

# HİPERTANSİYONDA BİREYSELLEŞTİRİLMİŞ TEDAVİ

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**Geriatrici Bilim Dalı**

**6. İstanbul Dahiliye Klinikleri Buluşması**

**19 Kasım 2016**

# HANGİ KILAVUZ?

- 2013 ESH/ESC Kılavuzu
- 2014 JNC-8 Kılavuzu

# Özel Gruplarda Hipertansiyon

- **Diabetes mellitus**
- **Kronik Böbrek Yetmezliği**
- **Serebrovasküler Hastalık**
- **İskemik Kalp Hastalığı**
- **Kalp yetersizliği/Sol ventrikül Disfonksiyonu**
- **Gebelik**
- **Yaşlılık**

# HT TANIMI

- OFİSTE
  - $>140/90$  mm Hg
- EVDE
  - $> 135/85$  mm Hg\* (24 saat ortalaması)
    - Gündüz (uyanık)  $>140/90$  mmHg
    - Gece (uyku)  $>125/75$  mmHg

\*Ambulatory and home blood pressure monitoring and white coat hypertension in adults. UpToDate. [Kaplan N, Townsend R.](#)

# Hipertansiyonu Olan Erişkinlerde Kan Basıncı Hedefleri ve Başlangıç İlaç Tedavisi

Guideline	Population	Goal BP, mm Hg	Initial Drug Treatment Options
2014 Hypertension guideline	General ≥60 y	<150/90	Nonblack: thiazide-type diuretic, ACEI, ARB, or CCB
JNC8	General <60 y	<140/90	Black: thiazide-type diuretic or CCB
	Diabetes	<140/90	Thiazide-type diuretic, ACEI, ARB, or CCB
	CKD	<140/90	ACEI or ARB
ESH/ESC 2013 <sup>37</sup>	General nonelderly	<140/90	β-Blocker, diuretic, CCB, ACEI, or ARB
	General elderly <80 y	<150/90	
	General ≥80 y	<150/90	
	Diabetes	<140/85	ACEI or ARB
	CKD no proteinuria	<140/90	ACEI or ARB
	CKD + proteinuria	<130/90	
CHEP 2013 <sup>38</sup>	General <80 y	<140/90	Thiazide, β-blocker (age <60y), ACEI (nonblack), or ARB
	General ≥80 y	<150/90	
	Diabetes	<130/80	ACEI or ARB with additional CVD risk ACEI, ARB, thiazide, or DHPCCB without additional CVD risk
	CKD	<140/90	ACEI or ARB
ADA 2013 <sup>39</sup>	Diabetes	<140/80	ACEI or ARB
KDIGO 2012 <sup>40</sup>	CKD no proteinuria	≤140/90	ACEI or ARB
	CKD + proteinuria	≤130/80	
NICE 2011 <sup>41</sup>	General <80 y	<140/90	<55 y: ACEI or ARB
	General ≥80 y	<150/90	≥55 y or black: CCB
ISHIB 2010 <sup>42</sup>	Black, lower risk	<135/85	Diuretic or CCB
	Target organ damage or CVD risk	<130/80	



# DIABETES MELLITUS

# Diabetes mellitus + HT

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JNC8	General <60 y	<140/90	Black: thiazide-type diuretic or CCB
	Diabetes	<140/90	Thiazide-type diuretic, ACEI, ARB, or CCB
ESH/ESC 2013 <sup>37</sup>	CKD	<140/90	ACEI or ARB
	General nonelderly	<140/90	β-Blocker, diuretic, CCB, ACEI, or ARB
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ISHIB 2010 <sup>42</sup>	Black, lower risk	<135/85	Diuretic or CCB
	Target organ damage or CVD risk	<130/80	



# KRONİK BÖBREK YETERSİZLİĞİ



# KBY+ HT

Guideline	Population	Goal BP, mm Hg	Initial Drug Treatment Options
2014 Hypertension guideline	General ≥60 y	<150/90	Nonblack: thiazide-type diuretic, ACEI, ARB, or CCB
JNC8	General <60 y	<140/90	Black: thiazide-type diuretic or CCB
	Diabetes	<140/90	Thiazide-type diuretic, ACEI, ARB, or CCB
	CKD	<140/90	ACEI or ARB
ESH/ESC 2013 <sup>37</sup>	General nonelderly	<140/90	β-Blocker, diuretic, CCB, ACEI, or ARB
	General elderly <80 y	<150/90	
	General ≥80 y	<150/90	
	Diabetes	<140/85	ACEI or ARB
	CKD no proteinuria	<140/90	ACEI or ARB
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CHEP 2013 <sup>38</sup>	General <80 y	<140/90	Thiazide, β-blocker (age <60y), ACEI (nonblack), or ARB
	General ≥80 y	<150/90	
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	General ≥80 y	<150/90	≥55 y or black: CCB
ISHIB 2010 <sup>42</sup>	Black, lower risk	<135/85	Diuretic or CCB
	Target organ damage or CVD risk	<130/80	



# SEREBROVASKÜLER HASTALIK

# Akut inme + HT

- ESH 2013 (CHHIPS, ACCESS, SCAST çalışmaları) (3B)
  - Akut iskemik inmede ilk haftada KB düşürücü tedavi ile araya girilmesi önerilmemektedir
    - Bu öneri KB değerinden bağımsızdır
  - Çok yüksek sistolik KB değerlerinde klinik olarak karar verilmelidir
- NICE İnme Kılavuzu (2008)
  - Sadece aşağıdaki durumlar varsa anti-HT tedavi ver
    - Hipertansif ensefalopati
    - Hipertansif nefropati
    - Hipertansif kalp yetersizliği/MI
    - Aortik diseksiyon
    - Preeklampsi/eklampsi
    - İntraserebral kanama ile birlikte sistolik KB>200 mmHg
  - Trombolitik için KB <185/110 mmHg tut

# Akut inme + HT

- **AHA/ASA Guideline 2013**
- AntiHT tedavi ařađıdaki **ařađıdaki durumlar haricinde verilmemelidir**
  - SBP >220 mm Hg
  - DBP >120 mm Hg
- İlk 24 saatte kan basıncını ancak %15 seviyelerinde dűřür (SKB: 30 mm Hg – DKB: 18 mmHg) (Hedef: 190/100 mmHg)
- *İv labetolol, nikardipin*
- İv nitroprussid
- **Akut hemorajik inme**
  - SKB >180 mmHg, Ortalama arter basıncı >130 mmHg ise tedavi et!
    - Hedef <160/90 mm Hg (15 dakikada bir yakın takip!)

# Geçirilmiş İnme + HT

- ESH 2013
  - İnme veya TİA öyküsü olanlara **SKB 140–160 mmHg arasında olsa bile başla (1B) ( $\geq 140/90$  mm Hg ise başla!)**
    - **Hedef < 140/90 mmHg olmalı (2B)**
      - Yaşlılarda hedef biraz daha yüksek tutulabilir (2B)
  - **Tüm anti-HT ilaç grupları inmenin önlenmesinde önerilebilir (1A)**
    - ACEİ\*, KKB, Diüretikler, ACEİ+KKB, ACEİ+diüretik
    - Beta bloker tercih etme



# İSKEMİK KALP HASTALIĞI

# İskemik Kalp Hastalığı + HT

- Hedefler?
  - İlaçla SKB < 130 mmHg indirilmesinin faydasına dair kanıt yok
- HT hastasında yeni geçirilen MI sonrası beta bloker önerilmeli (1A)
  - Beta blokerler ve KKB'ler anti-anjinal semptomatik etkili

