



Age Well, Live Long: The Blood Pressure Connection

Bernhard Haring, MD MPH

Department of Medicine IV

Clinic Hietzing

Vienna / Austria

bernhard.haring@meduniwien.ac.at



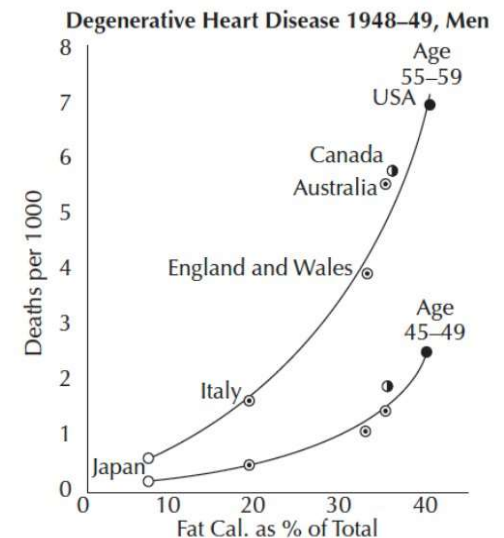
Seven Countries Study (1958)

US Epidemiologist Ancel Keys examined various countries...

Why do deaths rates from cardiovascular disease differ between countries ?



Ancel Keys' Six Countries results



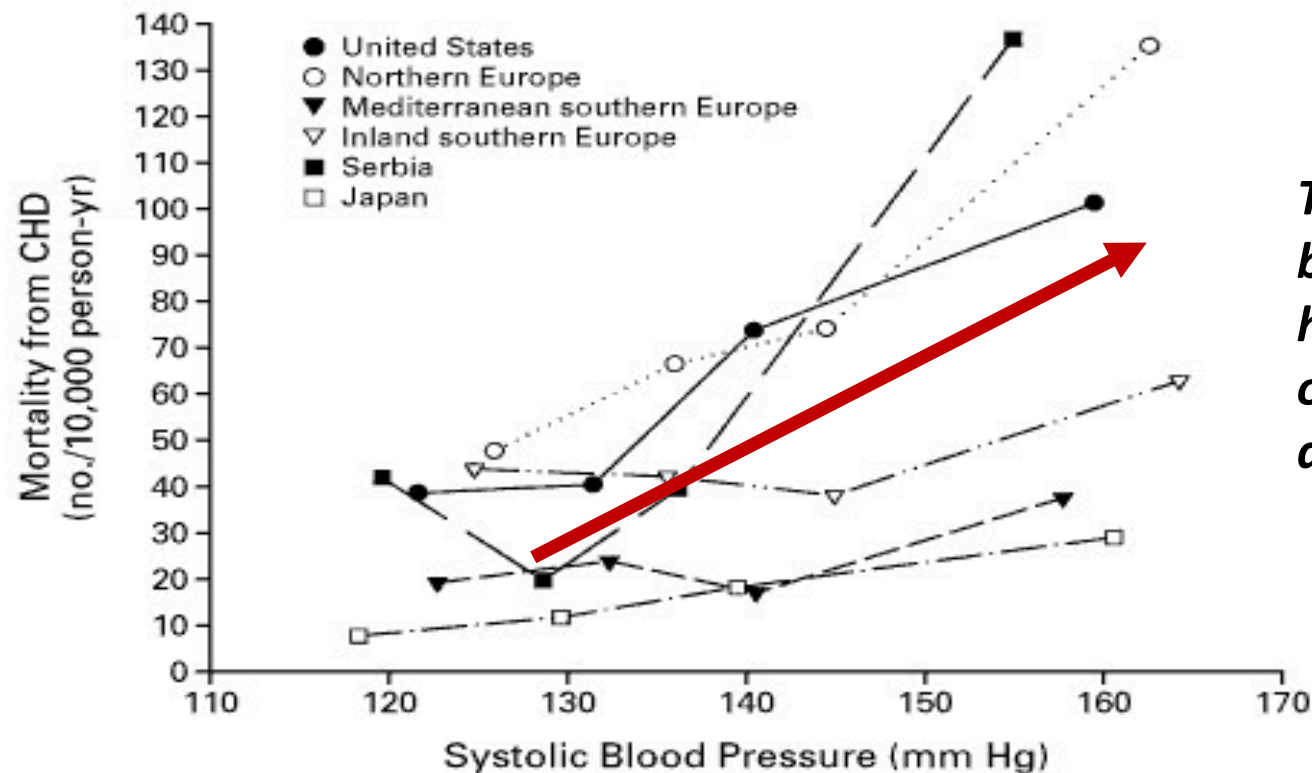
Source: Keys, A., J Mt Sinai Hosp NY, 1953³

The Seven Countries Study was essential in establishing the relationship that diet & lifestyle lead to heart disease.

