Controllo pressorio ottimale per ogni età?

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FATEBENEFRATELLI

UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA

Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease study 2013

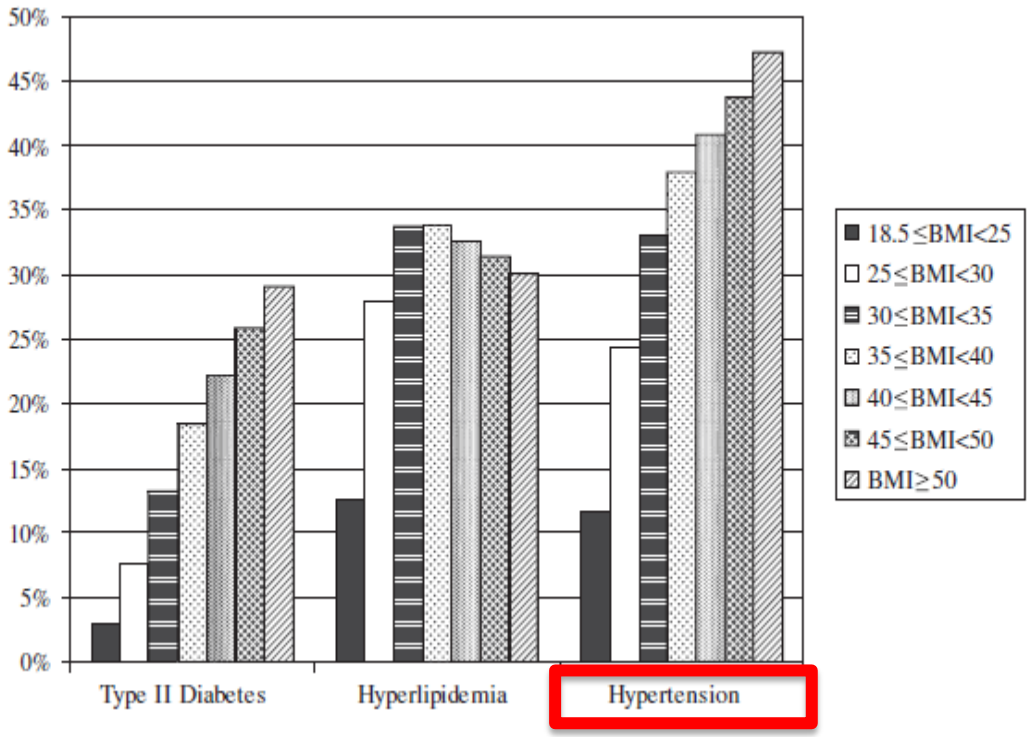
Ten leading risk factors in terms of attributable DALYs in 2013 for both sexes combined

	1	2	3	4	5	6	7	8	9	10
Global	Blood pressure	Smoking	BMI	Childhood under-nutrition	Fasting glucose	Alcohol use	Household air pollution	Unsafe water	Unsafe sex	Fruit
Developed	Blood pressure	BMI	Smoking	Alcohol use	Fasting glucose	Total chol.	GFR	Sodium	Physical activity	Fruit
Western Europe	Blood pressure	Smoking	BMI	Fasting glucose	Alcohol use	Total chol.	GFR	Physical activity	Sodium	Fruit
Italy	Blood pressure	BMI	Smoking	Fasting glucose	GFR	Total chol.	Sodium	Alcohol use	Physical activity	Bone mineral density

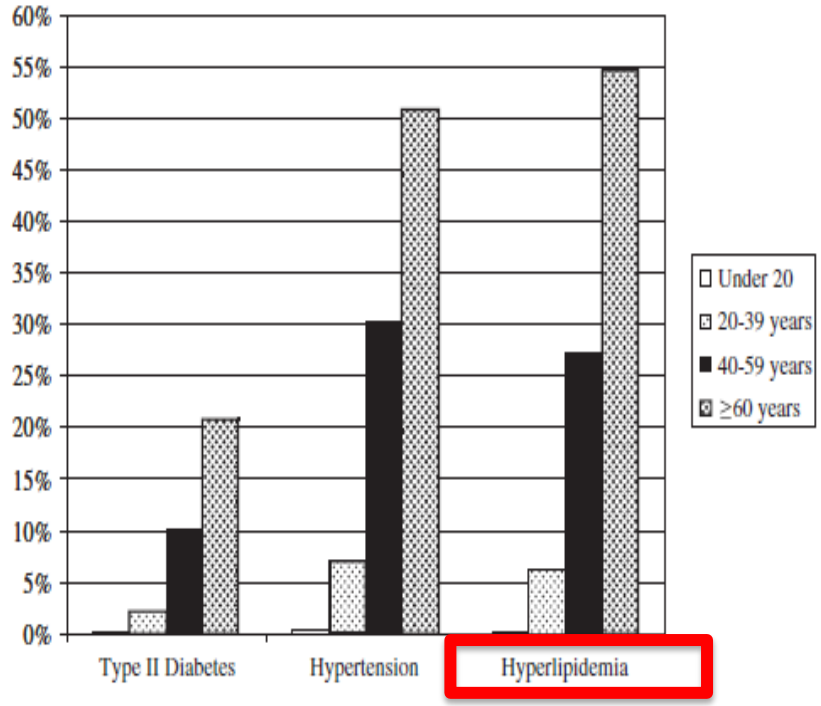
GBD 2013 Risk Factors Collaborators. Lancet, 2015

PREVALENZA DIABETE E IPERTENSIONE
associazione lineare con il BMI e l'età

prevalence by BMI category



prevalence by age group



Crawford AG Popul Health Manag 2010

“Hypertension and Diabetes, the bad companions”

H. Keen, 1981

- **L’ipertensione è una comorbidità presente in circa l’80% pazienti affetti da diabete mellito di tipo 2.**
- **I pazienti con DM hanno un elevato rischio cardiovascolare e tale rischio aumenta ulteriormente in presenza di ipertensione arteriosa.**

Schmieder RE, DIALOGUE study group. Cardiovasc Diabetol. 2018

I FARMACI PIU' PRESCRITTI ALLE PERSONE CON DIABETE

(escluse le tp per il DM)

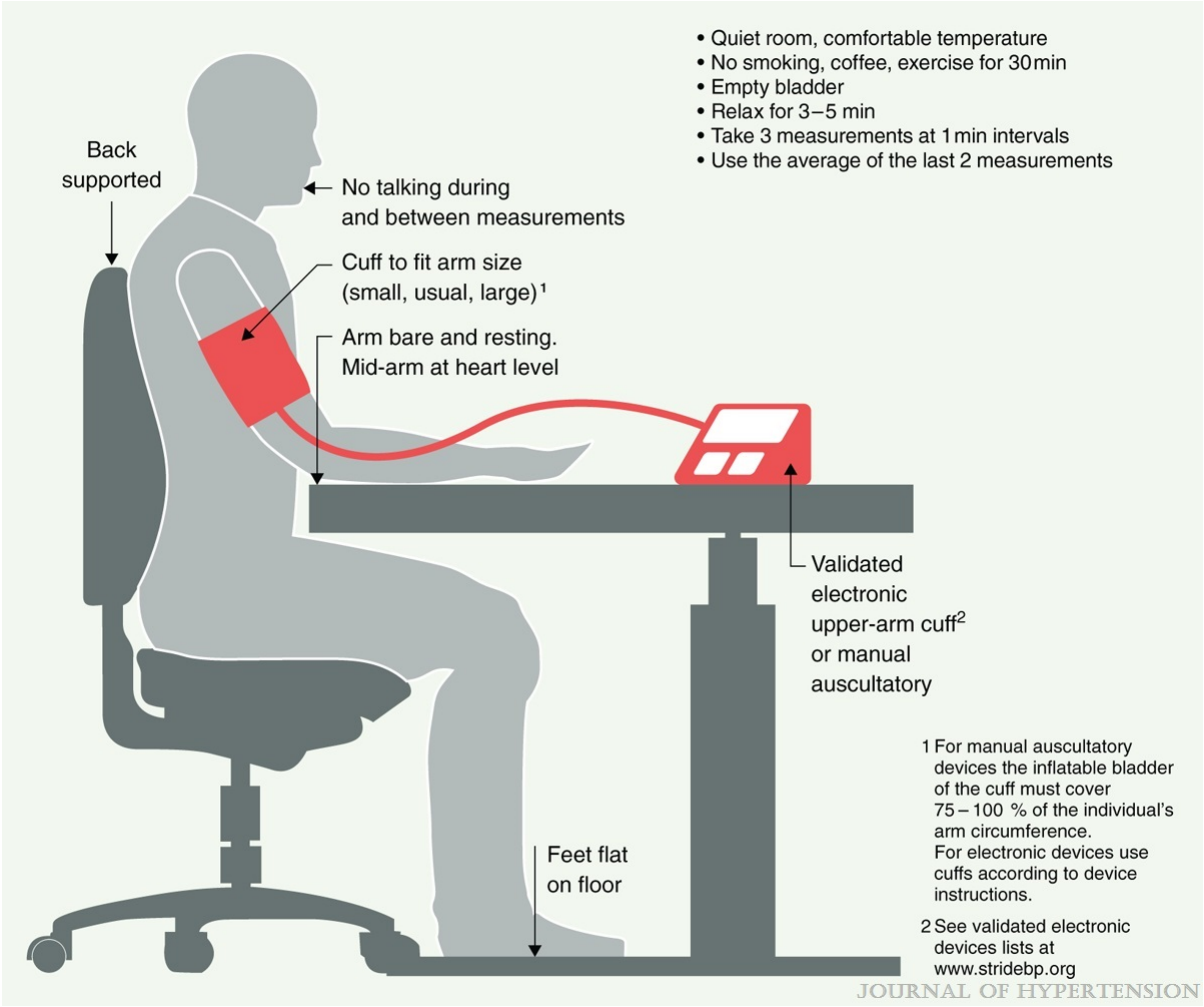
Persone con diabete 697.208	N. trattati con almeno un farmaco 671.036	Spesa complessiva (per tutti i farmaci) € 778.512.704

Categoria farmaco	Trattati	% su popolazione con diabete	Δ % Casi vs Controlli	Spesa media per trattato €	Spesa media pro capite € (N=697.208)	Δ % Casi vs Controlli
Antipertensivi	519.493	74,5	+59,2	155,50	115,86	+96,1
Antibiotici	377.890	54,2	+36,9	41,78	22,65	+76,6
Ipolipemizzanti	369.503	53,0	+153,6	141,07	74,76	+205,8
Antiacidi+Antiulcera	342.958	49,2	+61,1	96,45	47,44	+91,1
Antiaggreganti piastrinici	298.641	42,8	+152,1	58,26	24,95	+100,1
Antinfiammatori	246.386	35,3	+41,3	18,71	6,61	+51,7
Vitamine	179.097	25,7	+21,6	46,21	11,87	+26,1
Farmaci per il sistema nervoso	159.799	22,9	+62,2	145,59	33,37	+89,6
Antiasmatici	117.826	16,9	+42,4	227,91	38,52	+42,7
Altri antitrombotici	107.350	15,4	+55,3	262,90	40,48	+60,0

Ipertensione nel Diabete

obiettivi pressori...

2020 International Society of Hypertension Global Hypertension Practice Guidelines



The NEW ENGLAND JOURNAL of MEDICINE

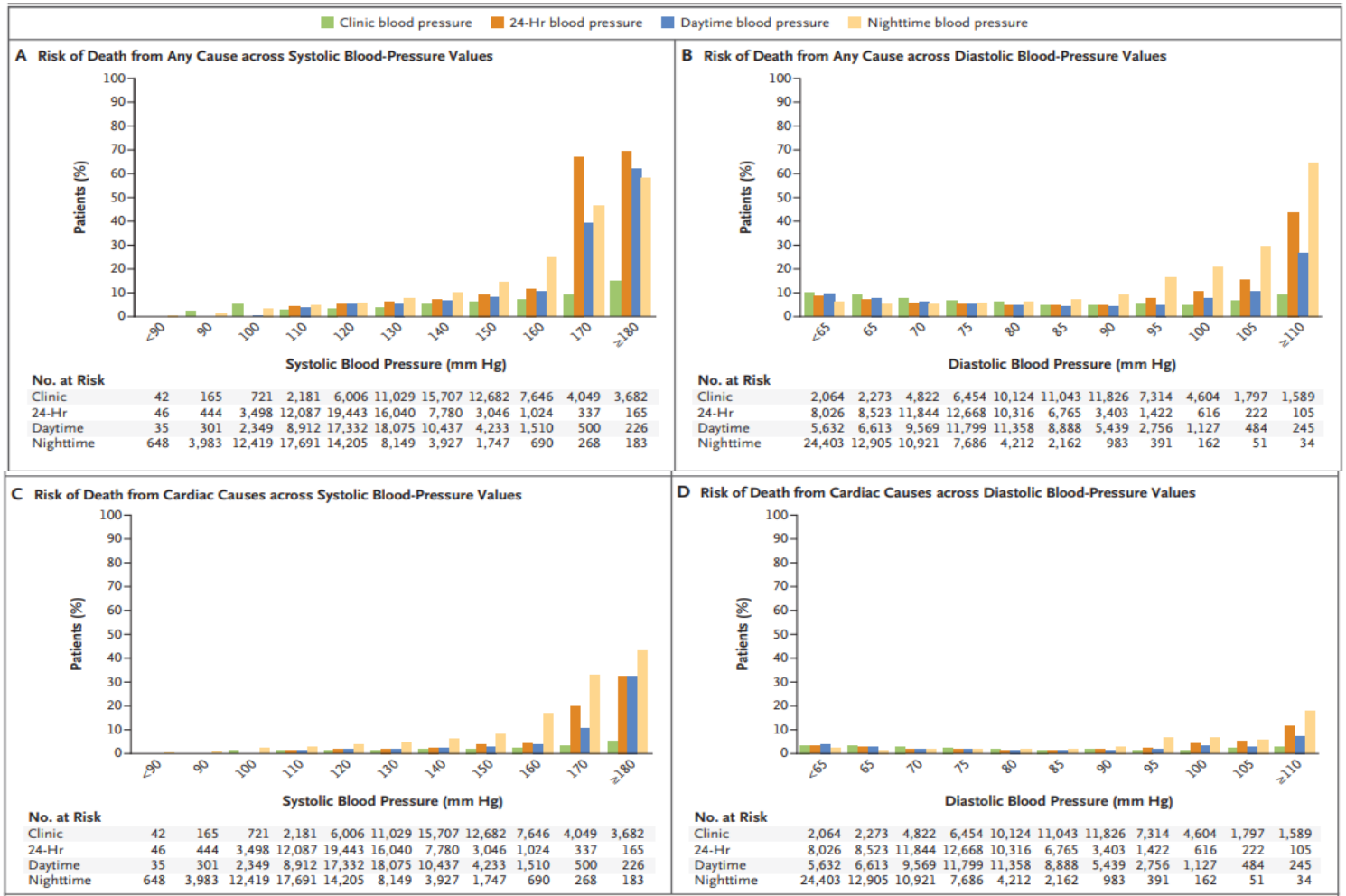
ORIGINAL ARTICLE

Relationship between Clinic and Ambulatory Blood-Pressure Measurements and Mortality

2018

J.R. Banegas, L.M. Ruilope, A. de la Sierra, E. Vinyoles, M. Gorostidi, J.J. de la Cruz, G. Ruiz-Hurtado, J. Segura, F. Rodríguez-Artalejo, and B. Williams

63.910 pz
20% con diabete



«Periodo di avanzamento»

1,4 anni per PAv vs 9,5 anni per SBPM24h

Table 4. Rate Advancement Periods and Population Attributable Fractions for Blood-Pressure Components and Hypertension Phenotypes.*