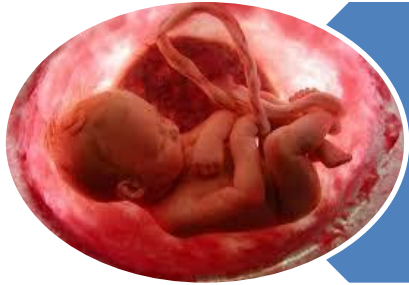


# KALP YETERSİZLİĞİ



# Kalp yetersizliđi + HT

- Tüm hastalarda sistolik KB < 140 mmHg olmalı
  - Semptomatik tedavi
    - Konjesyonda diüretik
    - Kalp hız kontrolünde beta bloker
- Kalp yetersizliđi ve ciddi SV disfonksiyonunda
  - **Diüretik, beta-bloker, ACEi, ARB, ve/veya mineralokortikoid**
  - **EF korunmuşlarda grup farkına dair kanıt yok**



**GEBELİK**

# Gebelik + HT

- **>160/110 mmHg ise antihipertansif tedavi başla**
- **Metildopa, *labetolol* ve nifedipin öneriliyor**
- RAS blokajı önerilmiyor
- **Acil preeklampsi tedavisi:**
  - iv *labetolol*, hidralazin, nitrogliserin infüzyonu (-nitroprussid)
  - beta bloker ve diüretik kullanımına dikkat
- **Emziren annelerde**
  - Metildopa, labetolol, KKB, propranolol, metoprolol güvenli
    - Atenolol, ACE veya ARB güvenli değil
    - Diüretikler süt üretimini azaltabilirler



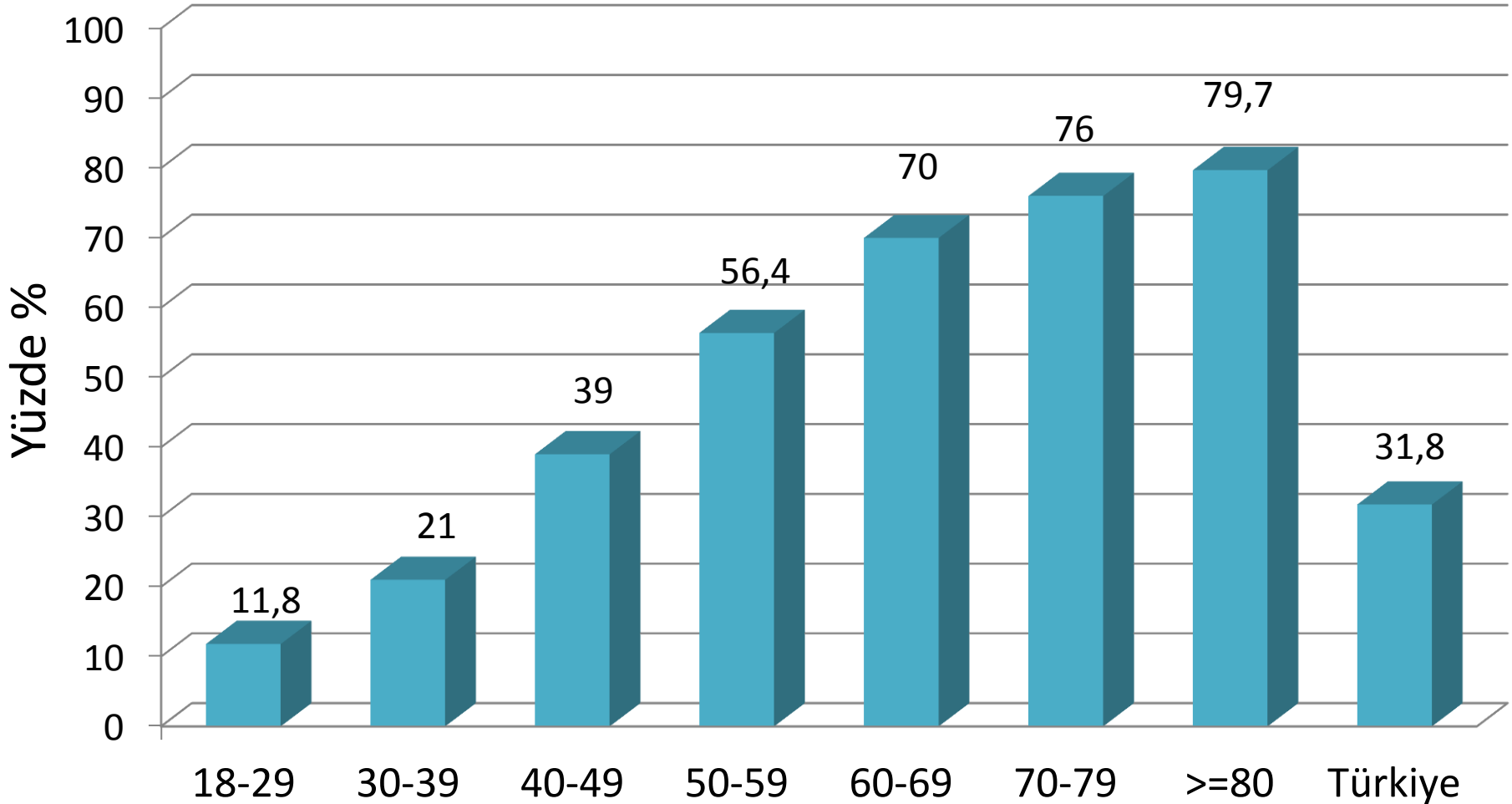
**YAŞLILIK**

# HT YAŞLIDA ÇOK SIK!

- Hipertansiyon (HT)
  - “yaşlılık döneminin hastalığı”dır.
- HT’li olguların  $3/4$ ’ü  $>50$  y (NHANES III).
- $>60-65$  y: %60-80 prevalans!



# Yaş Gruplarında Hipertansiyon Prevalansı



ORIGINAL ARTICLE

## Assessments of functional status, comorbidities, polypharmacy, nutritional status and sarcopenia in Turkish community-dwelling male elderly

Gulistan Bahat<sup>1</sup>, Fatih Tufan<sup>1</sup>, Zümrüt Bahat<sup>2</sup>, Yücel Aydın<sup>3</sup>, Asli Tufan<sup>1</sup>, Timur Selcuk Akpınar<sup>3</sup>, Nilgun Erten<sup>3</sup>, and Mehmet Akif Karan<sup>1</sup>

*Aging Clin Exp Res*. 2014 Jun;26(3):255-9. doi: 10.1007/s40520-014-0229-8. Epub 2014 Apr 30.

### Comorbidities, polypharmacy, functionality and nutritional status in Turkish community-dwelling female elderly.

Bahat G<sup>1</sup>, Tufan F, Bahat Z, Tufan A, Aydın Y, Akpınar TS, Nadir S, Erten N, Karan MA.

#### ⊖ Author information

<sup>1</sup>Division of Geriatrics, Department of Internal Medicine, Istanbul Medical School, Istanbul University, Capa, 34390, Istanbul, Turkey, [gbahatozturk@yahoo.com](mailto:gbahatozturk@yahoo.com).

- İTF Geriatri Poliklinik Prevelansı (n= 789, >=60y)  
**%71,7**

# Güncel Hipertansiyon Kılavuzları

**Table 6. Guideline Comparisons of Goal BP and Initial Drug Therapy for Adults With Hypertension**

Guideline	Population	Goal BP, mm Hg	Initial Drug Treatment Options
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	Target organ damage or CVD risk	<130/80	



[Heart](#). 2014 Feb;100(4):317-23. doi: 10.1136/heartjnl-2013-304111. Epub 2013 Jun 27.

## Effects of antihypertensive treatment in patients over 65 years of age: a meta-analysis of randomised controlled studies.

[Briasoulis A](#)<sup>1</sup>, [Agarwal V](#), [Tousoulis D](#), [Stefanadis C](#).

**<150/80 mmHg**

inme, KVH, KY ve herhangi bir sebepten ölüm ↓

18 çalışma, Takip süresi 3,4 yıl (ortalama)

n=114 854 (≥65y)

**CONCLUSION:** Reducing BP to a level of 150/80 mmHg is associated with large benefit in stroke, cardiovascular and all-cause mortality as well as heart failure risk in elderly individuals. Different antihypertensive regimens with equal BP reduction have similar effects on cardiovascular outcomes. SBP rather than DBP reduction is significantly related to lower cardiovascular risk in this population.

