/80

40 yo man, diabetes, out of office BP: 135/75

- A)
- B)
- C) Target ≤ 130/80
- D)

30 yo woman, Diabetes, Alb/creat 10, BP 125/70

- A) No Treatment
- B) Treat with ACEI or ARB
- C) Target 120 systolic

30 yo woman, Diabetes, Alb/creat 10, BP 125/70

- A)
- B) Treat with ACEI or ARB
- C)

62 yo woman with CAD (prior ACS + stent), No Diabetes, BP 135/72

- A) Already well controled
- B) Target 120
- C) Target 130
- D) Target 140

62 yo woman with CAD (prior ACS + stent), No Diabetes, BP 135/72

- A)
- B) Target 120
- C)
- D)

75 yo man, No CAD, No Diabetes, BP 150/70

- A) No treatment
- B) Target 150
- C) Target 140
- D) Target 130
- E) Target 120

75 yo man, No CAD, No Diabetes, BP 150/70

- A)
- B)
- C) Target 140
- D)
- E)

Questions?