Blood-Pressure Component and Hypertension Phenotype	Rate Advancement Period†		Population Attributable Fraction‡	
	All-Cause Mortality	Cardiovascular Mortality	All-Cause Mortality	Cardiovascular Mortality
	yr (95% CI)		*% (95% CI)*	
Blood-pressure component				
Clinic systolic	1.4 (0.6–2.2)	—	—	—
Clinic diastolic	0.9 (0.4–1.5)	—	—	—
24-Hour systolic	9.5 (4.2–14.8)	8.0 (3.5–12.5)	—	—
24-Hour diastolic	7.3 (3.2–11.5)	5.7 (2.5–8.9)	—	—
Daytime systolic	8.5 (3.7–13.3)	7.2 (3.2–11.3)	—	—
Daytime diastolic	—	—	—	—
Nighttime systolic	10.2 (4.4–15.9)	8.4 (3.7–13.1)	—	—
Nighttime diastolic	7.3 (3.2–11.4)	7.3 (3.2–11.5)	—	—
Hypertension phenotypes				
White-coat hypertension§	9.4 (4.3–14.4)	6.6 (2.3–10.9)	3.6 (2.2–4.6)	4.0 (1.5–5.5)
White-coat uncontrolled hypertension¶	—	—	—	—
Masked hypertension‖	22.6 (15.0–30.2)	20.5 (14.7–26.4)	1.9 (1.6–2.2)	1.6 (1.0–2.0)
Masked uncontrolled hypertension**	14.6 (6.9–22.3)	16.1 (10.1–22.1)	3.0 (2.1–3.8)	4.1 (2.1–5.3)
Masked uncontrolled hypertension among all patients with controlled clinic pressure††	13.2 (5.6–20.7)	11.4 (7.4–15.4)	33.3 (28.8–36.9)	31.7 (24.0–37.3)
Sustained hypertension‡‡	12.8 (5.9–19.7)	13.0 (7.4–18.6)	7.0 (4.5–8.9)	6.5 (2.5–9.0)
Sustained uncontrolled hypertension§§	12.1 (5.4–18.9)	10.2 (4.6–15.8)	12.7 (4.2–19.4)	16.1 (0.1–26.3)

Banegas JR N Engl J Med 2018;378:1509-

IPERTENSIONE ARTERIOSA

TARGET DA RAGGIUNGERE

- Il trattamento antipertensivo nei pazienti con diabete ha come obiettivo il raggiungimento di valori di pressione sistolica <140mmHg. (I A).
- In alcune categorie di pazienti (recente diagnosi di ipertensione, giovani, elevato rischio di ictus, pazienti con albuminuria, e uno o più fattori di rischio cardiovascolare aggiuntivi) obiettivo da raggiungere PA sistolica <130mmHg. (VI C).
- Obiettivo <130/80mmHg è raccomandato nei soggetti con diabete con micro e macroalbuminuria. (III B).

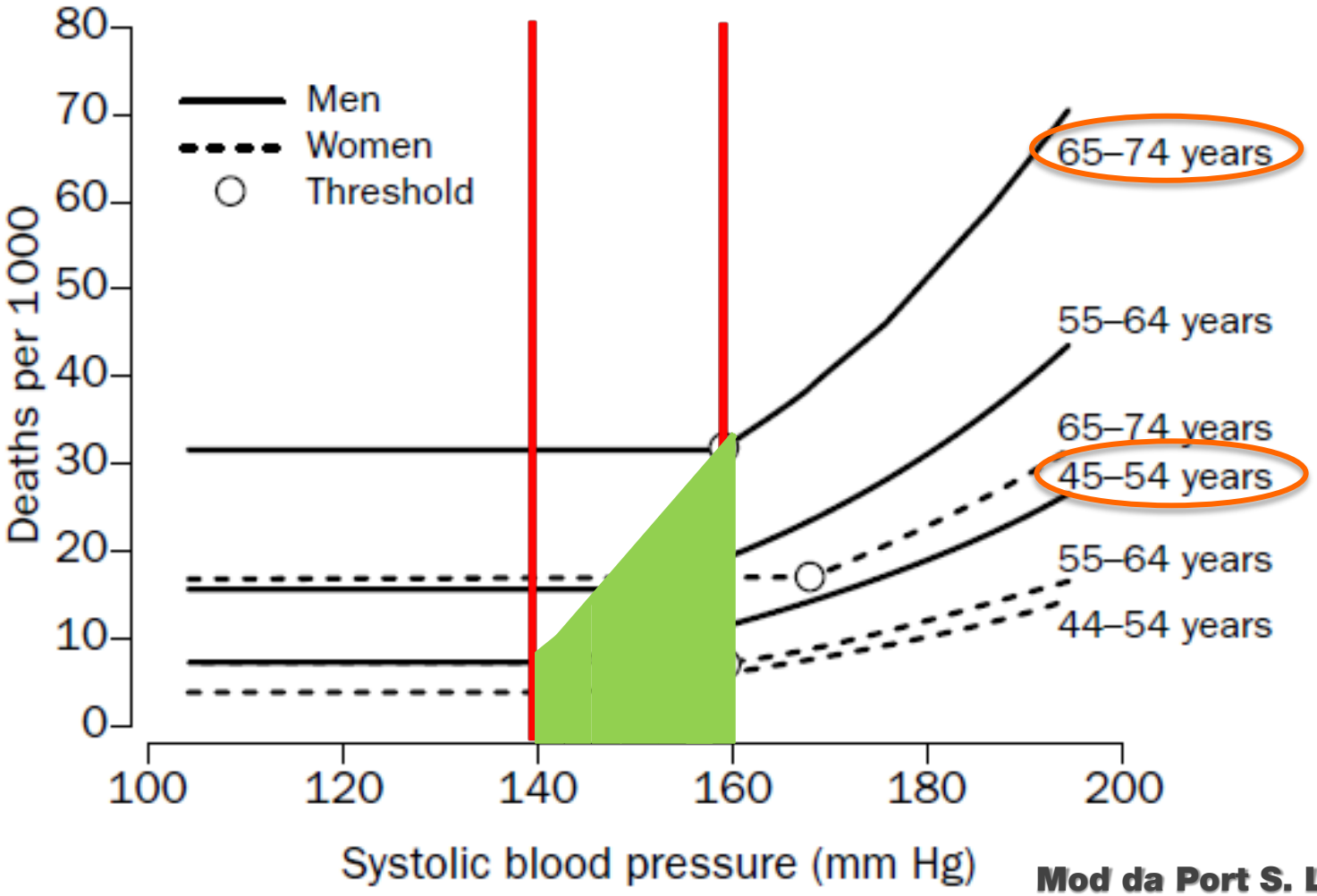
IPERTENSIONE ARTERIOSA

ANZIANI

- Nei soggetti con diabete anziani obiettivo <150/90 mmHg se ben tollerato (I A).
- Dato che i soggetti in età avanzata possono manifestare una scarsa tolleranza alla riduzione dei valori pressori, il trattamento dovrebbe essere instaurato e titolato gradualmente. (VI B).

Framingham study
mortalità in relazione all'età e alla PA

La soglia di PA sistolica alla quale si assiste ad un incremento della mortalità, in funzione dell'aumento della PA, aumenta con l'aumentare dell'età



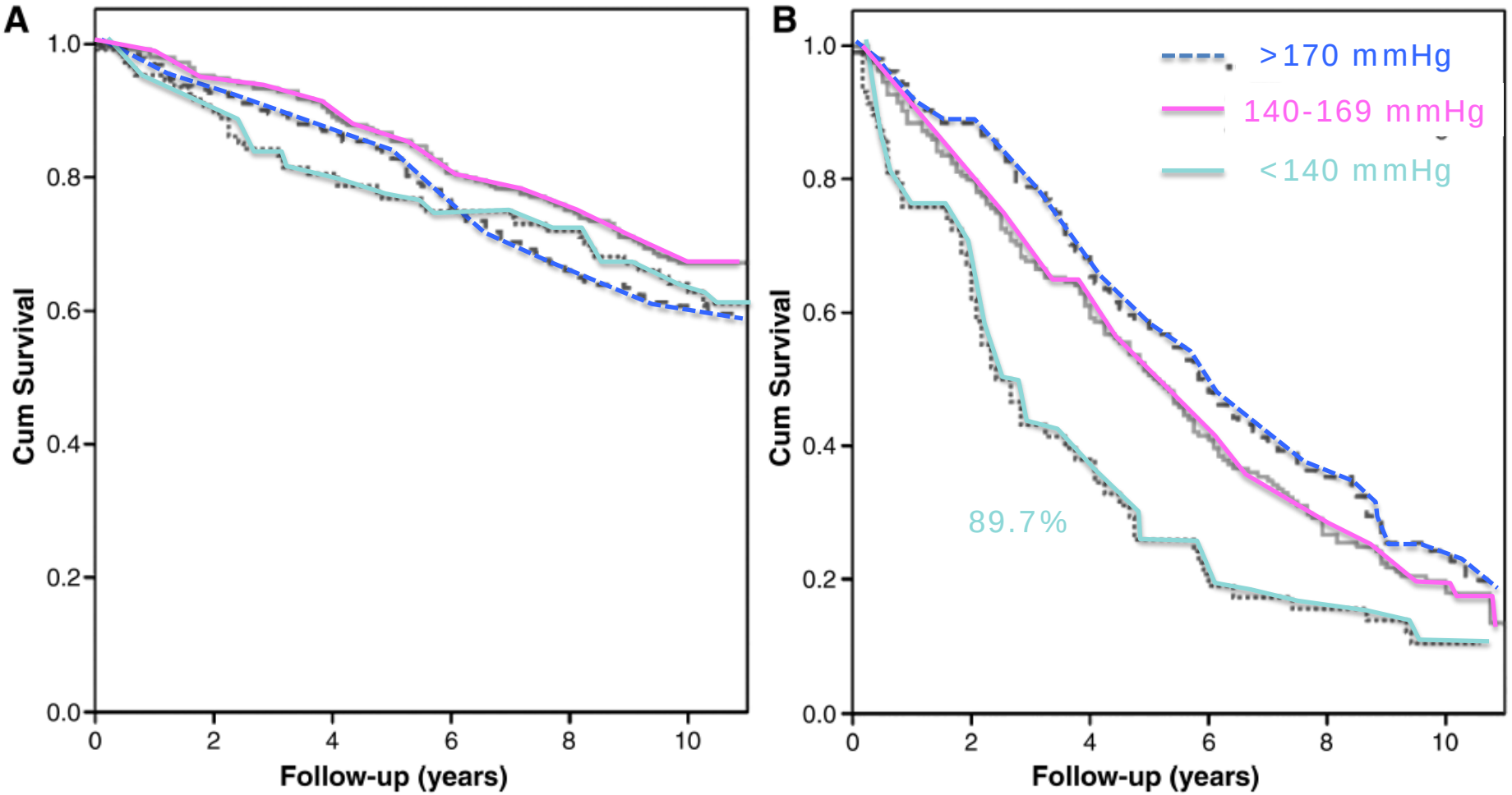
Mod da Port S. Lancet 2000

ANZIANO

Ridurre la PA <140mmHg aumenta la mortalità (ZODIAC-12)

60-75 years

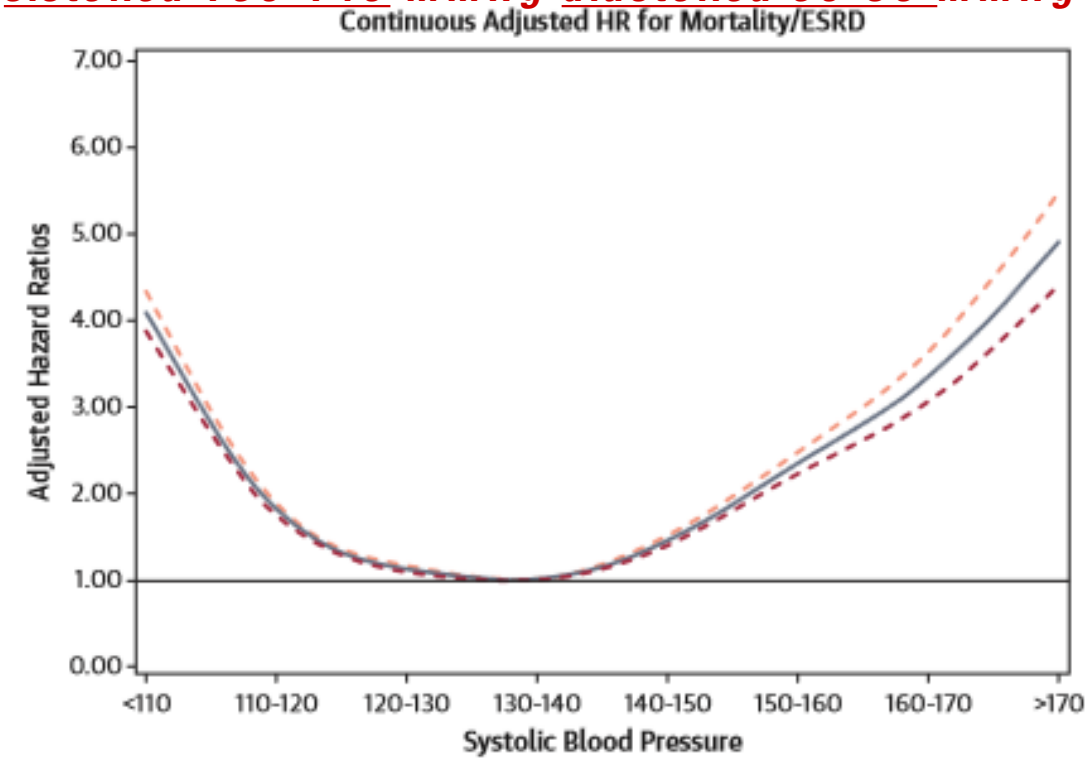
>75 years



Van Hateren KJJ, Age and Aging 20

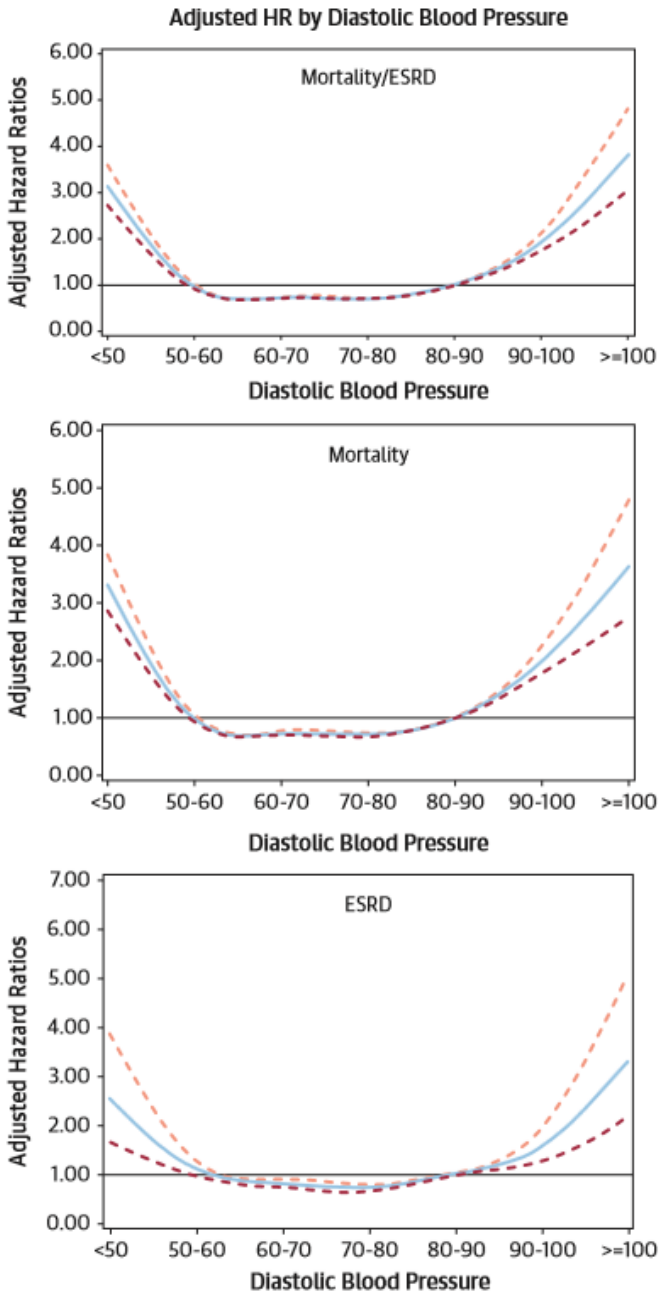
Impact of Achieved Blood Pressures on Mortality and End-Stage Renal Disease Among a Large, Diverse Hypertension Population