# Madalyonun öteki yüzü





NIH Public Access

Author Manuscript

*Arch Intern Med.* Author manuscript; available in PMC 2013 August 13.

Published in final edited form as:

*Arch Intern Med.* 2012 August 13; 172(15): 1162–1168. doi:10.1001/archinternmed.2012.2555.

**Rethinking the Association of High Blood Pressure with  
Mortality in Elderly Adults: The Impact of Frailty**

**>=65 y  
n= 2340**

- **Kırılgan yaşlılar (Yürüme Hızı)**
  - **KB vs Mortalite ilişki yok**
  - **En kırılgan olanlarda “yüksek KB” olanlarda “mortalite daha az”!**

April 2014 >

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Original Investigation | April 2014

# Antihypertensive Medications and Serious Fall Injuries in a Nationally Representative Sample of Older Adults

>70y  
n=4961

## AntiHT Tx yaşlılarda ciddi düşmeler!

*JAMA Intern Med.* 2014;174(4):588-595. doi:10.1001/jamainternmed.2013.14764.

Text Size: **A** A A

During follow-up, 446 participants (9.0%) experienced serious fall injuries, and 837 (16.9%) died. The adjusted hazard ratios for serious fall injury were 1.40 (95% CI, 1.03-1.90) in the moderate-intensity and 1.28 (95% CI, 0.91-1.80) in the high-intensity antihypertensive groups compared with nonusers. Although the difference in adjusted hazard ratios across the groups did not reach statistical significance, results were similar in the propensity score-matched subcohort. Among 503 participants with a previous fall injury, the adjusted hazard ratios were 2.17 (95% CI, 0.98-4.80) for the moderate-intensity and 2.31 (95% CI, 1.01-5.29) for the high-intensity antihypertensive groups.

**CONCLUSIONS AND RELEVANCE** Antihypertensive medications were associated with an increased risk of serious fall injuries, particularly among those with previous fall injuries. The potential harms vs benefits of antihypertensive medications should be weighed in deciding to

Tinetti ME, et al. *JAMA Intern Med.* 2014 Apr;174(4):588-95.

## Effects of antihypertensive treatment in patients over 65 years of age: a meta-analysis of randomised controlled studies.

Briasoulis A<sup>1</sup>, Aqarwal V, Tousoulis D, Stefanadis C.

**CONTEXT:** Despite the high incidence of hypertension, the elderly population is not represented in clinical trials as they have upper age limits or do not present age-specific results.

**OBJECTIVES:** The present study was designed to systematically review prospective randomized trials and assess the effects of antihypertensive treatment on cardiovascular, all-cause mortality, stroke and heart failure in patients over 65 years of age.

**DATA SOURCES:** We systematically searched the electronic databases, MEDLINE, PUBMED, EMBASE and Cochrane for prospective randomized studies (1970-2012) in which patients were randomized either to antihypertensive treatment and non-drug control group or to different antihypertensive treatments.

**STUDY SELECTION:** We identified 18 clinical studies, with 19 control arms and 19 treatment arms examining 59285 controls, 55569 hypertensive patients with an average follow up duration of 3.44 years. The mean age of patients on treatment was 71.04 years.

**DATA EXTRACTION:** Included studies were divided and analyzed in 2 subgroups: i) studies comparing treatment group vs non-drug placebo group with a BP decrease of 27.3/11.1 mmHg and ii) studies comparing two anti-hypertensive regimens with baseline BP ~157/86, and BP reduction to less than 140/80.

**RESULTS:** A significant reduction in all four outcomes was found in the first group of studies. In the second group similar BP reduction resulted in equivalent risk reduction in both treatment groups. In the meta-regression analysis mean SBP difference was linearly associated with all-cause, cardiovascular, stroke and heart failure risk reduction.

**CONCLUSION:** Reducing BP to a level of 150/80 mmHg is associated with large benefit in stroke, cardiovascular and all-cause mortality as well as heart failure risk in elderly individuals. Different antihypertensive regimens with equal BP reduction have similar effects on cardiovascular outcomes. SBP rather than DBP reduction is significantly related to lower cardiovascular risk in this population.

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### [Under-representation of Frail or Medically Compromised Hypertensive Older People in the Paper](#)



Gulistan Bahat, MD Asli Tufan, Mehmet Akif Karan

Istanbul University, Istanbul Medical School, Department of Internal Medicine, Division of Geriatric

Re: [Effects of antihypertensive treatment in patients over 65 years of age: a meta-analysis of randomised controlled studies](#). Briasoulis, et al. **100:4** 317-323  
doi:[10.1136/heartjnl-2013-304111](#)

Under-representation of Frail or Medically Compromised Hypertensive Older People in the Paper Gulistan Bahat\*. Asli Tufan. Mehmet Akif Karan

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- Education In Heart:[Cardiac MRI assessment of atrial fibrosis in atrial fibrillation: implications for diagnosis and therapy](#) (1 Apr 2014)
- Education In Heart:[Analytically false or](#)

The findings by Odden et al<sup>1</sup> and our data stress the importance of adapting practice to the specific needs of each older adult. Function is a collector of the enormous amount of biological and "vital" events that have occurred during the long natural history of each subject<sup>3</sup> and should be factored into assessment and treatment decisions.

New York, NY 10025 (eargulian@chpnet.org).

Conflict of Interest Disclosures: None reported.

1. Odden MC, Peralta CA, Haan MN, Covinsky KE. Rethinking the association of high blood pressure with mortality in elderly adults: the impact of frailty. *Arch Intern Med.* 2012;172(15):1162-1168.
2. Goodwin JS. Gait speed: an important vital sign in old age. *Arch Intern Med.* 2012;172(15):1168-1169.

## Yaşlı Hastada HT Tedavisi Bireyselleştirilmeli! Fonksiyonellik Değerlendirilmeli!

Conflict of Interest Disclosures: None reported.

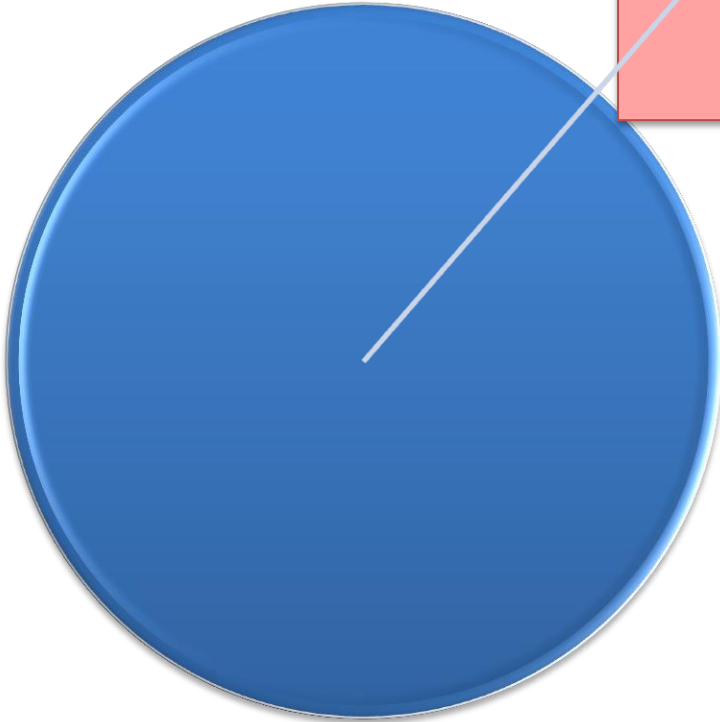
1. Odden MC, Peralta CA, Haan MN, Covinsky KE. Rethinking the association of high blood pressure with mortality in elderly adults: the impact of frailty. *Arch Intern Med.* 2012;172(15):1162-1168.
2. Goodwin JS. Gait speed: an important vital sign in old age. *Arch Intern Med.* 2012;172(15):1168-1169.
3. Rozzini R, Frisoni GB, Ferrucci L, Barbisoni P, Bertozzi B, Trabucchi M. The effect of chronic diseases on physical function: comparison between activities of daily living scales and the Physical Performance Test. *Age Ageing.* 1997;26(4):281-287.

slowly might not be at risk for the adverse effects of high BP. However, for slower-walking older persons, caution is needed with regard to BP levels measured in out-of-office settings, since we recently demonstrated that slower walking speed in older hypertensive patients (n=148; mean age, 75.5 years) was associated with high nocturnal (ie, sleep) BP or less nocturnal BP dipping (ie, non-dipping), but not daytime or office BP.<sup>2</sup> Because a high nocturnal BP level in the general population or in hy-

Rozzini R, Trabucchi M. Gait speed and high blood pressure. *JAMA Intern Med.* 2013 Feb 25;173(4):324-5.