Blood pressure and mortality from cardiovascular disease



Seven Countries Study (1958)

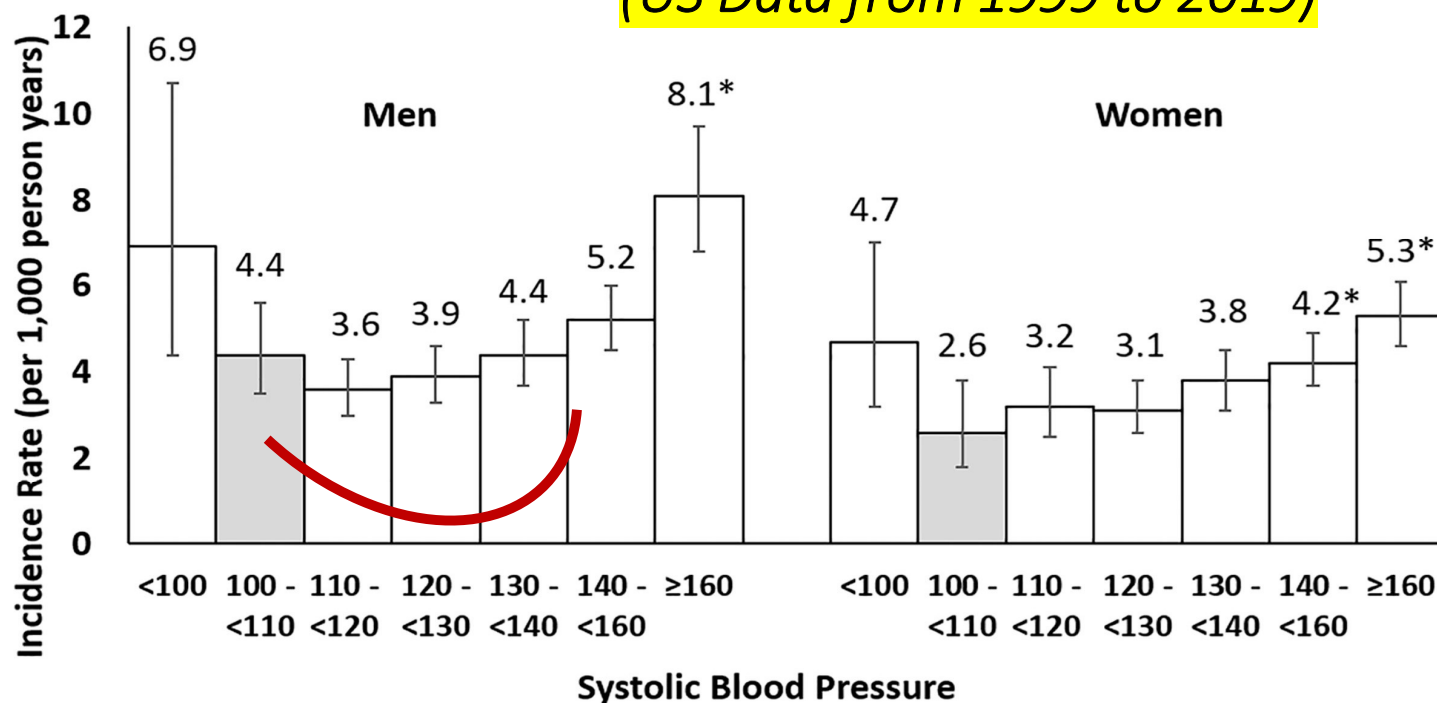


The higher systolic blood pressure, the higher the risk to die of cardiovascular disease ...

Blood Pressure and Cardiovascular Disease Mortality among adult men and women



(US Data from 1999 to 2019)



The higher systolic blood pressure, the higher the risk to die of cardiovascular disease.