Soggetti ipertesi in terapia, intervalli di pressione che si associano ad un minore rischio di morte o di ESRD:
sistolica 130-140 mmHg diastolica 60-80 mmHg

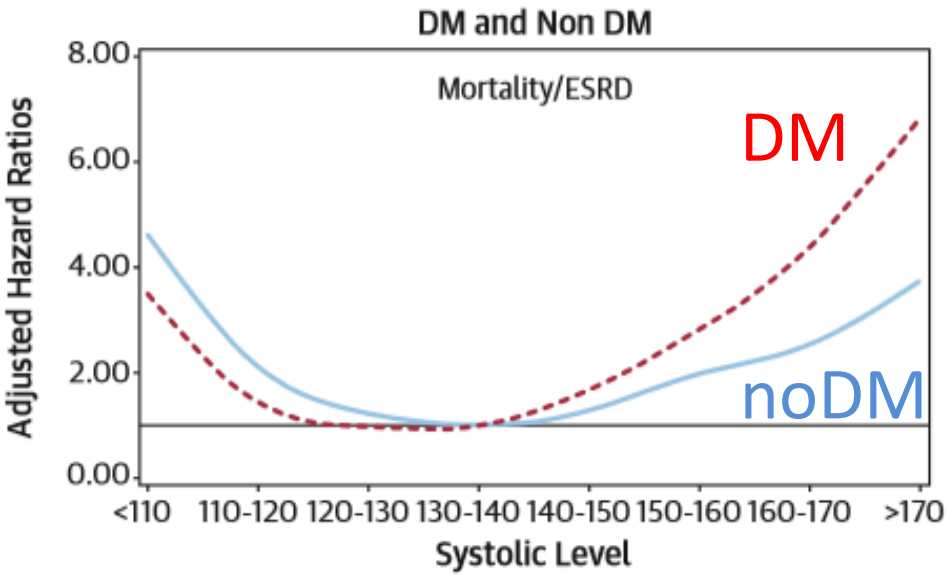


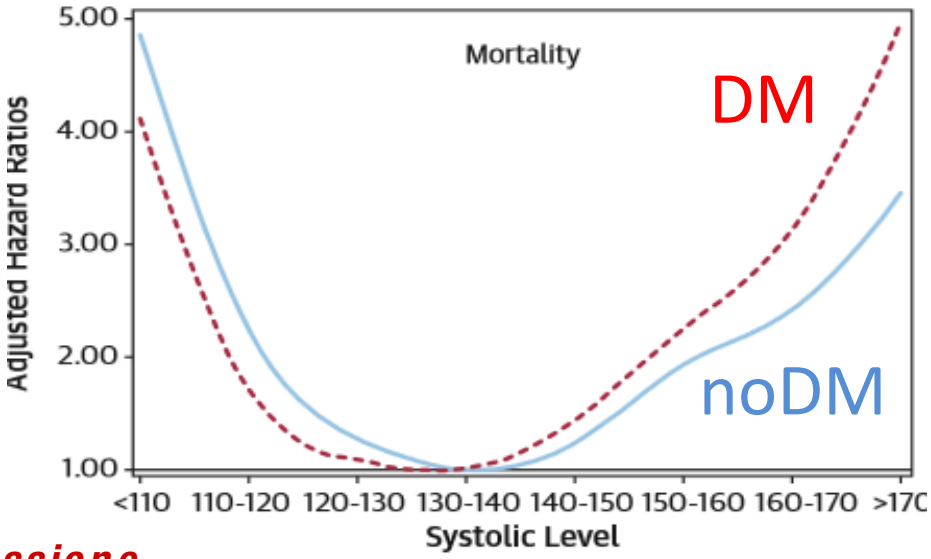
Systolic BP 130 to 139 mmHg was associated with the lower risk.
Diastolic BP 60 to 79 mmHg was associated with the lowest risk.
The nadir sBP and dBP for the lowest risk were 137 and 71 mmHg.
The nadir sBP and dBP for the lowest risk was 131 and 69 mmHg, in DM

Sim JJ, et al, J Am Coll Cardiol 64: 588-597, **2014**



Impact of Achieved Blood Pressures on Mortality and End-Stage Renal Disease Among a Large, Diverse Hypertension Population





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sistolica 130-140 mmHg diastolica 60-80 mmHg

INDIPENDENTEMENTE DALLA PRESENZA DI DIABETE

Systolic BP 130 to 139 mmHg was associated with the lower risk.
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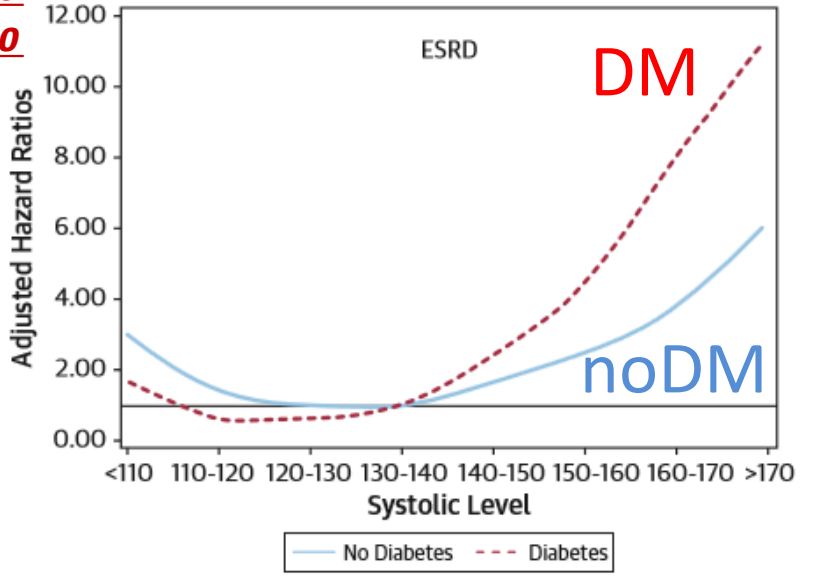
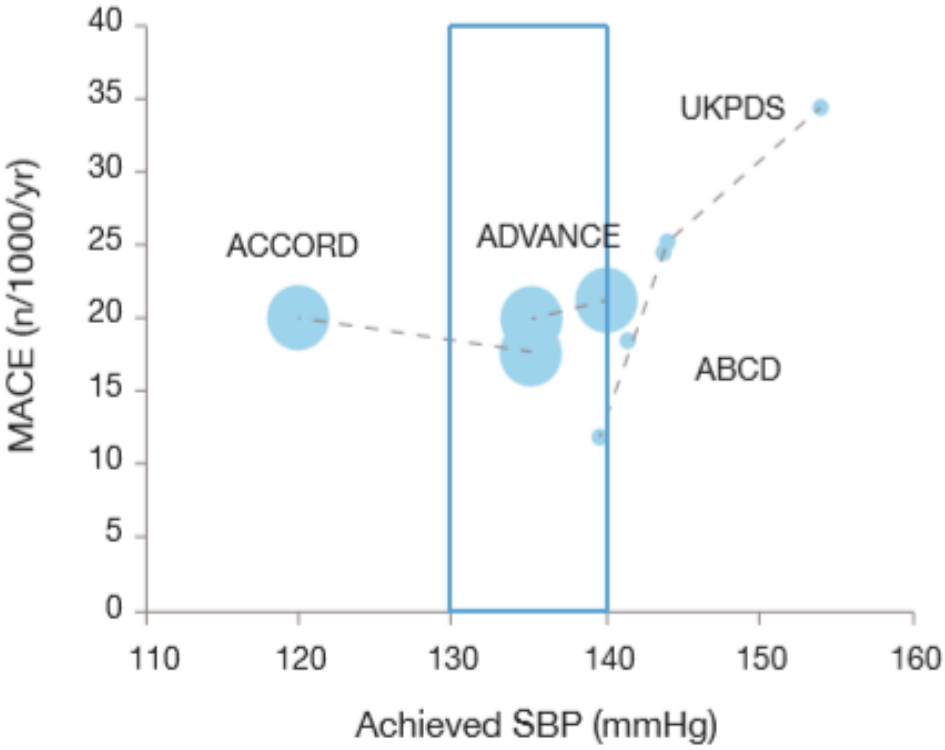
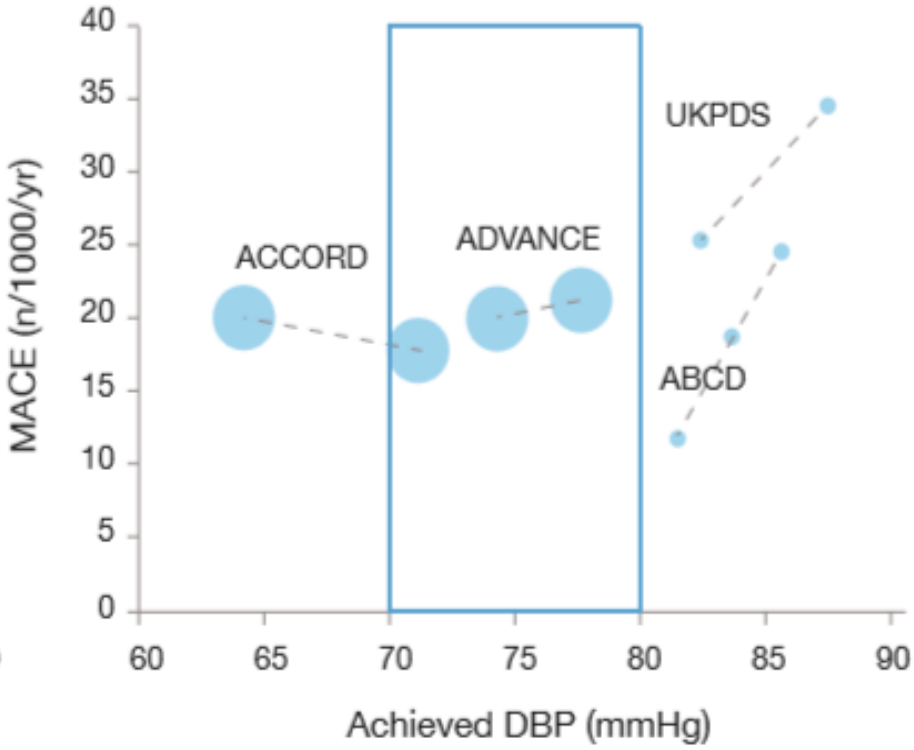


Sim JJ, et al, J Am Coll Cardiol 64: 588-597, **2014**

LIVELLO PRESSORI RAGGIUNTI ED EVENTI CARDIOVASCOLARI
studi ACCORD, ADVACE, UKPDS e ABCD

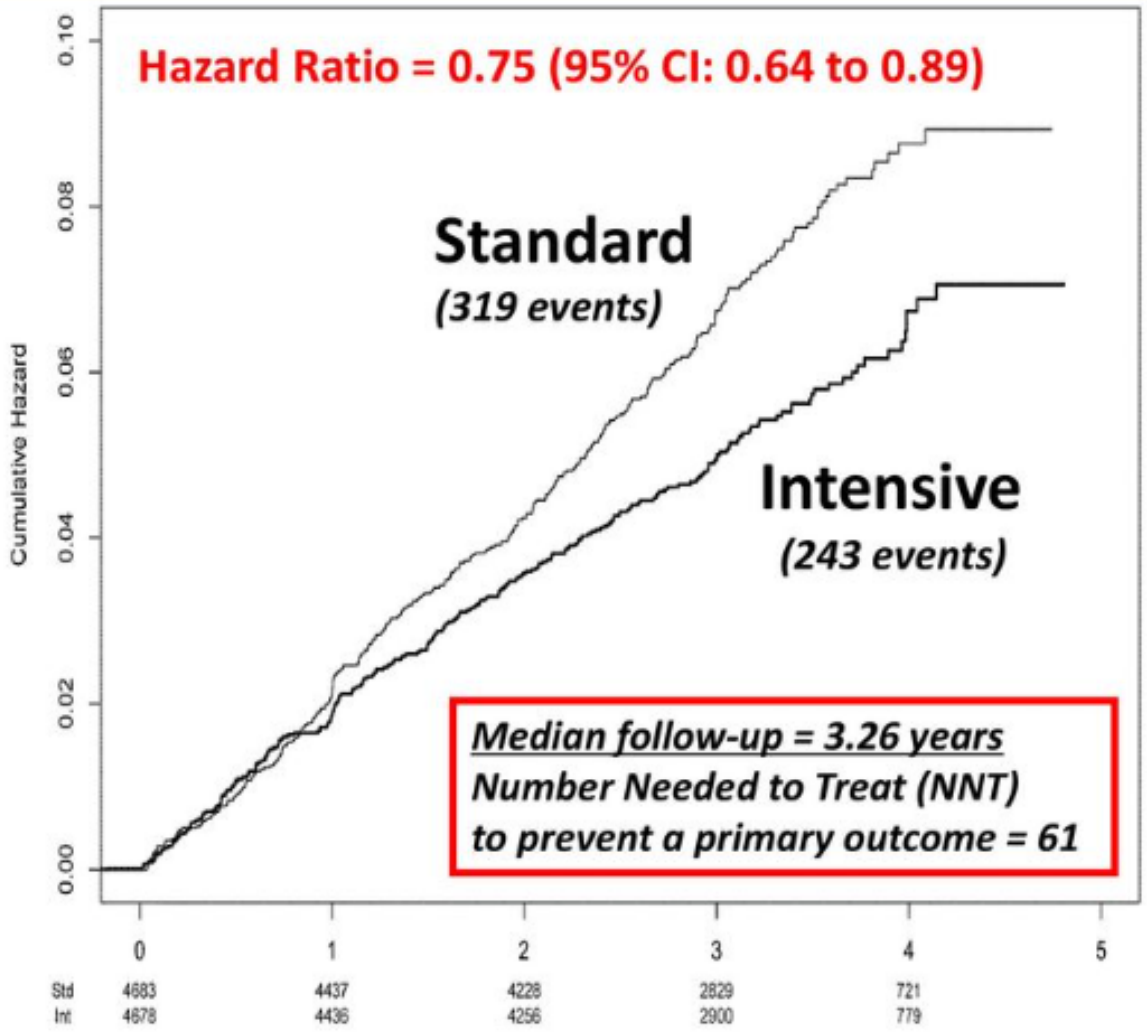




Frontoni S, et al. SID Study Group on Diabetes, Hypertension and the Kidney. Nutr Metab Cardiovasc Dis. 2014

Studio SPRINT

La riduzione della PAS a valori inferiori a 120mmHg determinava una riduzione significativa degli outcome primari



Endpoint primario: infarto del miocardio, sindrome coronarica acuta, ictus, scompenso cardiaca, morte per cause cardiovascolari