2016

YENİ VERİ  
VAR MI?





# 2015'E KADAR TÜM ÇALIŞMALARDA

- ÇALIŞMA BAŞINDAKİ SKB  $\geq 160$  mmHg

- ÇALIŞMA SONU SKB  $>140$  mmHg

- 140-160 mmHg'li olgularda (ISH) çalışma (-)

# SPRINT

## The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

NOVEMBER 26, 2015

VOL. 373 NO. 22

### A Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group\*

#### ABSTRACT

##### BACKGROUND

The most appropriate targets for systolic blood pressure to reduce cardiovascular morbidity and mortality among persons without diabetes remain uncertain.

##### METHODS

We randomly assigned 9361 persons with a systolic blood pressure of 130 mm Hg or higher and an increased cardiovascular risk, but without diabetes, to a systolic blood-pressure target of less than 120 mm Hg (intensive treatment) or a target of less than 140 mm Hg (standard treatment). The primary composite outcome was myocardial infarction, other acute coronary syndromes, stroke, heart failure, or death from cardiovascular causes.

The members of the writing committee (Jackson T. Wright, Jr., M.D., Ph.D., Jeff D. Williamson, M.D., M.H.S., Paul K. Whelton, M.D., Joni K. Snyder, R.N., B.S.N., M.A., Kaycee M. Sink, M.D., M.A.S., Michael V. Rocco, M.D., M.S.C.E., David M. Reboussin, Ph.D., Mahboob Rahman, M.D., Suzanne Oparil, M.D., Cora E. Lewis, M.D., M.S.P.H., Paul L. Kimmel, M.D., Karen C. Johnson, M.D., M.P.H., David C. Goff, Jr., M.D., Ph.D., Lawrence J. Fine, M.D., Dr.P.H., Jeffrey A. Cutler, M.D., M.P.H., William C. Cush-

# SPRINT

(Systolic Blood Pressure Intervention Trial)

n= 9361

$\geq 50$  yaş

(%28 olgu  $\geq 75$  yaş)

# SPRINT

## (Systolic Blood Pressure Intervention Trial)

- **SKB: 130-180 mmHg + Artmış KV Risk**
- **Artmış KV Risk ( $\geq 1$  Kriter varlığı)**
  - Klinik veya subklinik KV Hastalık
  - Kronik Böbrek Hastalığı (MDRD-eGFR: 20-60 ml/dk/1,73 m<sup>2</sup>)
  - Framingham 10-yıllık KVH Risk skoru  $\geq 15\%$
  - $\geq 75$  y
- **Dışlama Kriterleri**
  - DM
  - İnme

# SPRINT

## (Systolic Blood Pressure Intervention Trial)

- ÇALIŞMA BAŞI SKB  $\geq 130$  mmHg

- Hedef SKB  $< 120$  mm Hg vs Hedef SKB  $< 140$  mmHg

- Çalışma sonucu 121.4 mmHg vs 136.2 mmHg

# SPRINT

(Systolic Blood Pressure Intervention Trial)

- Erken sonlandırıldı!!!

- 3.3 yıl

- Prit

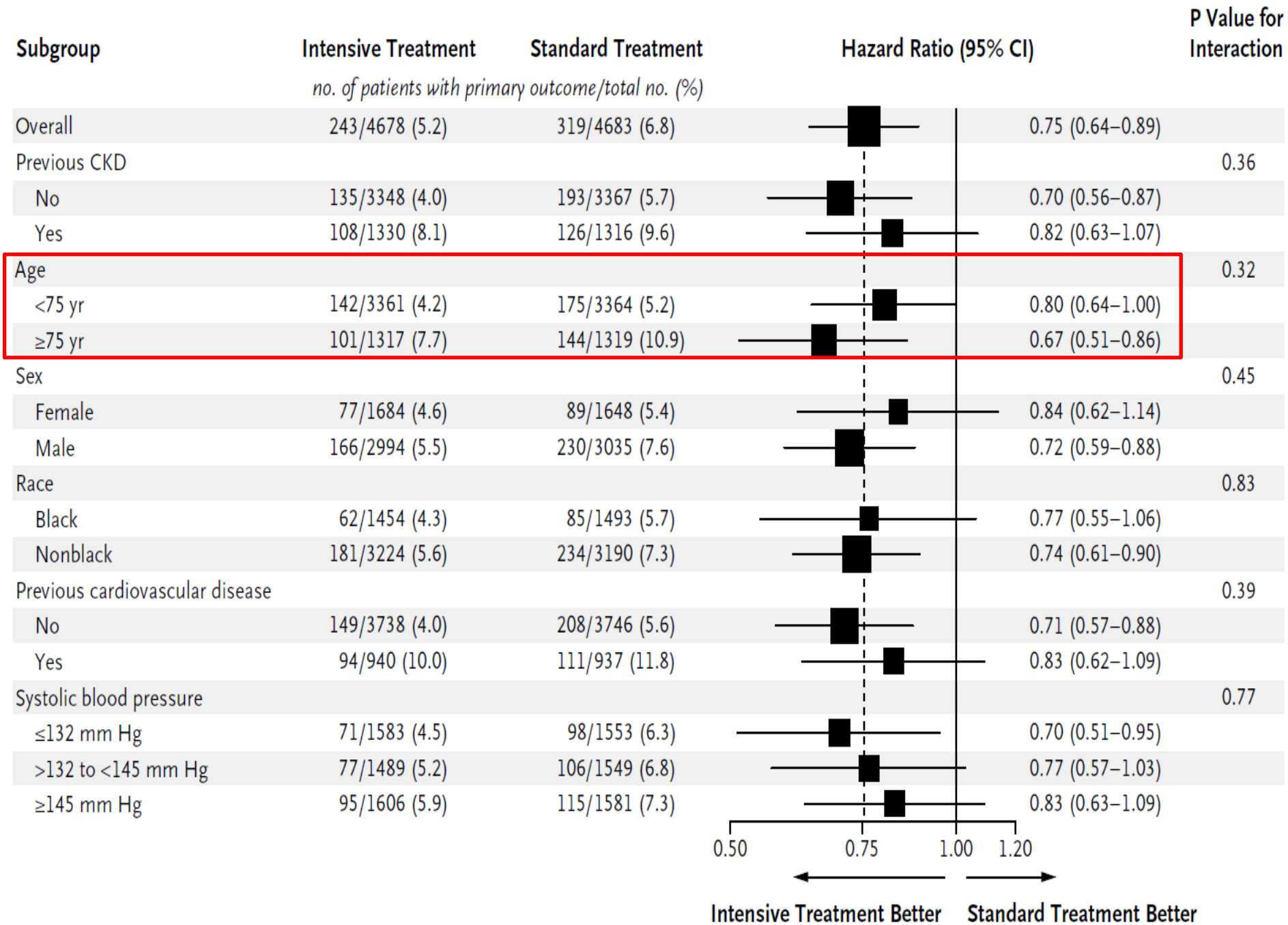
(A)

yet

- Mortalite

**İNTENSİF TEDAVİ  
GRUBUNDA DAHA  
AZ  
(HR:0,75- HR:0,73)**

kalp



# SPRINT

## (Systolic Blood Pressure Intervention Trial)

opment of ESRD was noted, though the number of events was small (Table 2). Among partici-

assignment among participants 75 years of age or older were similar to those in the overall cohort (Table S6 in the Supplementary Appendix).