<u>Pz non diabetici</u>

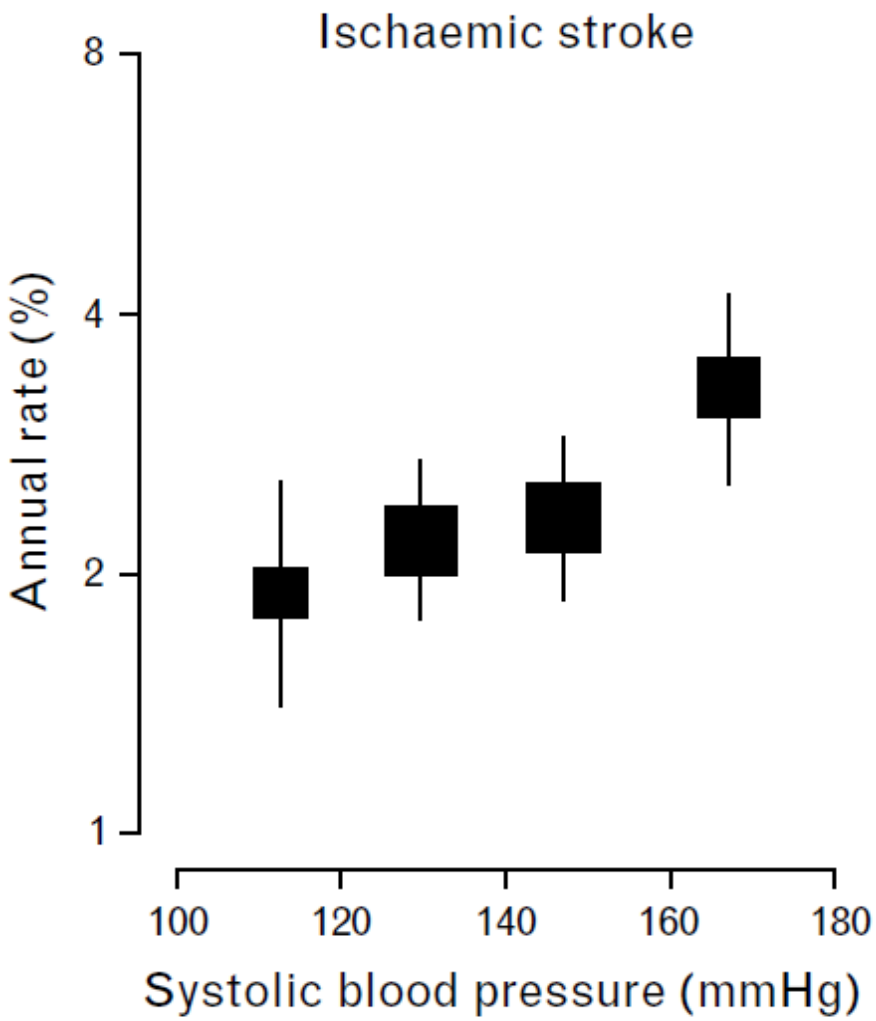
Ad un anno:

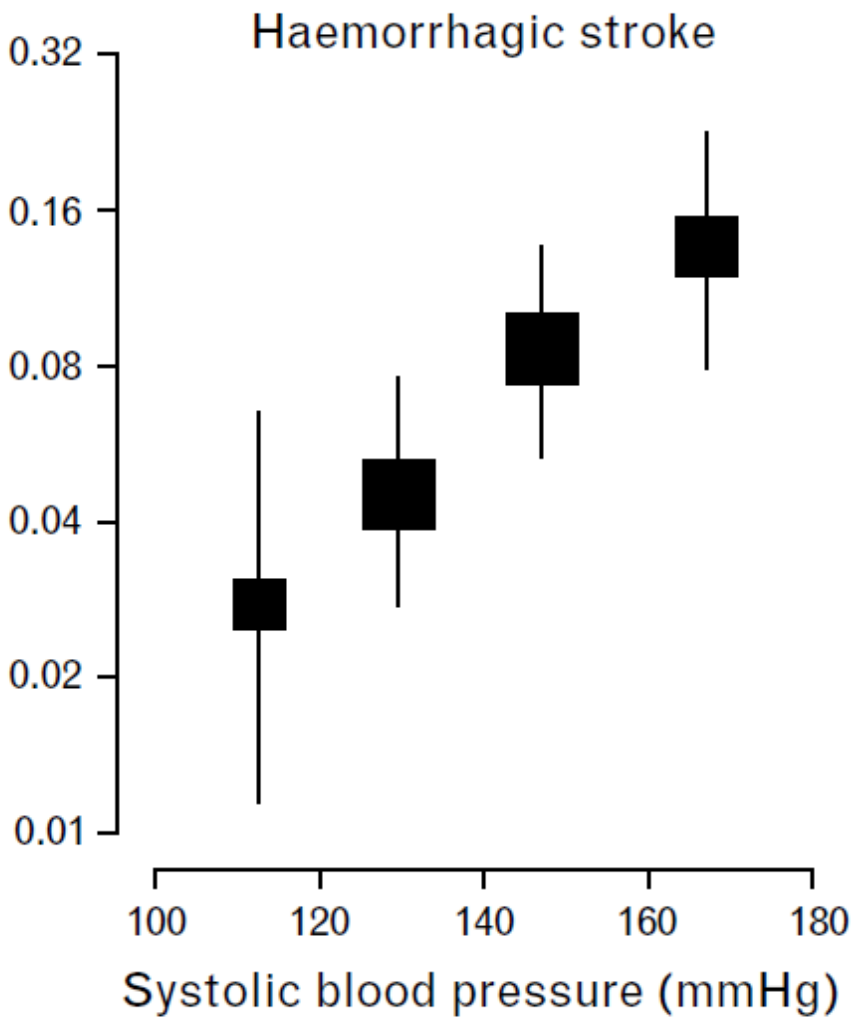
Braccio in tp intensiva
PAS media 121,4 mmHg

Braccio in tp standard
PAS media 136,2 mmHg

The SPRINT Research Group, N Engl J Med 2

Studio PROGRESS
progressiva riduzione della recidiva di ictus anche per PAS<115mmHg in assenza di curva J





Arima H J Hypertens. 2006; 24:1201–

Journal of the American Heart Association

ORIGINAL RESEARCH

Age-Specific Associations Between Systolic Blood Pressure and Cardiovascular Disease: A 10-Year Diabetes Mellitus Cohort Study

J Am Heart Assoc. 2020;9

OBIETTIVO: nella persona con diabete studiare l'associazione tra la PAS e il CVD nelle diverse fasce d'età

180.492 adulti

follow-up di 9,3 anni

32.545 eventi

Journal of the American Heart Association
ORIGINAL RESEARCH

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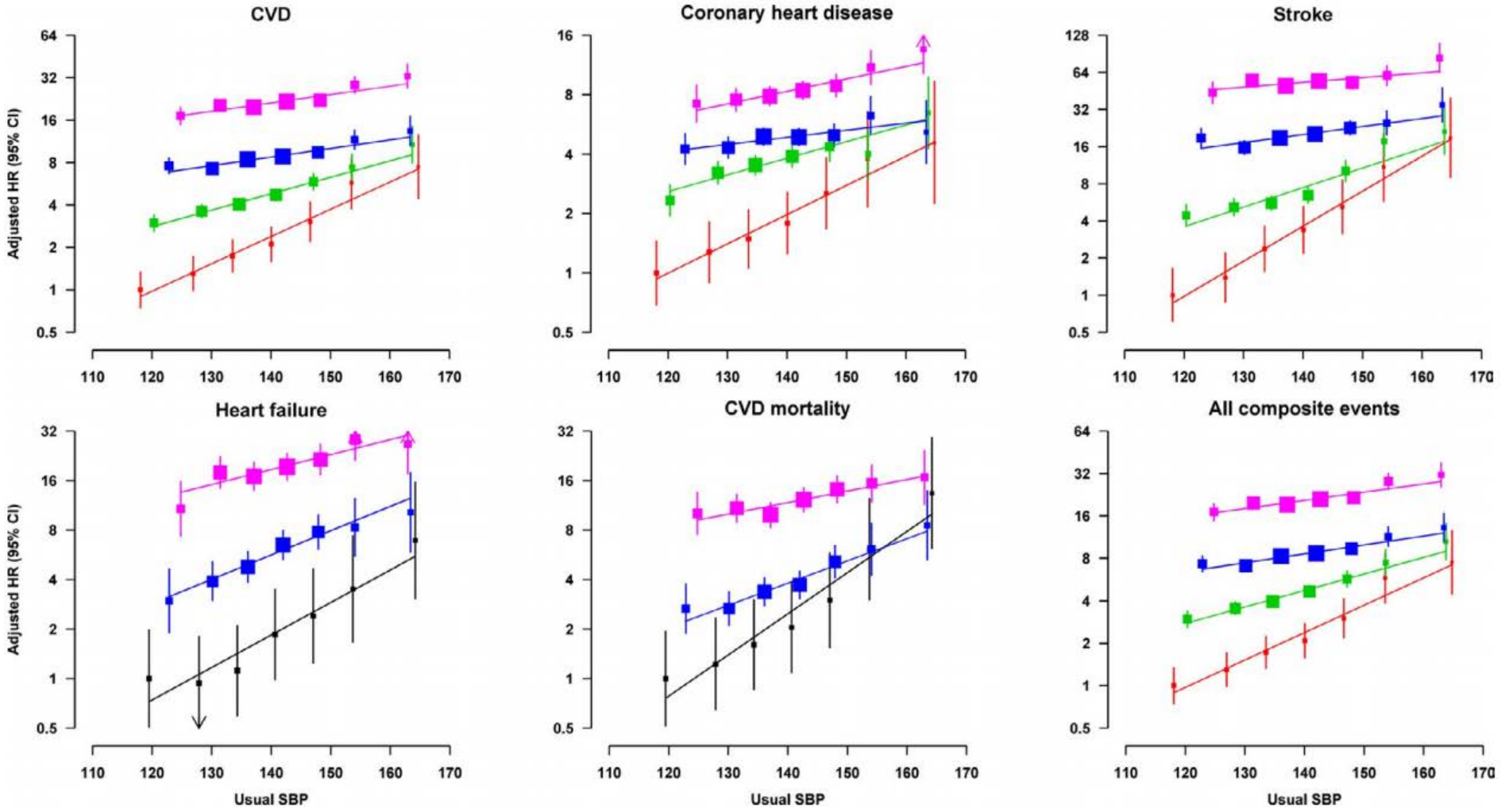

Mortality in Individuals Aged 80 and Older with Type 2 Diabetes Mellitus in Relation to Glycosylated Hemoglobin, Blood Pressure, and Total Cholesterol

Shota Hamada, DrPH, and Martin C. Gulliford, MA*†*

J Am Geriatr Soc 64:1425– 1431, 2016

Table 3. Associations Between Glycosylated Hemoglobin (HbA1c), Blood Pressure, and Total Cholesterol and All-Cause Mortality (N = 25,966)

Factor	Deaths, n/N	%	Mortality (1,000 Person-Years)	Unadjusted Hazard Ratio (95% Confidence Interval) *P*-Value	Adjusted Hazard Ratio (95% Confidence Interval) *P*-Value
HbA1c, % (mmol/mol)					
<6.0 (<42)	301/1,387	21.7	134.9	1.21 (1.03–1.42) .02	1.04 (0.88–1.23) .67
6.0–6.4 (42–47)	506/2,976	17.0	102.1	0.92 (0.80–1.05) .21	0.91 (0.79–1.05) .19
6.5–6.9 (48–52)	1,081/7,463	14.5	85.6	0.77 (0.68–0.87) <.001	0.84 (0.74–0.96) .009
7.0–7.4 (53–57)	648/4,700	13.8	80.9	0.72 (0.63–0.83) <.001	0.80 (0.70–0.91) .001
7.5–7.9 (58–63)	453/2,777	16.3	98.6	0.88 (0.77–1.02) .09	0.90 (0.79–1.04) .15
8.0–8.4 (64–68)	324/1,780	18.2	111.5	Reference	Reference
≥8.5 (≥69)	641/3,006	21.3	133.1	1.20 (1.05–1.37) .009	1.04 (0.91–1.19) .55
Missing	536/1,877	28.6	195.9	1.76 (1.53–2.02) <.001	1.01 (0.86–1.19) .88
Blood pressure, mmHg					
<130/70	982/4,116	23.9	151.7	1.89 (1.67–2.13) <.001	1.52 (1.34–1.72) <.001
≥130/70 & <135/75	815/4,416	18.5	112.3	1.40 (1.23–1.58) <.001	1.30 (1.14–1.48) <.001
≥135/75 & <140/80	719/4,749	15.1	90.3	1.12 (0.99–1.27) .08	1.11 (0.97–1.27) .13
≥140/80 & <145/85	685/4,746	14.4	85.6	1.06 (0.93–1.21) .35	1.09 (0.95–1.24) .23
≥145/85 & <150/90	349/2,534	13.8	80.5	Reference	Reference
≥150/90 & <155/95	231/1,717	13.5	80.3	1.00 (0.85–1.18) .98	0.97 (0.82–1.14) .70
≥155/95	419/2,663	15.7	94.0	1.17 (1.01–1.35) .03	1.05 (0.91–1.22) .49
Missing	290/1,025	28.3	191.2	2.38 (2.04–2.78) <.001	1.38 (1.18–1.61) <.001
Total cholesterol, mmol/L					
<3.0	455/2,033	22.4	138.7	1.58 (1.39–1.80) <.001	1.42 (1.24–1.64) <.001
3.0–3.4	630/3,857	16.3	97.6	1.11 (0.99–1.25) .08	1.15 (1.02–1.29) .02
3.5–3.9	787/5,247	15.0	89.2	1.02 (0.91–1.14) .78	1.08 (0.96–1.21) .20
4.0–4.4	728/4,666	15.6	92.9	1.06 (0.94–1.19) .33	1.16 (1.03–1.30) .01
4.5–4.9	468/3,158	14.8	87.7	Reference	Reference
5.0–5.4	276/1,822	15.1	90.6	1.03 (0.89–1.20) .67	1.00 (0.85–1.16) .96
≥5.5	347/2,288	15.2	91.4	1.04 (0.91–1.20) .56	0.99 (0.86–1.13) .85
Missing	799/2,895	27.6	185.9	2.12 (1.89–2.38) <.001	1.40 (1.22–1.60) <.001

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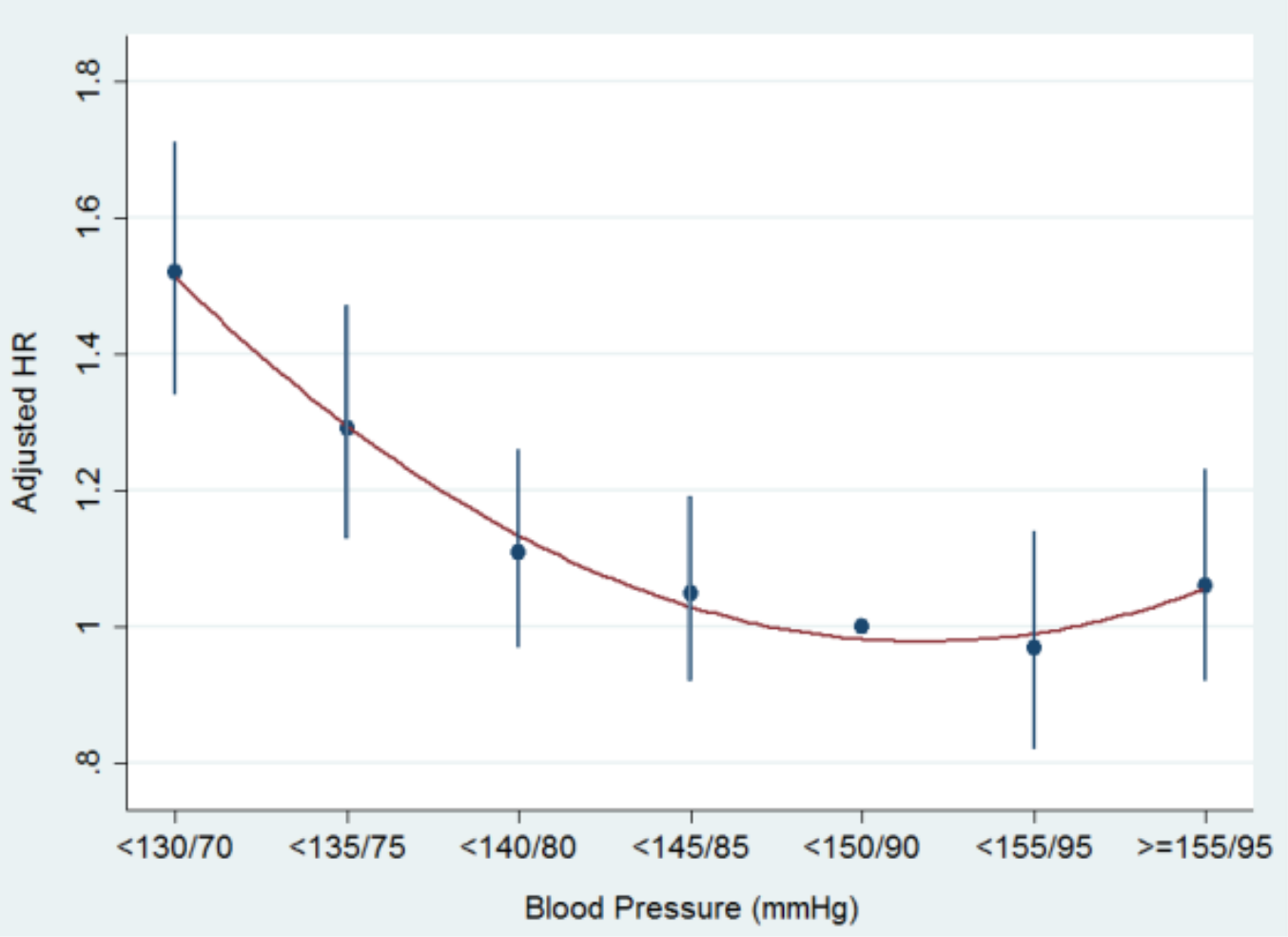

Ipertensione nel Diabete

Controllo pressorio ottimale per ogni età?

Nella persona con diabete gli stessi valori di PA hanno un diverso impatto sul rischio cardiovascolare in funzione dell'età del paziente

I benefici sul rischio cardiovascolare di obiettivi pressori ambiziosi si riducono progressivamente con l'aumentare dell'età

Nell'anziano raggiungere valori di PA particolarmente bassi può aumentare il rischio cardiovascolare

ESC European Society of Cardiology

European Heart Journal (2019) **00**, 1–69
doi:10.1093/eurheartj/ehz486

ESC GUIDELINES

2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD

Recommendations for the management of blood pressure in patients with diabetes and pre-diabetes

Recommendations	Class[a]	Level[b]
Treatment targets		

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Treatment targets		
Antihypertensive drug treatment is recommended for people with DM when office BP is >140/90 mmHg.[155,178–180]	I	A

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Recommendations	Class[a]	Level[b]
Treatment targets		
Antihypertensive drug treatment is recommended for people with DM when office BP is >140/90 mmHg.[155,178–180]	I	A
It is recommended that patients with hypertension and DM are treated in an individualized manner. The BP goal is to target SBP to 130 mmHg and <130 mmHg if tolerated, but not <120 mmHg. In older people (aged >65 years), the SBP goal is to a range of 130 - 139 mmHg.[155,159,160,181–183]	I	A

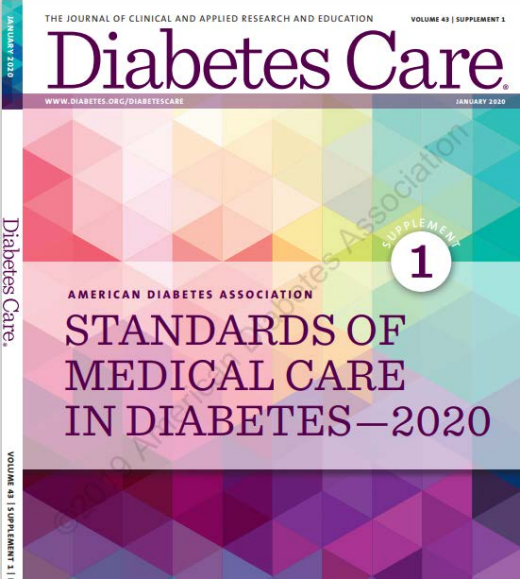
2020 International Society of Hypertension Global Hypertension Practice Guidelines

American Heart Association.

Diabete

La pressione arteriosa deve essere ridotta se ≥140 / 90 mmHg e trattata a un target <130/80 mmHg

PA <140/80 nei pazienti anziani



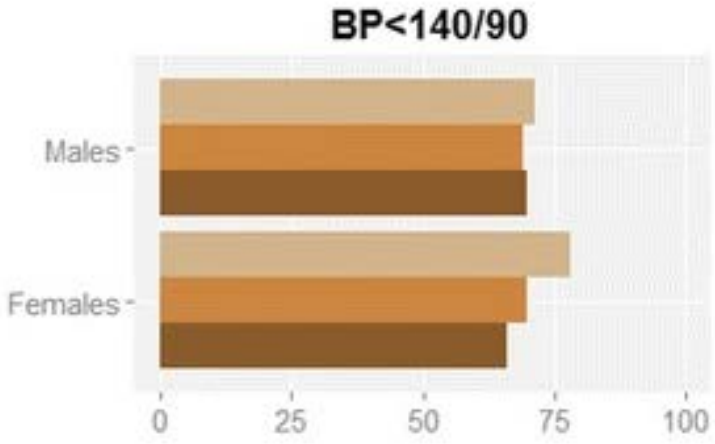
Recommendations

10.3 For patients with diabetes and hypertension, blood pressure targets should be individualized through a shared decision-making process that addresses cardiovascular risk, potential adverse effects of antihypertensive medications, and patient preferences. **C**

10.4 For individuals with diabetes and hypertension at higher cardiovascular risk (existing atherosclerotic cardiovascular disease [ASCVD] or 10-year ASCVD risk ≥15%), a blood pressure target of <130/80 mmHg may be appropriate, if it can be safely attained. **C**

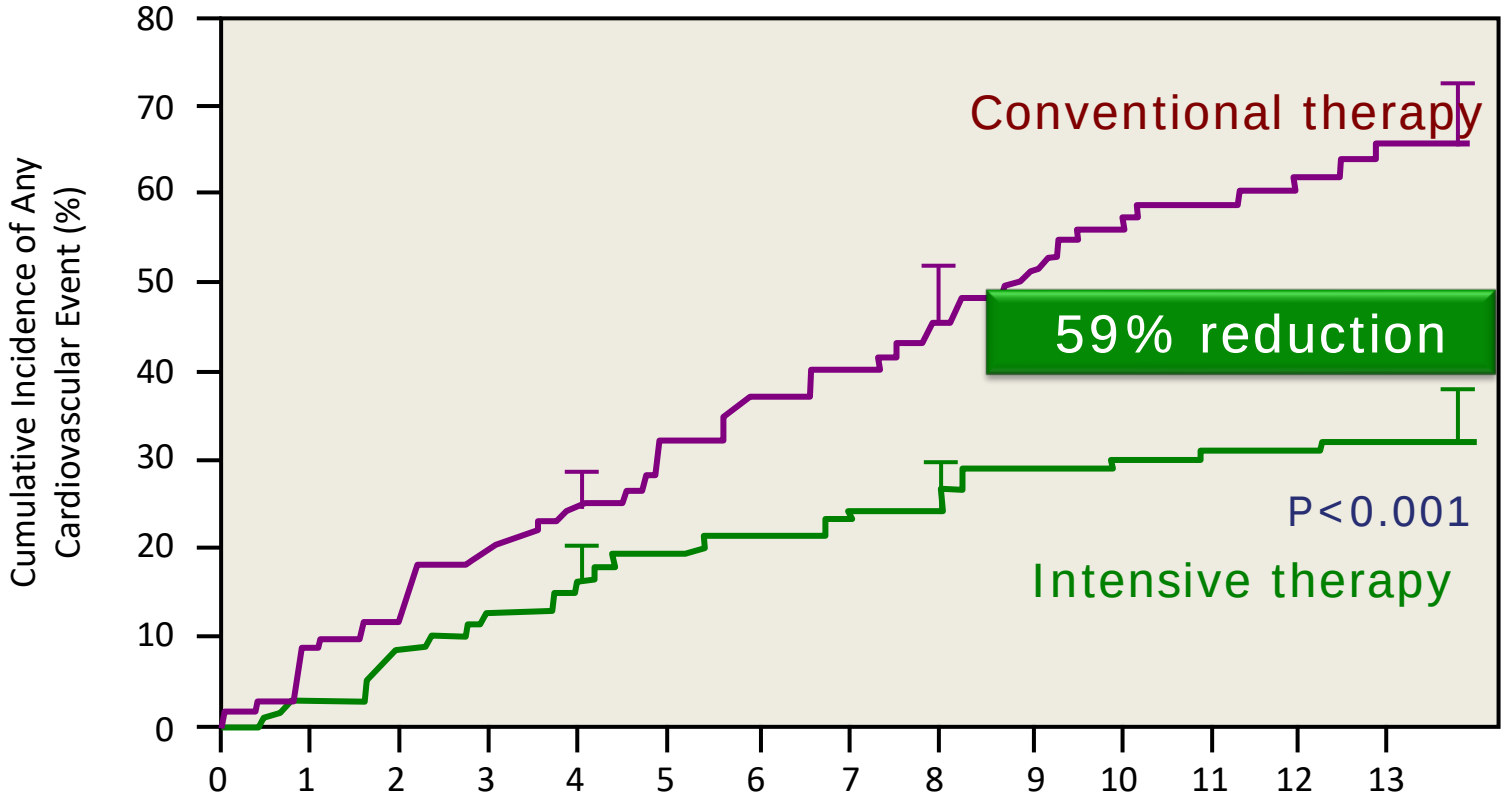
10.5 For individuals with diabetes and hypertension at lower risk for cardiovascular disease (10-year atherosclerotic cardiovascular disease risk <15%), treat to a blood pressure target of <140/90 mmHg. **A**

DM2
target raggiunti: HbA1c BP LDL
n 32638



Cambra et al. BMC Family Practice (2016) 1

Multi-factorial Intervention and CVD in Patients with Type 2 Diabetes: Long-term Follow-up STENO study



No. at Risk								
Intensive	80	72	65	61	56	50	47	31
Conventional	80	70	60	46	38	29	25	14

Gaede P, NEJM 2008

La CVD nel pz con diabete tipo 2 ha una genesi multifattoriale

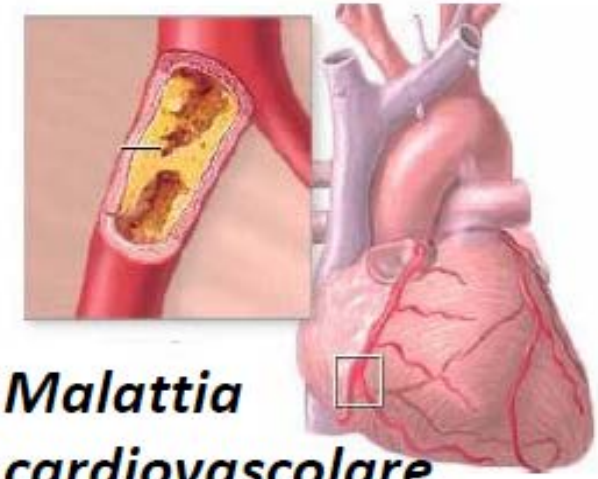
DIABETE =

Ipertensione

Iperglicemia

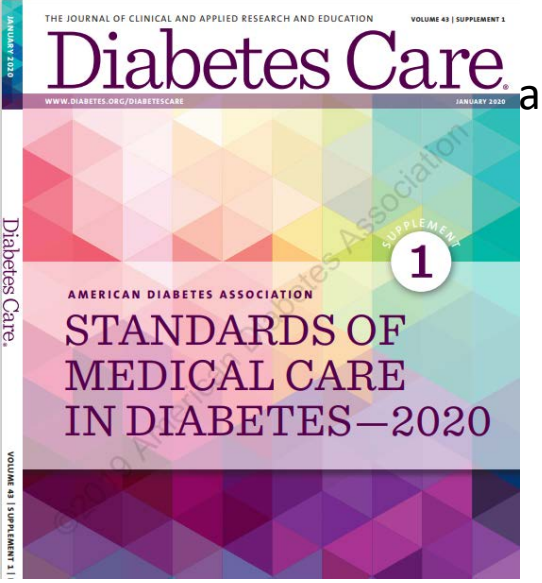
Obesità

Dislipidemia



Malattia cardiovascolare

Grazie per l’attenzione



a 2020

Table 10.1—Randomized controlled trials of intensive versus standard hypertension treatment strategies

Clinical trial	Population	Intensive	Standard	Outcomes
ACCORD BP (28)	4,733 participants with T2D aged 40–79 years with prior evidence of CVD or multiple cardiovascular risk factors	SBP target: <120 mmHg Achieved (mean) SBP/DBP: 119.3/64.4 mmHg	SBP target: 130–140 mmHg Achieved (mean) SBP/DBP: 13.5/70.5 mmHg	• No benefit in primary end point: composite of nonfatal MI, nonfatal stroke, and CVD death • Stroke risk reduced 41% with intensive control, not sustained through follow-up beyond the period of active treatment • Adverse events more common in intensive group, particularly elevated serum creatinine and electrolyte abnormalities
ADVANCE BP (29)	11,140 participants with T2D aged 55 years and older with prior evidence of CVD or multiple cardiovascular risk factors	Intervention: a single-pill, fixed-dose combination of perindopril and indapamide Achieved (mean) SBP/DBP: 136/73 mmHg	Control: placebo Achieved (mean) SBP/DBP: 141.6/75.2 mmHg	• Intervention reduced risk of primary composite end point of major macrovascular and microvascular events (9%), death from any cause (14%), and death from CVD (18%) • 6-year observational follow-up found reduction in risk of death in intervention group attenuated but still significant (174)
HOT (185)	18,790 participants, including 1,501 with diabetes	DBP target: ≤80 mmHg	DBP target: ≤90 mmHg	• In the overall trial, there was no cardiovascular benefit with more intensive targets • In the subpopulation with diabetes, an intensive DBP target was associated with a significantly reduced risk (51%) of CVD events
SPRINT (39)	9,361 participants without diabetes	SBP target: <120 mmHg Achieved (mean): 121.4 mmHg	SBP target: <140 mmHg Achieved (mean): 136.2 mmHg	• Intensive SBP target lowered risk of the primary composite outcome 25% (MI, ACS, stroke, heart failure, and death due to CVD) • Intensive target reduced risk of death 27% • Intensive therapy increased risks of electrolyte abnormalities and AKI

ACCORD BP, Action to Control Cardiovascular Risk in Diabetes Blood Pressure trial; ACS, acute coronary syndrome; ADVANCE BP, Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation–Blood Pressure trial; AKI, acute kidney injury; CVD, cardiovascular disease; DBP, diastolic blood pressure; HOT, Hypertension Optimal Treatment trial; MI, myocardial infarction; SBP, systolic blood pressure; SPRINT, Systolic Blood Pressure Intervention Trial; T2D, type 2 diabetes. Data from this table can also be found in the ADA position statement "Diabetes and Hypertension" (17).