**DM ve inme (-)**  
**erişkinlerde**  
**ve**  
**yaşlılarda**  
**Hedef SKB < 120 mm**  
**Hg**

### DISCUSSION

SPRINT showed that among adults with hypertension but without diabetes, lowering systolic blood pressure to a target goal of less than 120 mm Hg, as compared with the standard goal of less than 140 mm Hg, resulted in significantly lower rates of fatal and nonfatal cardiovascular events and death from any cause.

Trial participants assigned to the lower systolic blood-pressure target (intensive-treatment group), as compared with those assigned to the higher target (standard-treatment group), had a 25% lower relative risk of the primary outcome; in addition, the intensive-treatment group had lower rates of several other important outcomes, including heart fail-

normalities, and acute kidney injury or acute



- DM (-) ve İnme (-) Erişkinlerde
- Artmış KV Risk Varlığında ( $\geq 1$  Kriter varlığı)

– *Klin*

– *Kro*  
*m2*

– *Fran*

–  $\geq 7$

Hedef SKB < 120 mm Hg  
daha iyi olabilir

*-60 ml/dk/1,73*

*15*

- DM (-) ve İnme (-) Erişkinlerde
- Artmış KV Risk Yaşında ( $\geq 1$  Kriter varlığı)

– K

–

mi

– Fran

–  $\geq 7$

YAŞLILARDA DA MI??

/dk/1,73

15

# Madalyonun öteki yüzü



# SPRINT

## (Systolic Blood Pressure Intervention Trial)

opment of ESRD was noted, though the number of events was small (Table 2). Among participants who did not have a history of ESRD, assignment among participants 75 years of age or older was similar to that in the overall cohort (Appendix).

KIRILGAN  
YAŞLILAR???

< 120 mm Hg

in the Supplementary Appendix). Serious adverse events of hypotension, syncope, electrolyte abnormalities, and acute kidney injury or acute heart failure were reported in 1.1% of participants assigned to the lower systolic blood-pressure target (intensive-treatment group), as compared with those assigned to the higher target (standard-treatment group), had a 25% lower relative risk of the primary outcome; in addition, the intensive-treatment group had lower rates of several other important outcomes, including heart fail-

## A Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group\*

of cardiovascular events. Increased cardiovascular risk was defined by one or more of the following: clinical or subclinical cardiovascular disease other than stroke; chronic kidney disease, excluding polycystic kidney disease, with an estimated glomerular filtration rate (eGFR) of 20 to less than 60 ml per minute per 1.73 m<sup>2</sup> of body-surface area, calculated with the use of the four-variable Modification of Diet in Renal Disease equation; a 10-year risk of cardiovascular disease of 15% or greater on the basis of the Framingham risk score; or an age of 75 years or older. Patients with diabetes mellitus or prior stroke were excluded. Detailed inclusion and exclusion criteria are listed in the Supplementary Appendix. All participants provided written informed

Takeda Pharmaceuticals International and Arbor Pharmaceuticals; neither company had any other role in the study.

Participants were seen monthly for the first 3 months and every 3 months thereafter. Medications for participants in the intensive-treatment group were adjusted on a monthly basis to target a systolic blood pressure of less than 120 mm Hg. For participants in the standard-treatment group, medications were adjusted to target a systolic blood pressure of 135 to 139 mm Hg, and the dose was reduced if systolic blood pressure was less than 130 mm Hg on a single visit or less than 135 mm Hg on two consecutive visits. Dose adjustment was based on a mean of three blood-pressure measure-

Diabetes mellitus

inme

The NEW ENGLAND  
JOURNAL of MEDICINE

Demans

Bakımevi ihtiyacı

Son iki yılda kanser

ESTABLISHED IN 1812

SEPTEMBER 26, 2015

VOLUME 373 NO. 22

A Randomized Trial of Intensive  
Statins in Blood Pressure Control

The SPIN Research Group

<3 yıldan az beklenen sürvi

<6 ayda semt. KY veya EF <%35

<3 ayda geçirilmiş kardiyovasküler olay

1 dk

durma sonrası SKB <110 mmHg

<6 ayda %10 < istemsiz kilo kaybı

**YAŞLILARDA SPRINT İLERİ ANALİZİ?**

# SPRINT $\geq 75$ y

## Original Investigation

### Intensive vs Standard Blood Pressure Control and Cardiovascular Disease Outcomes in Adults Aged $\geq 75$ Years A Randomized Clinical Trial

Jeff D. Williamson, MD, MHS; Mark A. Supiano, MD; William B. Applegate, MD, MPH; Dan R. Berlowitz, MD; Ruth C. Campbell, MD, MSPH; Glenn M. Chertow, MD; Larry J. Fine, MD; William E. Haley, MD; Amret T. Hawfield, MD; Joachim H. Ix, MD, MAS; Dalane W. Kitzman, MD; John B. Kostis, MD; Marie A. Krousel-Wood, MD; Lenore J. Launer, PhD; Suzanne Oparil, MD; Carlos J. Rodriguez, MD, MPH; Christianne L. Roumie, MD, MPH; Ronald I. Shorr, MD, MS; Kaycee M. Sink, MD, MAS; Virginia G. Wadley, PhD; Paul K. Whelton, MD; Jeffrey Whittle, MD; Nancy F. Woolard; Jackson T. Wright Jr, MD, PhD; Nicholas M. Pajewski, PhD; for the SPRINT Research Group



Table 1. Baseline Characteristics of Participants Aged 75 Years or Older

	Intensive Treatment (n = 1317)	Standard Treatment (n = 1319)
Female sex	499 (37.9)	501 (38.0)
Age, mean (SD), y	79.8 (3.9)	79.9 (4.1)
Race/ethnicity, No. (%)		
White	977 (74.2)	987 (74.8)
Black	225 (17.1)	226 (17.1)
Hispanic	89 (6.8)	85 (6.4)
Other	26 (2.0)	21 (1.6)
Seated blood pressure, mean (SD), mm Hg		
Systolic	141.6 (15.7)	141.6 (15.8)
Diastolic	71.5 (11.0)	70.9 (11.0)
Orthostatic hypotension, No. (%)	127 (9.6)	124 (9.4)
Serum creatinine, median (IQR), mg/dL	1.1 (0.9-1.3)	1.1 (0.9-1.3)
Estimated GFR <sup>a</sup>		
Mean (SD), mL/min/1.73 m <sup>2</sup>	63.4 (18.2)	63.3 (18.3)
Level <60 mL/min/1.73 m <sup>2</sup> , No. (%)	584 (44.3)	577 (43.7)
Level <45 mL/min/1.73 m <sup>2</sup> , No. (%)	207 (15.7)	212 (16.1)
Urinary albumin to creatinine ratio, median (IQR), mg/g	13.0 (7.2-31.6)	13.4 (7.2-33.4)
History of cardiovascular disease, No. (%)	338 (25.7)	309 (23.4)
Total cholesterol, mean (SD), mg/dL	181.4 (39.0)	181.8 (38.7)
Fasting HDL cholesterol, mean (SD), mg/dL	55.9 (15.1)	55.7 (14.9)
Fasting total triglycerides, median (IQR), mg/dL	96.0 (71.0-130.0)	99.0 (72.0-134.5)
Fasting plasma glucose, mean (SD), mg/dL	97.9 (12.1)	98.2 (11.6)
Statin use, No. (%)	682 (51.8)	697 (52.8)
Aspirin use, No. (%)	820 (62.3)	765 (58.0)
10-y Framingham cardiovascular disease risk, median (IQR), %	24.2 (16.8-32.8)	25.0 (17.0-33.4)
Body mass index, mean (SD) <sup>b</sup>	27.8 (4.9)	27.7 (4.6)
No. of antihypertensive agents taking at baseline visit, mean (SD)	1.9 (1.0)	1.9 (1.0)
<b>Gait speed</b>		
Median (IQR), m/s	0.90 (0.77-1.05)	0.92 (0.77-1.06)
<b>Speed &lt;0.8 m/s, No. (%)</b>	<b>371 (28.2)</b>	<b>369 (28.0)</b>
Frailty index, median (IQR) <sup>c</sup>	0.18 (0.13-0.23)	0.17 (0.12-0.22)
<b>Frailty status, No. (%)</b>		
Fit (frailty index ≤0.10)	159 (12.1)	190 (14.4)
<b>Less fit (frailty index &gt;0.10 to ≤0.21)</b>	<b>711 (54.0)</b>	<b>745 (56.5)</b>
<b>Frail (frailty index &gt;0.21)</b>	<b>440 (33.4)</b>	<b>375 (28.4)</b>
Montreal Cognitive Assessment score, median (IQR) <sup>d</sup>	22.0 (19.0-25.0)	22.0 (19.0-25.0)