2020 International Society of Hypertension Global Hypertension Practice Guidelines

American Heart Association.

SECTION 12: HYPERTENSION MANAGEMENT AT A GLANCE

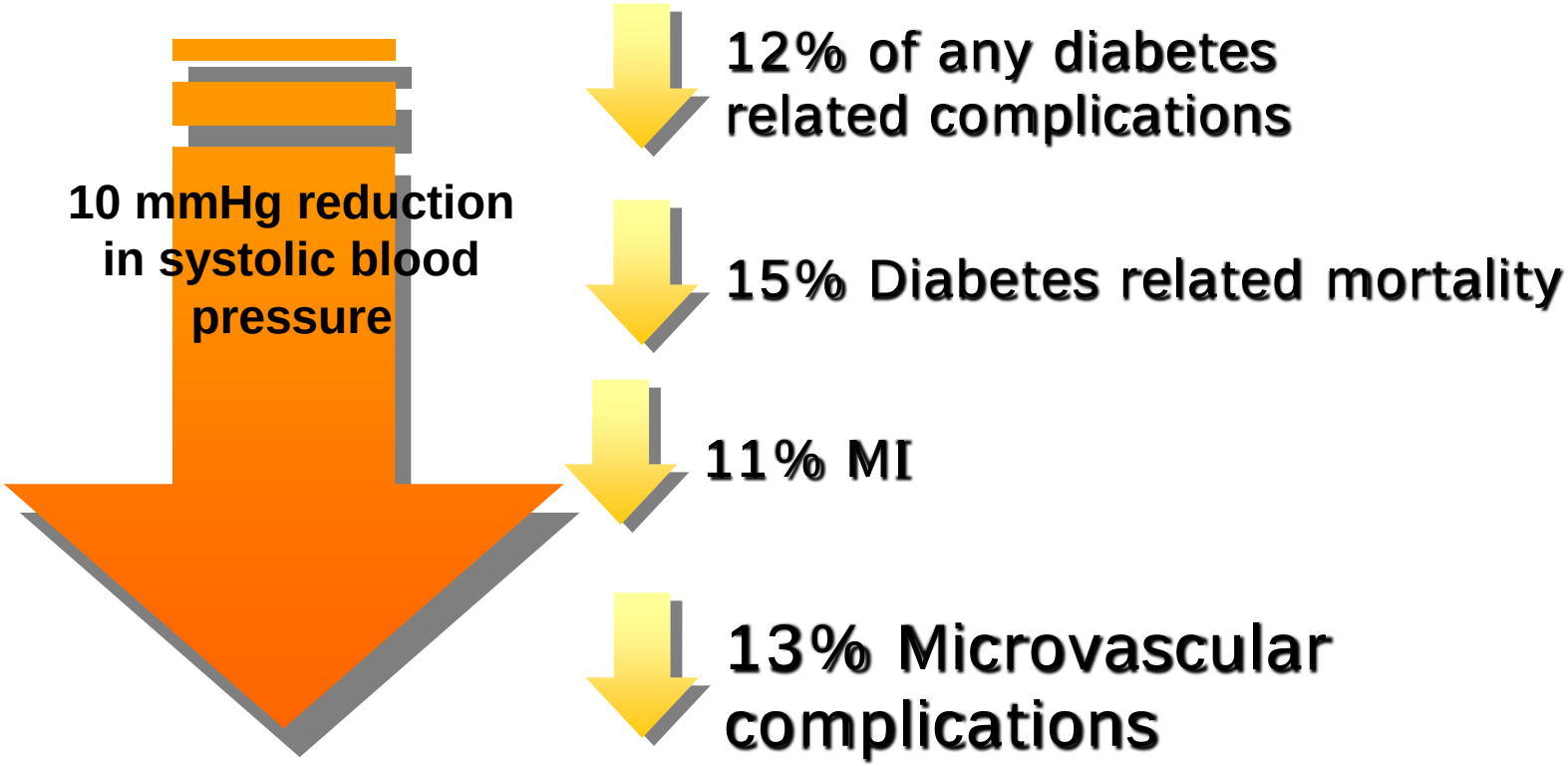
Table 1. Classification of Hypertension Based on Office Blood Pressure (BP) Measurement (Table view)

Category	Systolic (mm Hg)		Diastolic (mm Hg)
Normal BP	<130	and	<85
High-normal BP	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	≥160	and/or	≥100

Table 2. Criteria for Hypertension Based on Office-, Ambulatory (ABPM)-, and Home Blood Pressure (HBPM) Measurement (Table view)

	SBP/DBP, mm Hg
Office BP	≥140 and/or ≥90
ABPM	
24-h average	≥130 and/or ≥80
Day time (or awake) average	≥135 and/or ≥85
Night time (or asleep) average	≥120 and/or ≥70
HBPM	≥135 and/or ≥85

UKPDS
Systolic blood pressure and end points



Adler AI, BMJ 2000

Studio ADVANCE
target PA sistolica

Braccio trattamento attivo	Braccio terapia standard
PA 136/73 mmHg	PA 140/73 mmHg

	Numero (%) di pazienti con evento		Favorevole Perindopril–indapamide	Favorevole Placebo	Riduzione rischio relativo (95%CI)
	Perindopril–indapamide (n=5569)	Placebo (n=5571)			
Mortalità cardiovascolare	211 (3,8%)	257 (4,6%)			18% (2-32)
Eventi coronarici	468 (8,4%)	535 (9,6%)			14% (2-24)
Eventi cerebrovascolari	286 (5,1%)	303 (5,4%)			6% (-10-20)
Eventi renali	1243 (22,3%)	1500 (26,9%)			21% (15-27)
Mortalità per tutte le cause	408 (7,3%)	471 (8,5%)			14% (2-25)

Patel A, ADVANCE trial *Lancet* 2007; 370:829–840

Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus The ACCORD Study Group

Table 3. Primary and Secondary Outcomes.

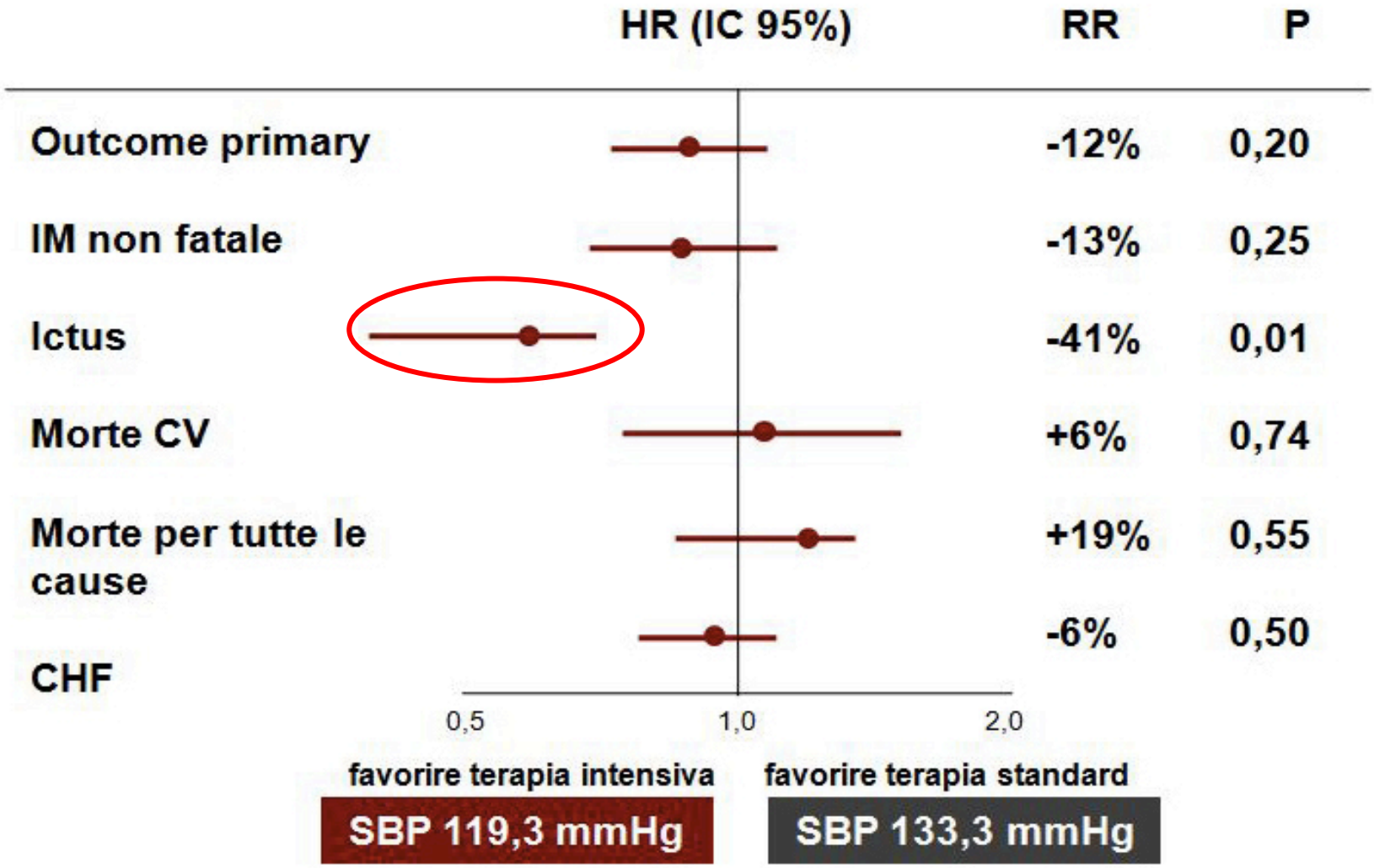
Outcome	Intensive Therapy (N=2363)		Standard Therapy (N=2371)		Hazard Ratio (95% CI)	P Value
	no. of events	*%/yr*	*no. of events*	*%/yr*		
Primary outcome*	208	1.87	237	2.09	0.88 (0.73–1.06)	0.20
Prespecified secondary outcomes						
Nonfatal myocardial infarction	126	1.13	146	1.28	0.87 (0.68–1.10)	0.25
Stroke						
Any	36	0.32	62	0.53	0.59 (0.39–0.89)	0.01
Nonfatal	34	0.30	55	0.47	0.63 (0.41–0.96)	0.03
Death						
From any cause	150	1.28	144	1.19	1.07 (0.85–1.35)	0.55
From cardiovascular cause	60	0.52	58	0.49	1.06 (0.74–1.52)	0.74
Primary outcome plus revascularization or nonfatal heart failure	521	5.10	551	5.31	0.95 (0.84–1.07)	0.40
Major coronary disease event†	253	2.31	270	2.41	0.94 (0.79–1.12)	0.50
Fatal or nonfatal heart failure	83	0.73	90	0.78	0.94 (0.70–1.26)	0.67

* The primary outcome was a composite of nonfatal myocardial infarction, nonfatal stroke, or death from cardiovascular causes.

† Major coronary disease events, as defined in the protocol, included fatal coronary events, nonfatal myocardial infarction, and unstable angina.

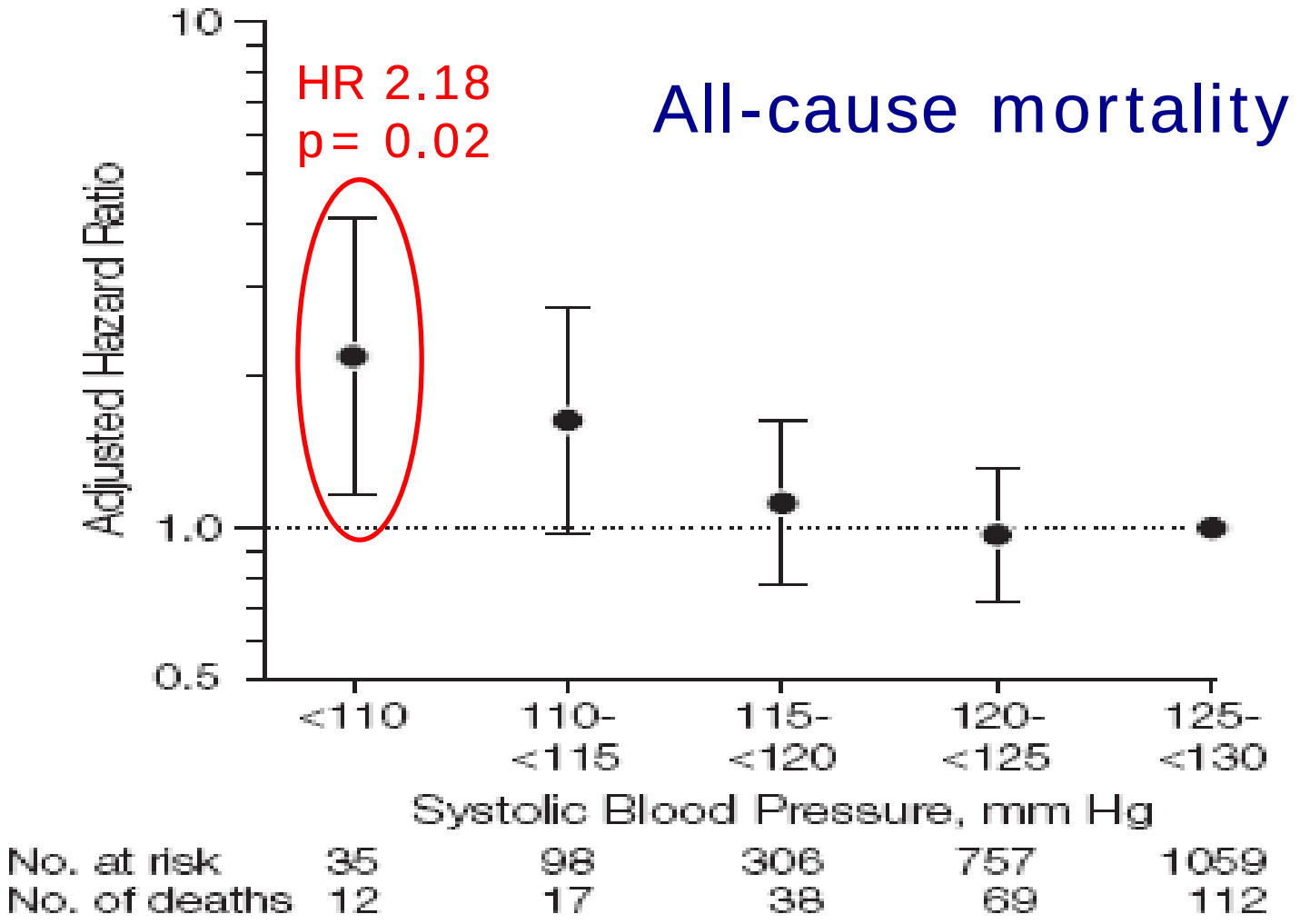
The ACCORD Study Group, N Engl J Med 2010

Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus The ACCORD Study Group



The ACCORD Study Group, N Engl J Med 2010

Intensive BP control in hypertensive patients with diabetes and CAD: follow up of the INVEST Study (n=6400)



Cooper-DeHoff R et al, JAMA 2010

IDNT study
CV outcomes in patients with mean achieved SBP> and ≤120 mm/Hg

	BP>120 mmHg (n=1537)		BP<120 mmHg (n=53)			
	Events	Ptz (%)	Events	Ptz (%)	RR	P
All cause		192 (12)		15 (28)	**3.05**	**<0.0001**
CV		92 (6)		10 (19)	**4.06**	**<0.0001**
CHF	289	195 (13)	23	13 (25)	**1.80**	**0.008**
MI	120	109 (7)	3	3 (6)	0.91	0.87
Stroke	65	59 (4)	4	3 (6)	2.12	0.15