Table 4. Incidence of Cardiovascular and Mortality Outcomes by Frailty Status and Gait Speed

		Intensive Treatment		Standard Treatment		HR (95% CI) <sup>a</sup>	P Value	P Value for Interaction
		No./Total With Outcome Events	% (95% CI) With Outcome Events/y	No./Total With Outcome Events	% (95% CI) With Outcome Events/y			
<b>Frailty status<sup>b</sup></b>								
<b>Primary outcome<sup>c</sup></b>	Fit	4/159	0.80 (0.30-2.12)	10/190	1.72 (0.93-3.20)	0.47 (0.13-1.39) <sup>d</sup>	.20	.84
	Less fit	48/711	2.23 (1.68-2.97)	77/745	3.51 (2.81-4.39)	0.63 (0.43-0.91)	.01	
	<b>Frail</b>	50/440	3.90 (2.96-5.15)	61/375	5.80 (4.52-7.46)	0.68 (0.45-1.01)	<b>.06</b>	
<b>All-cause mortality</b>	Fit	5/159	0.98 (0.41-2.36)	6/190	1.01 (0.45-2.24)	0.95 (0.27-3.15) <sup>d</sup>	.93	.52
	Less fit	26/711	1.16 (0.70-1.71)	53/745	2.24 (1.71-2.95)	0.48 (0.29-0.78)	.003	
	<b>Frail</b>	40/440	3.16 (2.28-4.35)	52/375	5.79 (4.47-7.54)	0.64 (0.41-1.01)	<b>.05</b>	
<b>Primary outcome plus all-cause mortality<sup>c</sup></b>	Fit	8/159	1.26 (0.53-3.01)	16/190	1.72 (0.93-3.20)	0.71 (0.28-1.69) <sup>d</sup>	.45	.88
	Less fit	69/711	2.53 (1.93-3.34)	130/745	4.16 (3.32-5.17)	0.60 (0.44-0.83)	.002	
	<b>Frail</b>	69/440	3.64 (2.72-4.84)	113/375	6.48 (5.00-8.43)	0.67 (0.48-0.95)	<b>.02</b>	
<b>Gait speed</b>								
<b>Primary outcome<sup>c</sup></b>	Speed ≥0.8 m/s	59/880	2.22 (1.72-2.87)	86/893	3.24 (2.63-4.01)	0.67 (0.47-0.94)	.02	.85
	Speed <0.8 m/s	<b>34/371</b>	3.15 (2.25-4.41)	<b>54/369</b>	5.22 (4.00-6.81)	0.63 (0.40-0.99)	<b>.05</b>	
	Missing	9/66	4.40 (2.29-8.46)	8/57	5.13 (2.57-10.27)	0.86 (0.33-2.29) <sup>d</sup>	.75	
<b>All-cause mortality</b>	Speed ≥0.8 m/s	40/880	1.45 (1.07-1.98)	60/893	2.16 (1.67-2.78)	0.65 (0.43-0.98)	.04	.68
	Speed <0.8 m/s	<b>29/371</b>	2.56 (1.78-3.68)	<b>40/369</b>	3.57 (2.62-4.86)	0.75 (0.44-1.26)	<b>.28</b>	
	Missing	4/66	1.85 (0.69-4.93)	7/57	4.19 (2.00-8.80)	0.44 (0.12-1.47) <sup>d</sup>	.20	
<b>Primary outcome plus all-cause mortality<sup>c</sup></b>	Speed ≥0.8 m/s	82/880	3.08 (2.48-3.83)	119/893	4.48 (3.74-5.36)	0.67 (0.50-0.89)	.006	.91
	Speed <0.8 m/s	<b>51/371</b>	4.70 (3.57-6.18)	<b>73/369</b>	7.00 (5.56-8.80)	0.69 (0.46-1.01)	<b>.06</b>	
	Missing	11/66	5.37 (2.97-9.70)	13/57	8.30 (4.82-14.30)	0.64 (0.28-1.44) <sup>d</sup>	.28	

**HIZLI YÜRÜYENLERDE ANLAMLI!**  
**YAVAŞ YÜRÜYENLERDE ANLAMSIZ!**

## SPRINT Results in Older Patients How Low to Go?

Aram V. Chobanian, MD

**In this issue of *JAMA*,** Williamson and colleagues<sup>1</sup> report the results of a preplanned, appropriately powered subgroup analysis of data from the Systolic Blood Pressure intervention Trial (SPRINT) in persons aged 75 years or older.



**Related article** [page 2673](#)

SPRINT was a randomized, clinical, open-label study of

Nevertheless, many clinicians still have concerns about reducing SBP to less than 160 mm Hg in older patients, with their reluctance based on such factors as the very high prevalence of systolic hypertension in their practices, potential adverse effects of medications in older persons, the need to use 2 or more antihypertensive medications to achieve recommended blood pressure (BP) goals, and hesitation of both cli-

indicating that not all patients in the study attained the pre-set SBP goal of less than 120 mm Hg. Furthermore, only ambulatory, community-based persons were recruited into the study, so the results may not be relevant to frail individuals and others restricted to their homes or to institutions. The investigators tried to address the frailty issue by performing post hoc secondary analyses in which the effect of levels of frailty and functional ability on the primary outcome was estimated. Although the findings did not appear to show an influence of these factors on the benefits of intensive BP treatment, such analyses can only be considered exploratory in nature.

## Toplumda yaşayan ambulator hastalar

- Evden çıkamayan yaşlılar (-)
- Bakımevi (-)

The available safety data in the subgroup of patients 75 years or older in this trial are somewhat reassuring, in that no

## Ortostatik hipot (+) olan yaşlılar dışlanmış!

col for intensive blood pressure lowering, except that only patients with type 2 diabetes were included in ACCORD but were excluded from SPRINT. No difference in primary outcome with intensive vs standard therapy was found in ACCORD, although a significant reduction in stroke incidence was