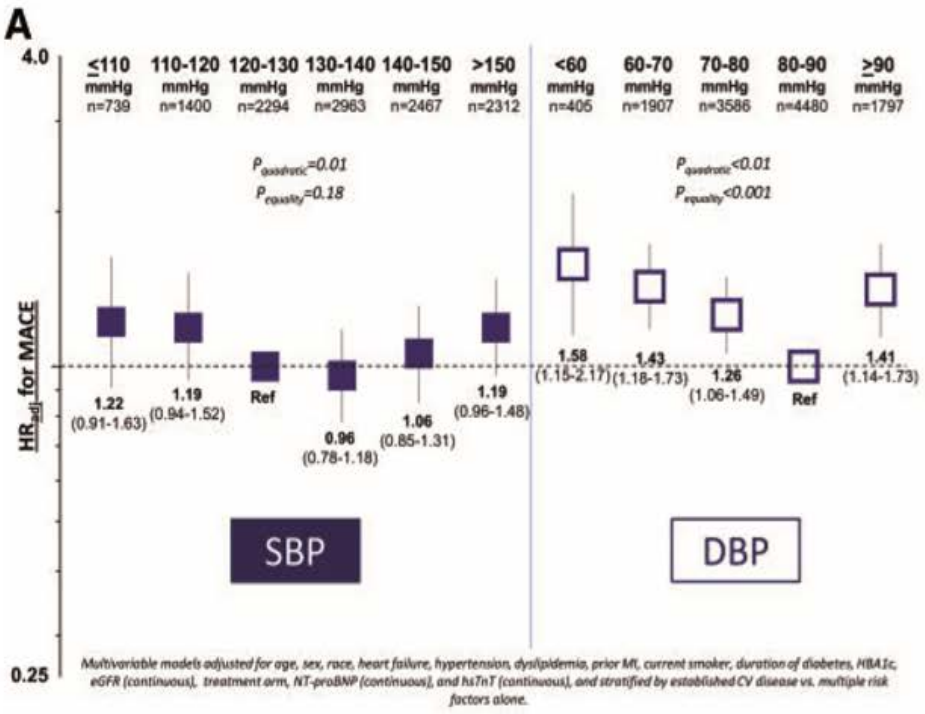
Berl T, J Am Soc Nephrol 2005

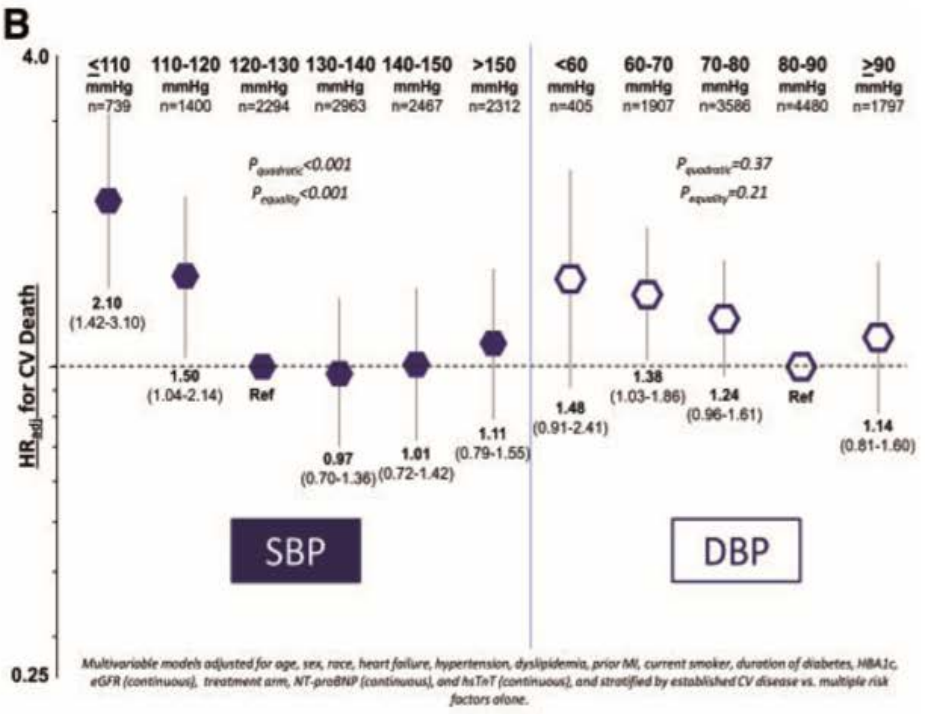
VADT
aumento del rischio di CVD per PA<70 e PA≥140

	Baseline			On-Study		
	HR	95% CI	*P*	HR	95% CI	*P*
DBP (mmHg)						
70–79	Reference			Reference		
<70	1.482	1.179–1.862	<0.001	1.491	1.206–1.844	<0.001
≥80	1.030	0.825–1.287	0.79	1.049	0.814–1.351	0.71
SBP (mmHg)						
105–129	Reference			Reference		
<105	0.974	0.591–1.603	0.92	1.364	0.977–1.904	0.07
130–139	1.004	0.786–1.283	0.97	0.938	0.733–1.201	0.61
≥140	1.508	1.203–1.890	<0.001	1.469	1.157–1.867	0.002

Anderson VADT STUDY GROUP Diabetes Care 34:34–38, 2011

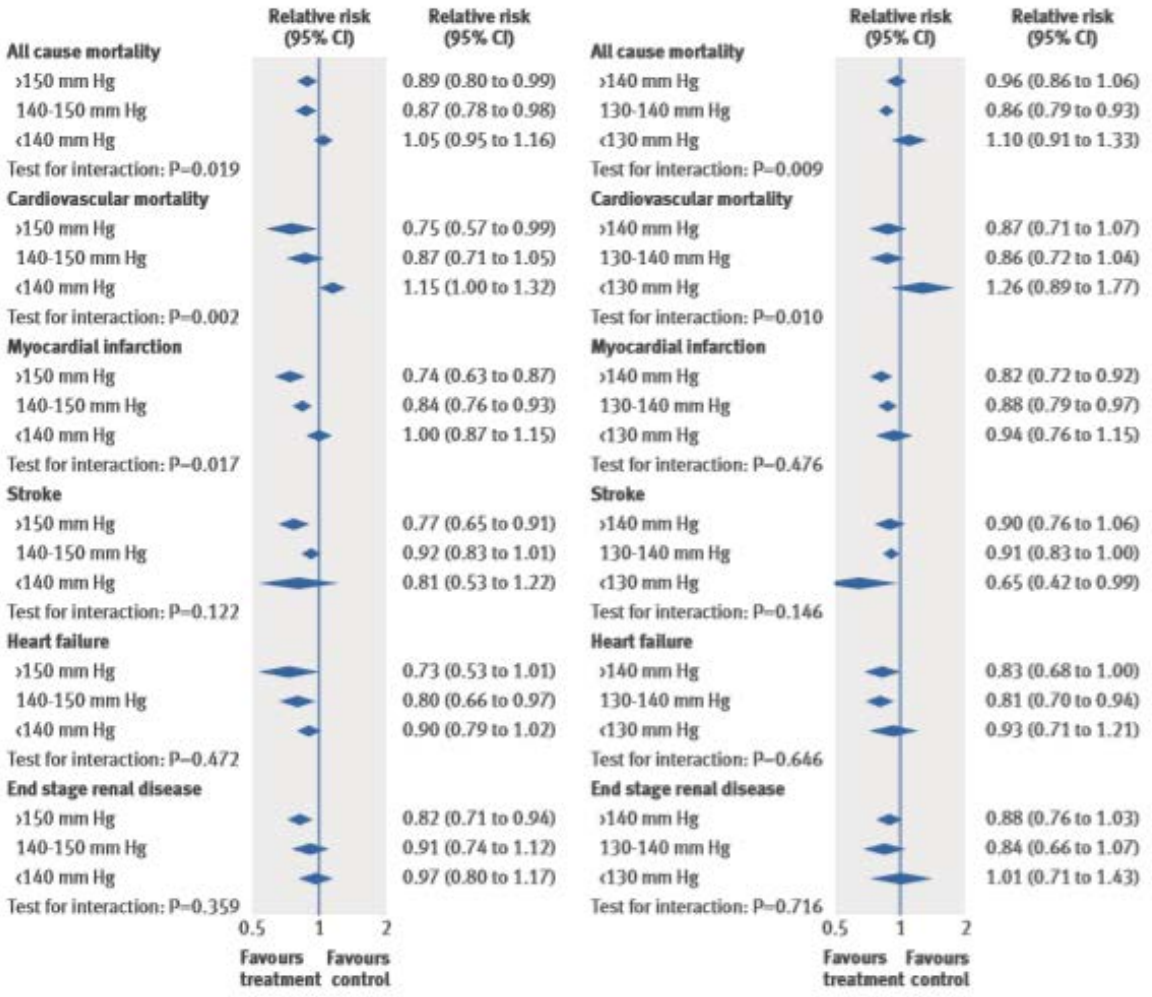
In pazienti con DM2 ed elevato rischio CV bassi valori di PAD mostravano una forte associazione con il danno miocardico subclinico e con il rischio di IMA





Bergmark BA, SAVOR-TIMI 53 Eur Heart J. 2018 Ja

Nei soggetti con DM il trattamento antipertensivo riduce il rischio di mortalità e di morbilità cardiovascolare solo nei soggetti con PAS>140 mmHg. Per i soggetti con valori ≤140 mmHg non è di alcun beneficio e forse è pericoloso



Mattias Brunström BMJ 2016

IPERTENSIONE ARTERIOSA

DONNE CON DIABETE IPERTESE DURANTE LA GRAVIDANZA

- Obiettivi pressori di 110-129 mmHg di sistolica e 65-79 mmHg di diastolica (VI B).

	TARGET PAS	TARGET PAD	ANZIANO	NEFRO PATICO	RACCOMANDAZIONI
AMD-SID 2018 Standard Italiani per la cura del DM	<140mmHg	<90mmHg	<150/90 mmHg	<130/80 mmHg se micro e macroalbuminuria	<130/80 nel giovane e con elevato rischio di ICTUS
ADA 2020 Standards of medical care in diabetes	<140mmHg	<90mmHg	--------	--------	<130/80mmHg nei pazienti ad alto rischio CV
ESC-EASD 2019 Guidelines Hypertension	<130 >120 mmHg	<80mmHg >70mmHg	130-139 mmHg		
AHA 2020 Practice Guidelines	<130mmHg	<80mmHg	<140/80 mmHg		Iniziare tp per PA≥140/90

Studio GUIDANCE

aderenza ai target di PA raccomandati per i pazienti con DM in Europa

Outcome measure	Target	Belgium	France	Germany	Ireland	Italy	Netherlands	Sweden	UK	Total sample	Variation (%)*
Percentage (95% confidence limits) meeting target											
HbA1c (%)	<7% (53mmol/mol)	59.7 (56.7–62.8)	65.3 (62.4–68.2)	48.6 (45.4–51.9)	53.4 (50.2–56.7)	**35.7 (32.7–38.7)**	70.5 (67.7–73.3)	56.5 (52.3–60.6)	39.1 (36.1–42.1)	53.6 (52.5–54.8)	34.8
Systolic BP	<130 mmHg	29.3 (26.5–32.1)	26.3 (23.7–29.0)	19.0 (16.5–21.5)	32.9 (29.8–36.0)	**31.8 (28.9–34.7)**	27.8 (25.1–30.6)	35.3 (31.3–39.3)	32.5 (29.7–35.4)	29.0 (28.0–30.0)	16.3
Diastolic BP	<80 mmHg	36.5 (33.5–39.4)	38.8 (35.8–41.7)	22.4 (19.7–25.0)	57.3 (54.0–60.5)	**42.1 (39.0–45.2)**	49.2 (46.1–52.2)	53.7 (49.6–57.9)	59.2 (56.2–62.2)	44.3 (43.2–45.5)	36,8
BP (combined)	<130/80 mmHg	17.6 (15.3-20)	14.9 (12.7–17.1)	7.4 (5.7–9.1)	24.9 (22.1–27.8)	**20.8 (18.2–23.3)**	20.3 (17.9–22.8)	27.1 (23.3–30.8)	25.0 (22.3–27.7)	19.3 (18.4–20.2)	19.7

Stone Diabetes Care 2013

Diabete mellito e Ipertensione

Quanto ridurre la PA?

Effetto del controllo pressorio sugli eventi cardiovascolari in diabetici con ipertensione di recente diagnosi

15665 Pz DIABETICI
IPERTENSIONE DI RECENTE DIAGNOSI
ASSENZA DI MALATTIE CARDIOVASCOLARI

AL BASALE			
n. Pz	5158	7409	3098
PA media	**133,1/79,6**	**135,9/81,7**	**145,3/82,3**

DOPO 12 MESI			
PA media	**122,2/73,7**	**131,7/79,0**	**145,9/83,0**

O'Connor PJ Diabetes Care 2013

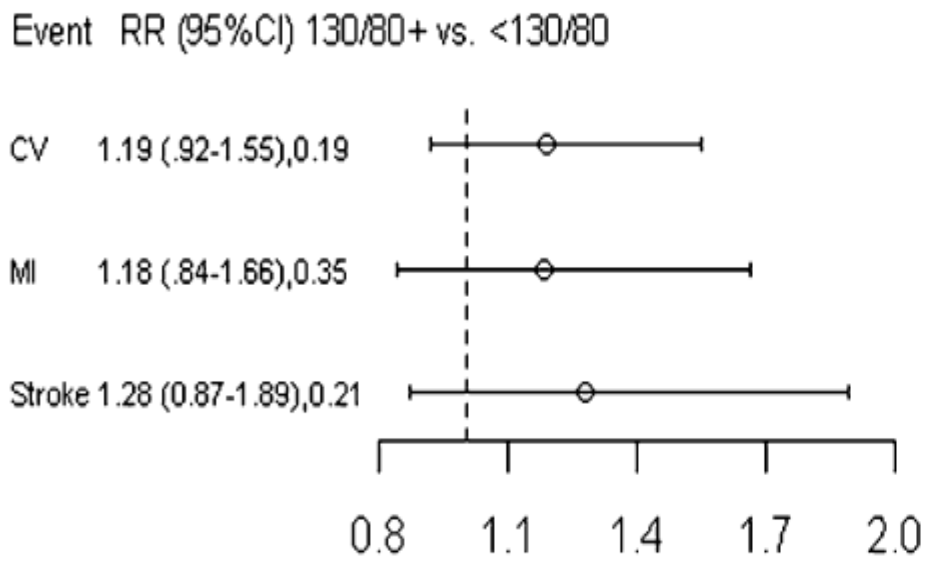
Effetto del controllo pressorio sugli eventi cardiovascolari in diabetici con ipertensione di recente diagnosi