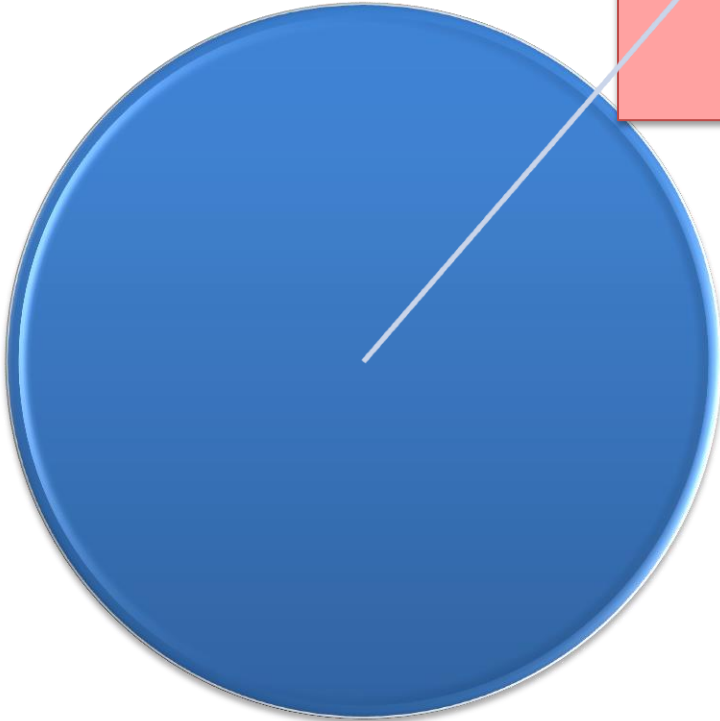
Although the story is incomplete, the available evidence supports a stepwise approach to treatment beginning with an initial SBP goal of less than 140 mm Hg. If lowering SBP to that level is tolerated well, further titration with careful monitoring should be considered to achieve an SBP goal of less than 130 mm Hg. The choice of antihypertensive medications can vary depending on clinician and patient preference, considering that several studies have shown that the major benefit of treatment depends on BP lowering rather than type of antihypertensive medication used.<sup>11</sup> In general, however, the preferred first-line drugs should be diuretics, calcium antagonists, angiotensin receptor antagonists, and angiotensin-converting enzyme inhibitors.  $\beta$  Receptor antagonists are also valuable as first-line agents in patients with coronary heart disease, arrhythmias, and heart failure. Combination drug preparations are useful because therapy often will involve multiple drugs. Since older persons with SBP less than 110 mm Hg while standing were excluded in SPRINT, the risk of syncope and falls may have been underestimated, and particular attention should be given to avoidance of orthostatic hypotension with treatment.

# 2016

SPRINT'TEN

BAŞKA VERİ

VAR MI?



**ORIGINAL ARTICLE**

# Walking speed and high blood pressure mortality risk in a spanish elderly population

**>=65 y**

A Gutiérrez-Misis<sup>1</sup>, MT Sánchez-Santos<sup>2</sup>, JR Banegas<sup>3,4</sup>, MV Castell<sup>5,6</sup>, JI González-Montalvo<sup>6,7</sup> and A Otero<sup>3,6</sup>

- **N= 814**
- **Kırılgan yaşlılar (Yürüme Hızı)**
  - **Yavaş Yürüyenlerde “SKB< 140 mmHg”  
“mortalite daha yüksek”!**

# Functional Status and Antihypertensive Therapy in Older Adults: A New Perspective on Old Data

Christina J. Charlesworth,<sup>1</sup> Carmen A. Peralta,<sup>2</sup> and Michelle C. Odden<sup>1</sup>

>=60 y

BACKGROUND

death, and MI compared with placebo (8.6, 5.3, and 1.3%, respectively).

**SHEP**

**N= 4376**

**Fiziksel aktivite kısıtlılığı olanlarda**

**Plasebo yerine AntiHT verilen olgularda**

**ölüm, KV ölüm, ve MI ↑**



# ESH-EUGMS

## Expert Opinion

2016

### **An Expert Opinion From the European Society of Hypertension–European Union Geriatric Medicine Society Working Group on the Management of Hypertension in Very Old, Frail Subjects**

Athanase Benetos,\* Christopher J. Bulpitt,\* Mirko Petrovic, Andrea Ungar, Enrico Agabiti Rosei, Antonio Cherubini, Josep Redon, Tomasz Grodzicki, Anna Dominiczak, Timo Strandberg, Giuseppe Mancia

**T**wo years after the publication of the 2013 guidelines for the management of arterial hypertension of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC),<sup>1</sup> the ESH and the European Union Geriatric Medicine Society have created a common working group to examine the management of hypertensive subjects aged >80 years. The general term hypertension in the elderly is not sufficiently accurate because it mixes younger old patients (60–70 years) with the oldest old. Our group believes that the management of hypertension in individuals aged ≥80 years should be specifically addressed. Although arbitrary, this cutoff value identifies a population that is expanding faster than any other

#### **Benefits of Treatment**

The 2013 ESH/ESC guidelines<sup>1</sup> reported the results of the Hypertension in the Very Elderly Double Blind Trial (HYVET). This showed that in hypertensive patients aged ≥80 years, the administration of the thiazide-like diuretic indapamide supplemented, if necessary, by the angiotensin-converting enzyme inhibitor perindopril led to a significant reduction in the risk of major cardiovascular events and all-cause death when compared with placebo.<sup>2</sup> From this, the guidelines concluded that there is evidence that antihypertensive treatment is beneficial in octogenarians in whom BP is elevated and that, therefore, BP-lowering interventions can be strongly recom-

Benetos A et al. An Expert Opinion From the European Society of Hypertension-European Union Geriatric Medicine Society Working Group on the Management of Hypertension in Very Old, Frail Subjects. *Hypertension*. 2016 May;67(5):820-5

KIRILGANLIĞI  
DEĞERLENDİR!

YAŞLIDA HT  
YÖNETİMİNE  
ENTEĞRE  
EDİLMELİ!

## Suggestions of the Working Group for the Management of Hypertension in Octogenarians

Based on the above comments, we propose the following:

### *Treatment Initiation*

The 2013 ESH/ESC guidelines state that in individuals aged  $\geq 80$  years with an initial SBP  $\geq 160$  mmHg, SBP should be reduced by drug treatment provided that patients are in good physical and mental conditions. We believe that this recommendation should be accompanied by (1) a more precise definition of the meaning of the term good physical and mental conditions and (2) an indication of how physical conditions, mental conditions, and the frailty status can be assessed.

A rapid (<10 minutes) assessment of frailty is feasible.

The most frequently used is the Fried frailty phenotype<sup>39</sup> in which frailty is defined by the presence of at least 3 of the following: weight loss, exhaustion, weakness, decreased gait speed, and diminished physical activity. Other scales used in different countries<sup>40-42</sup> may also be referred to.

# KIRILGAN (+)

Kırılgnlık derecesi

Fonksiyon

Kognisyon

Sürvi

Çoklu ilaç kullanımı

HipoT sekonder faktörlerini ara

- OrtoHipoT
- Dehidratasyon
- Malnütrisyon
- İlaçlar

*Frail Very Old Patients (People Living in Nursing Homes or Needing Assistance on a Daily Basis for Their Basic Activities)*

The 2013 ESH/ESC guidelines state that “in frail older patients, it is recommended to leave decisions on antihypertensive therapy to the treating physician, and base them on monitoring of the clinical effects of treatment.” We suggest that in these patients, therapeutic decisions should be preceded by (1) accurate information on their functional capacity, cognitive status. Although notoriously difficult, an estimate of patient’s prognosis should also be attempted; (2) attention to multiple drug administration so common in this age stratum; (3) stratification of the frailty status by one of the available rapid methods; and (4) identification and correction of factors that predispose to an excessive BP reduction, orthostatic hypotension, and other hypotensive episodes, such as concomitant treatments, malnutrition, and dehydration. The decision of the practicing physician to start treatment in a frail very old patient should be especially cautious (low drug doses and monotherapy) and patient status should be checked on a frequent basis.

## Should guidance for the use of antihypertensive medication in older people with frailty be different?

Anti-HT reçetelerken yaş > 60-80 yaş olması kararımızı vermede HİÇ YETERLİ DEĞİL

live in a care home [1]. The evidence for people who are also participants to an unknown risk of cerebro- and cardiovascular

**Kırılganlık, fonksiyonel durum, yürüme hızı göz önüne alınmalı**

sure of 160 mmHg or above, to between 140 and 150 mmHg in the randomised controlled DANTE trial, which looked at the effects of withdrawing antihypertensive treatment on with the caveat of those over 80 years of age should be in

Fonksiyonel sınırlamaları olan yaşlılarda antiHT tedavi yaşam kalitesini ve yaşam süresini azaltabilir.