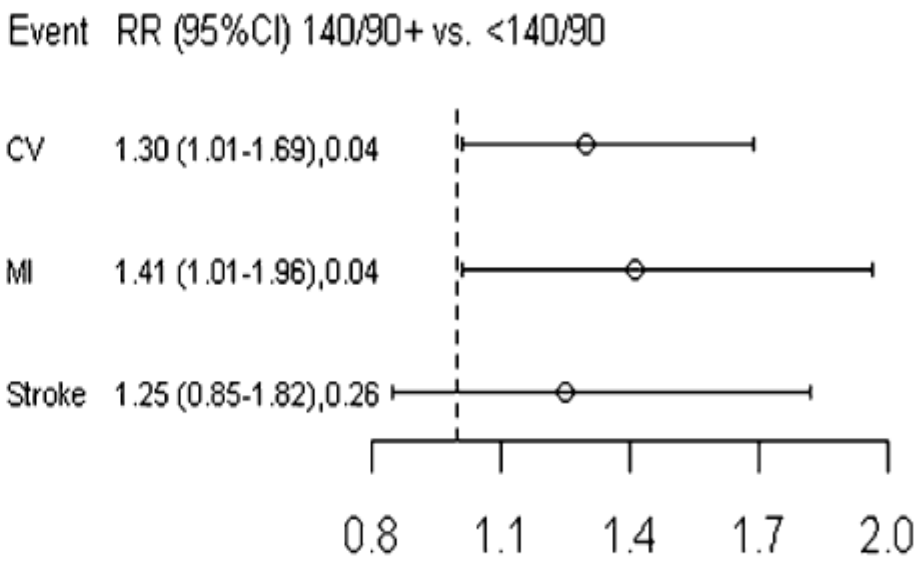
DOPO 12 MESI				
PA	**<130/80**	**130-139/80-89**	**≥140/90**	
% Pz	32,9	47,3	19,8	
DOPO 3,2 ANNI				***P***
Eventi card.vasc. maggiori (eventi/1000 persone/anno)	4,75	5,02	6,94	**0,03**
Infarto del miocardio (eventi/1000 persone/anno)	2,76	2,76	4,32	**0,03**
Stroke (eventi/1000 persone/anno)	2,11	2,50	3,01	**0,31**

Il controllo non adeguato della PA nel primo anno dopo la diagnosi di ipertensione aumenta significativamente la probabilità di eventi cardiovascolari maggiori e di infarto del miocardio nei tre anni successivi

O'Connor PJ Diabetes Care 2013

Effetto del controllo pressorio sugli eventi cardiovascolari in diabetici con ipertensione di recente diagnosi



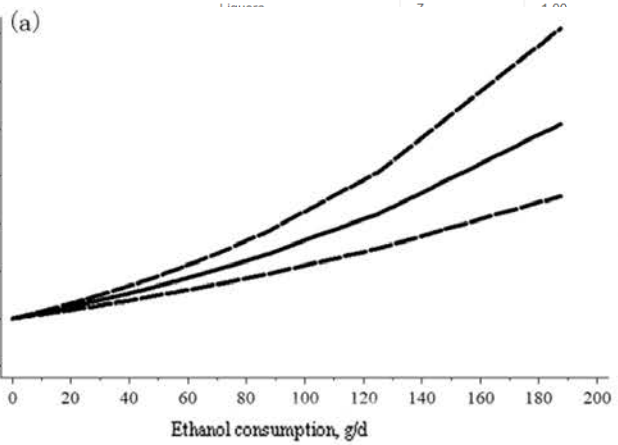


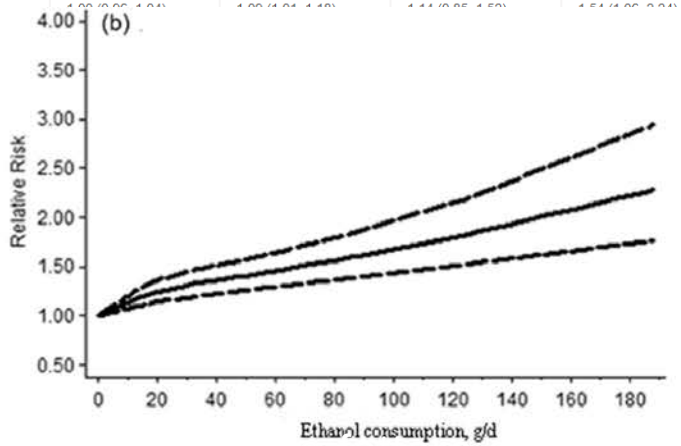
Valori di PA <130/80mmHg non sembrano apportare alcun beneficio aggiuntivo rispetto a PA < 140/90mmHg

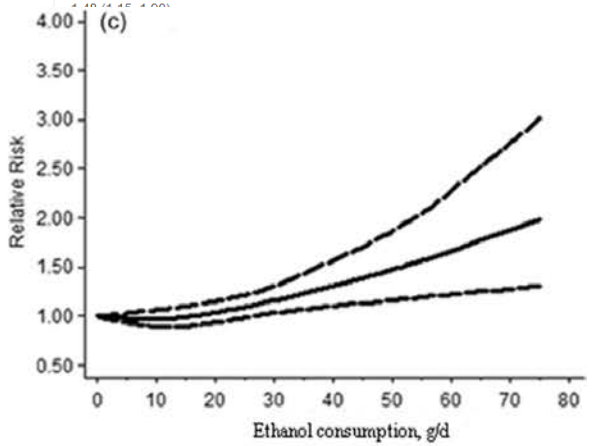
O'Connor PJ Diabetes Care 2013

Tabella 1 RR stimato di ipertensione con consumo di alcol specifico per la bevanda.

Bevanda	N. studi, n	Consumo di etanolo, g / d					
		Non bevitori	0,1–5	5.1–10	10.1-15	15.1–20	> 20
Vino	8	1.00	0,97 (0,94–1,01)	0,92 (0,87–0,97)	1.03 (0.92–1.14)	1,29 (1,09–1,53)	1,26 (1,06–1,50)
birra	7	1.00	0,94 (0,88–0,99)	0,94 (0,79–1,12)	0,94 (0,74–1,19)	1,39 (1,14–1,68)	1,34 (1,00–1,78)



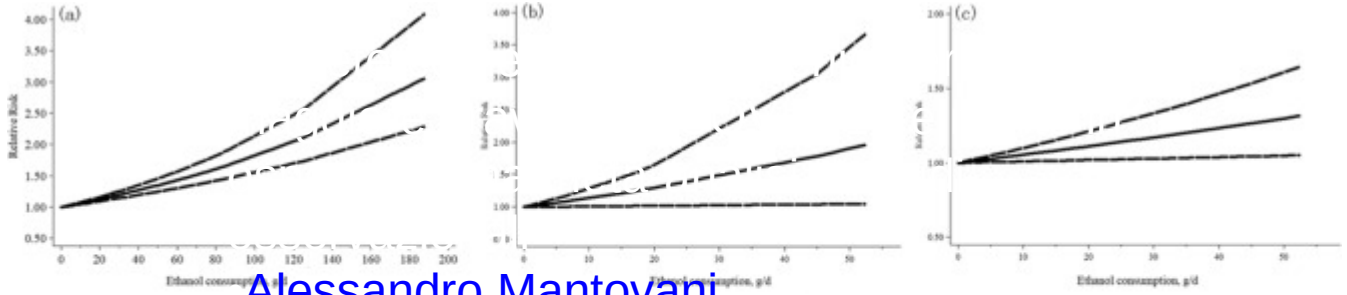




Ethanol consumption	Total		Men		Women		$P_{\text{-between genders}}$
g/d	RR	95% CI	RR	95% CI	RR	95% CI	
10	1.06	(1.05-1.08)	1.14	(1.07-1.20)	0.98	(0.89-1.06)	0.005
30	1.20	(1.14-1.25)	1.31	(1.18-1.45)	1.16	(1.04-1.31)	0.123
50	1.35	(1.25-1.45)	1.48	(1.29-1.69)	1.48	(1.17-1.87)	0.718

Alessandro Mantovani
Christopher D. Byrne
Ming-Hua Zheng
Giovanni Targher

https://doi.org/10.1016/j.numecd.2020.05.014



Alessandro Mantovani
Christopher D. Byrne
Ming-Hua Zheng
Giovanni Targher

Ethanol consumption	Asian		Black		White		P - across subgroups
g/d	RR	95% CI	RR	95% CI	RR	95% CI	
6	[illegible]	[illegible]	1.08	(1.01-1.16)	1.03	(1.01-1.06)	0.002
15	[illegible]	[illegible]	1.21	(1.01-1.45)	1.08	(1.01-1.15)	<0.001
45	[illegible]	[illegible]	1.78	(1.04-3.05)	1.26	(1.04-1.53)	<0.001

https://doi.org/10.1016/j.numecd.2020.05.014

ESC European Society of Cardiology
European Heart Journal (2019) **00**, 1–69
doi:10.1093/eurheartj/ehz486

2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD

Table 7 Cardiovascular risk categories in patients with diabetes[a]

Very high risk	Patients with DM **and** established CVD **or** other target organ damage[b] **or** three or more major risk factors[c] **or** early onset T1DM of long duration (>20 years)
High risk	Patients with DM duration ≥10 years without target organ damage plus any other additional risk factor
Moderate risk	Young patients (T1DM aged <35 years or T2DM aged <50 years) with DM duration <10 years, without other risk factors

CV = cardiovascular; CVD = cardiovascular disease; DM = diabetes mellitus; T1DM = type 1 diabetes mellitus; T2DM = type 2 diabetes mellitus.

[a]Modified from the 2016 European Guidelines on cardiovascular disease prevention in clinical practice.[27]

[b]Proteinuria, renal impairment defined as eGFR ≥30 mL/min/1.73 m^2, left ventricular hypertrophy, or retinopathy.

PERCHE'

il controllo intensivo della PA riduce il rischio di ictus ma non di IMA?

- in pazienti con preesistente malattia coronarica l'eccessiva riduzione della PA sistolica può essere associata ad un aumentato rischio di infarto miocardico secondario ad un'alterazione della perfusione

  Deedwania Circulation. 2011;123:2776-2778

- un'eccellente autoregolazione del flusso sanguigno cerebrale assicura la perfusione continua del cervello anche a bassi valori di PA

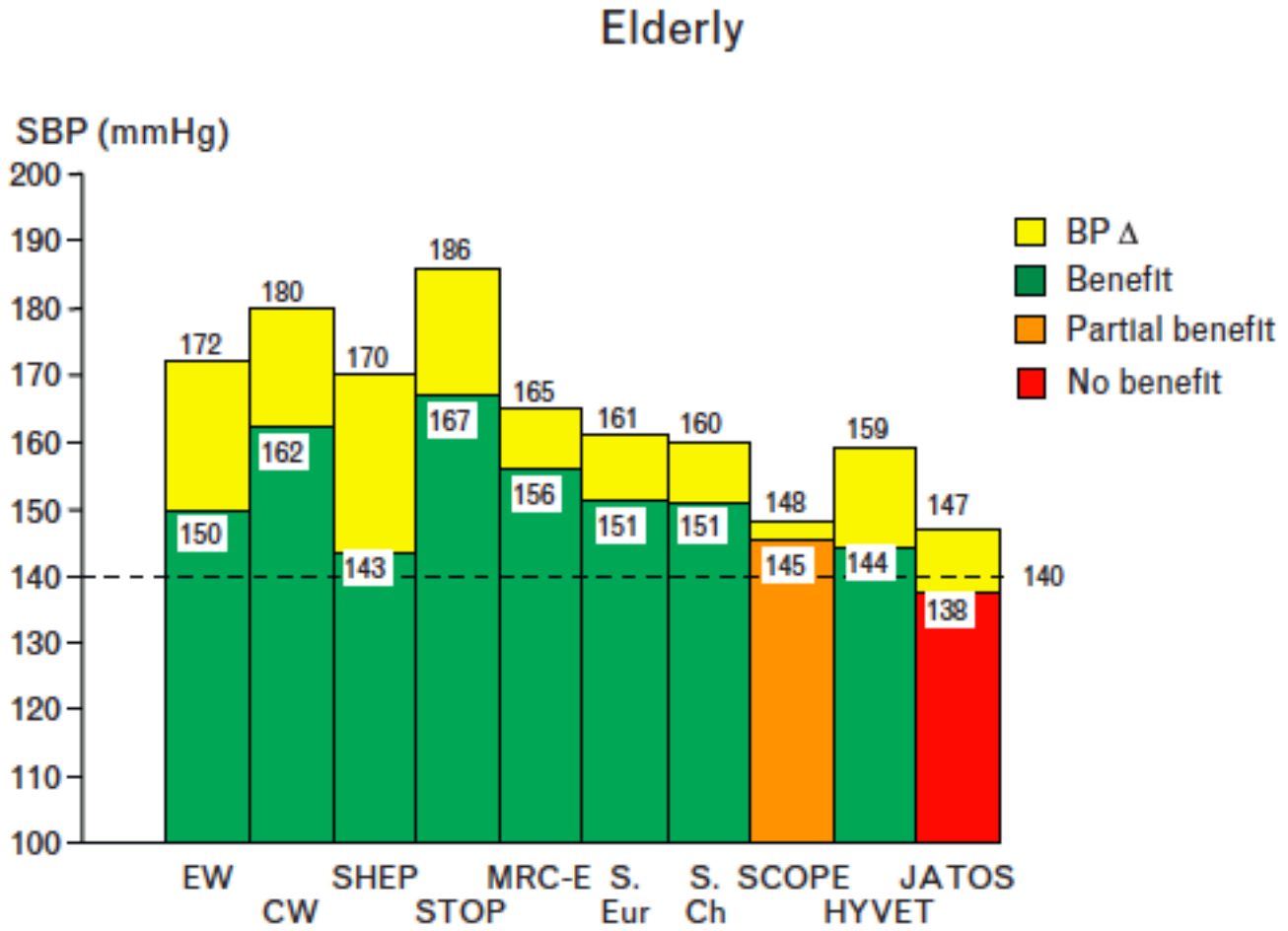
  Paulson OB Am J Med 1984;76:91–95

IPERTENSIONE ARTERIOSA

DONNE CON DIABETE IPERTESE DURANTE LA GRAVIDANZA

- Obiettivi pressori di 110-129 mmHg di sistolica e 65-79 mmHg di diastolica (VI B).

Achieved SBP in patients randomized to a more active (filled rectangles) or less active (open rectangles) treatment in trials



Mod. from Zanchetti A et al.,J Hypertens 2009; 27:923–934.

ANZIANI IPERTESI

rischio cardiovascolare raddoppiato nei diabetici rispetto ai non diabetici

Table 1. Risk of Cardiovascular Morbidity and Mortality in Elderly Diabetic Hypertensive Patients*

	Syst-Eur[15]	SHEP[17]	Syst-China[18]	HOT[20]†
No. of patients				
Diabetic	240	300	47	501
Nondiabetic	2057	2069	1094	5763
Risk				
Cardiac end points	1.30	2.18	2.19	2.30
All cardiovascular events	1.74	1.73	1.97	2.77
Stroke	2.07	2.02	2.06	2.54
Cardiovascular mortality	2.25	. . .‡	3.33	3.66
Total mortality	2.00	1.73	2.25	2.18

*Patients are derived from placebo groups in prospective studies. Syst-Eur indicates Systolic Hypertension in Europe Study; SHEP, Systolic Hypertension in the Elderly Program; Syst-China, Systolic Hypertension in China Study; and HOT, Hypertension Optimal Treatment Study.

†Patients who were assigned to target diastolic blood pressure of 90 mm Hg or less.

‡Not available.

Grossman E *Arch Intern Med* 2000

La parola alle meta-analisi....

JAMA Internal Medicine
Formerly *Archives of Internal Medicine* Sep 24, 2012, Vol 172, No. 17

Intensive BP targets in patients with type 2 DM is associated with a small reduction in the risk for stroke, evidence does not show that intensive targets reduce the risk for mortality or myocardial infarction

Journal of Hypertension 2011, 29:1253–1269

Risk of stroke decreased by 13% for each 5 mmHg reduction in SBP, and by 11.5% for each 2 mmHg reduction in DBP, the risk of MI did not show any association with the extent of BP reduction .

Annals of Medicine, 2012; 44(Suppl 1): S36–S42
MINI REVIEW

A SBP treatment goal of 130 – 135 mmHg is acceptable

NOËL C. BARENGO[1,2] & JAAKKO O. TUOMILEHTO

Circulation May 31, 2011 American Heart

A SBP treatment goal of 130 – 135 mmHg is acceptable and more aggressive goals to 120 mm Hg can be considered in patients at higher risk of stroke

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