**ÖLÇÜM TEKNİĞİ DE ÖNEMLİ!!!**

## SPRINT trial on goal blood pressure

- In hypertensive patients with characteristics similar to those enrolled in the SPRINT trial (age 50 years or older with systolic blood pressure 130 to 180 mmHg and an additional risk factor for cardiovascular disease other than diabetes, proteinuric chronic kidney disease, or stroke), as well as for hypertensive patients with diabetes, we now recommend the same lower goal blood pressure, although the strength of recommendation and the quality

**OTOMATİK (Osilometrik) vs MANUEL  
(Oskültatuvar)  
5-10 mm Hg daha düşük sonuç!!**

Patients were randomly assigned to a standard treatment group (target systolic pressure <140 mmHg) or an intensive treatment group (target systolic pressure <120 mmHg); the diastolic goal in both groups was <90 mmHg. Blood pressure during the trial was measured using automated oscillometric blood pressure (AOBP) and **not** using manual (auscultatory) blood pressure (perhaps more commonly used in routine practice), typically yielding readings 5 to 10 mm lower than with manual measurement. In the SPRINT trial, consecutive automated blood pressure readings were taken with the patient at rest and averaged. After a median of 3.26 years, intensive as compared with standard treatment reduced the rate of the primary end point, a composite of myocardial infarction, acute coronary syndrome, stroke, heart failure, or cardiovascular death (5.2 versus 6.8 percent), and also reduced mortality (3.3 versus 4.5 percent). Intensive treatment increased the rates of acute kidney injury, syncope, and hyponatremia, but not orthostatic hypotension or falls resulting in hospitalization.

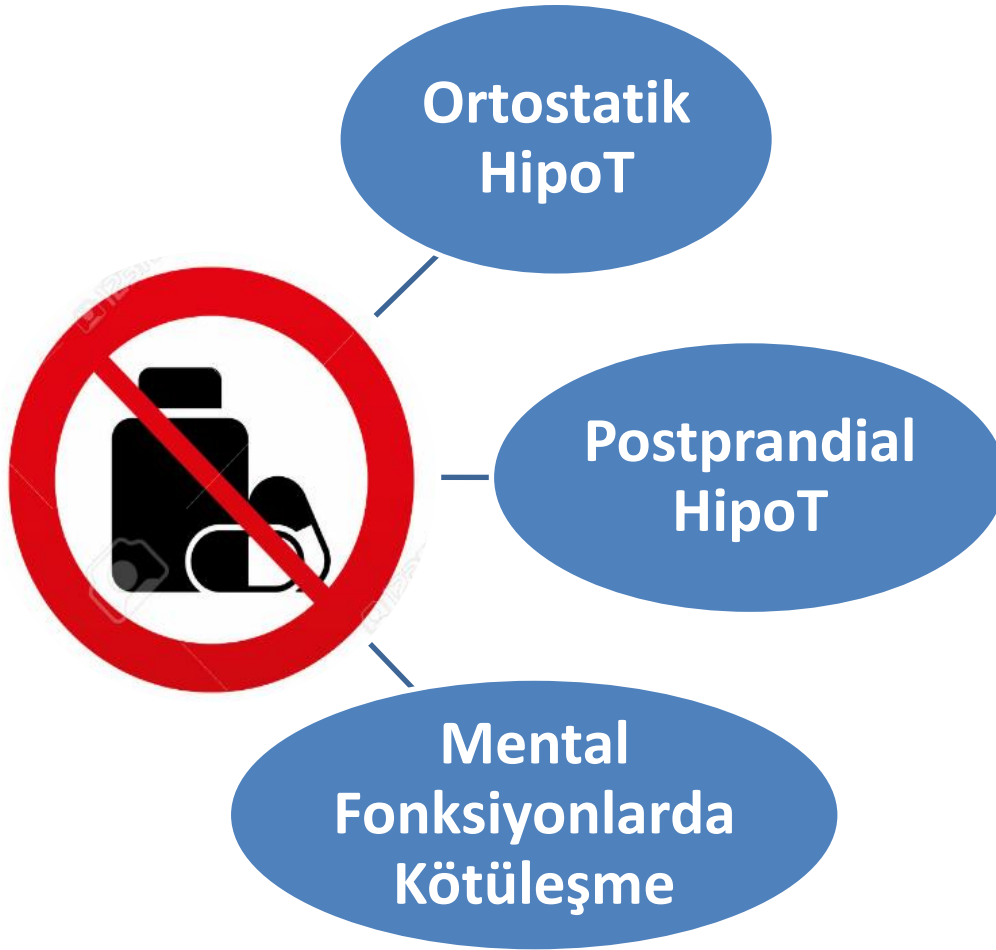
UpToDate. Practice Changing UpDates. <https://www.uptodate.com/contents/practice-changing-updates?source=machineLearning&search=SPRINT&selectedTitle=1~33&sectionRank=1&anchor=H104078#H104078>

# ÖNERİLEN MİNİMUM DKB

- KAH(+): 65 MMHG
- KAH(-): 60 MMHG\*
- SİSTEMİK HİPOPERFÜZYON  
BELİRTİLERİNİN GÖRÜLDÜĞÜ DAHA  
YÜKSEK DKB

\*UpToDate. What is goal blood pressure in the treatment of hypertension?

# Yaşlıda ilaç tedavisinde **önemli** **sınırlama** yapan sebepler



**KLİNİK  
TAKİP  
ÖNEMLİ!**



# Eve götürülecek mesajlar

- İleri yaş antiHT tedavinin daha az verilmesini gerektirmemektedir.



# Eve götürülecek mesajlar

- İleri yaş antiHT tedavinin daha az verilmesini gerektirmemektedir.
- **OTOMATİK CİHAZLA**
- **Uygun yaşlılarda SKB<120 mmHg hedefi geçerli olabilir**



# Eve götürülecek mesajlar

- İleri yaş antiHT tedavinin daha az verilmesini gerektirmemektedir.
- OTOMATİK CİHAZLA
- Uygun yaşlılarda SKB<120 mmHg hedefi geçerlidir
- Kırılgan yaşlılarda **“SKB <150 mm Hg”** veya **“serebral hipoperfüzyon belirtileri-ortostatizm-fonksiyonelliğe göre”**  
**“DAHA YÜKSEK”** olmalıdır





# SPRINT-DIASTOLIC PRESSURE (1. yıl)

- intensive-treatment
  - 68.7 mm Hg
- standard-treatment
  - 76.3 mm Hg



- SPRINT excluded patients with
  - Diabetes
  - symptomatic heart failure
  - a history of stroke
  - proteinuria ( $\geq 1$  g/day total protein or  $\geq 600$  mg/day albumin)
  - NH

- SPRINT enrolled patients
  - $\geq 50$  y
  - who had a systolic blood pressure of 130 to 180 mmHg
  - plus one or more of the following additional risk factors for cardiovascular disease
    - $\geq 75$  years
    - clinically evident cardiovascular disease (ie, previously documented coronary, peripheral arterial, or cerebrovascular disease [except for stroke])
    - subclinical cardiovascular disease (ie, an elevated coronary artery calcification score by computerized tomography scan, left ventricular hypertrophy, or an ankle-brachial index  $<0.9$ )
    - an estimated glomerular filtration rate (eGFR) of 20 to 59 mL/min/1.73 m<sup>2</sup>
    - 10-year Framingham Risk Score greater than or equal to 15 percent.

# TÜM ÇALIŞMALARDA

- ÇALIŞMA BAŞINDAKİ SKB  $\geq 160$  mmHg

- ÇALIŞMA SONU SKB  $>140$  mmHg

- 140-160 mmHg'li olgularda (ISH) çalışma (-)