Aim for a systolic blood pressure between 100 to 130 mmHg

Current Blood Pressure Recommendations

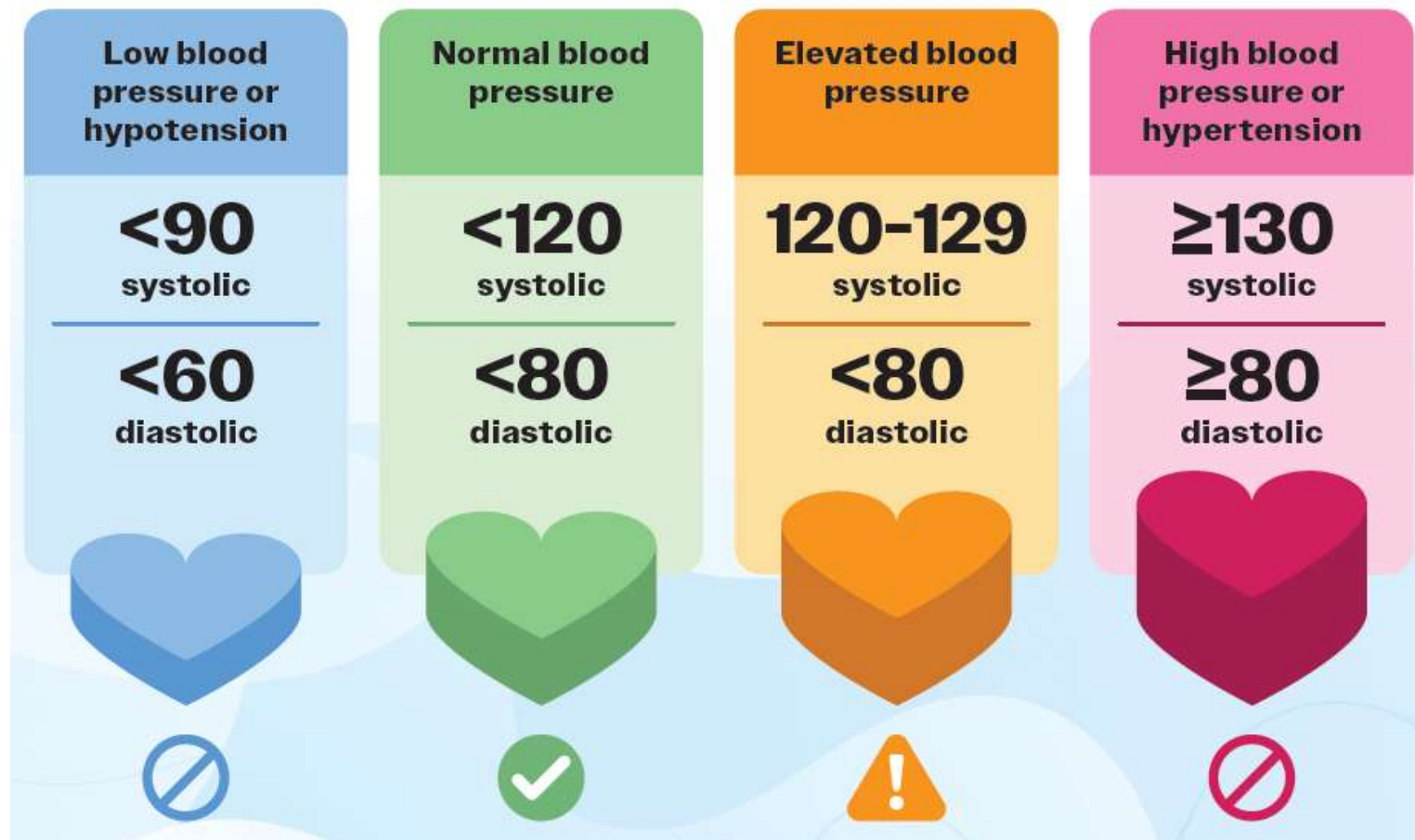


Categories of Blood Pressure (BP) in Adults*

BP Category	Systolic Blood Pressure (SBP)		Diastolic Blood Pressure (DBP)
Normal	<120 mm Hg	and	<80 mm Hg
Elevated	120–129 mm Hg	and	<80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	or	80–89 mm Hg
Stage 2	≥ 140 mm Hg	or	≥ 90 mm Hg

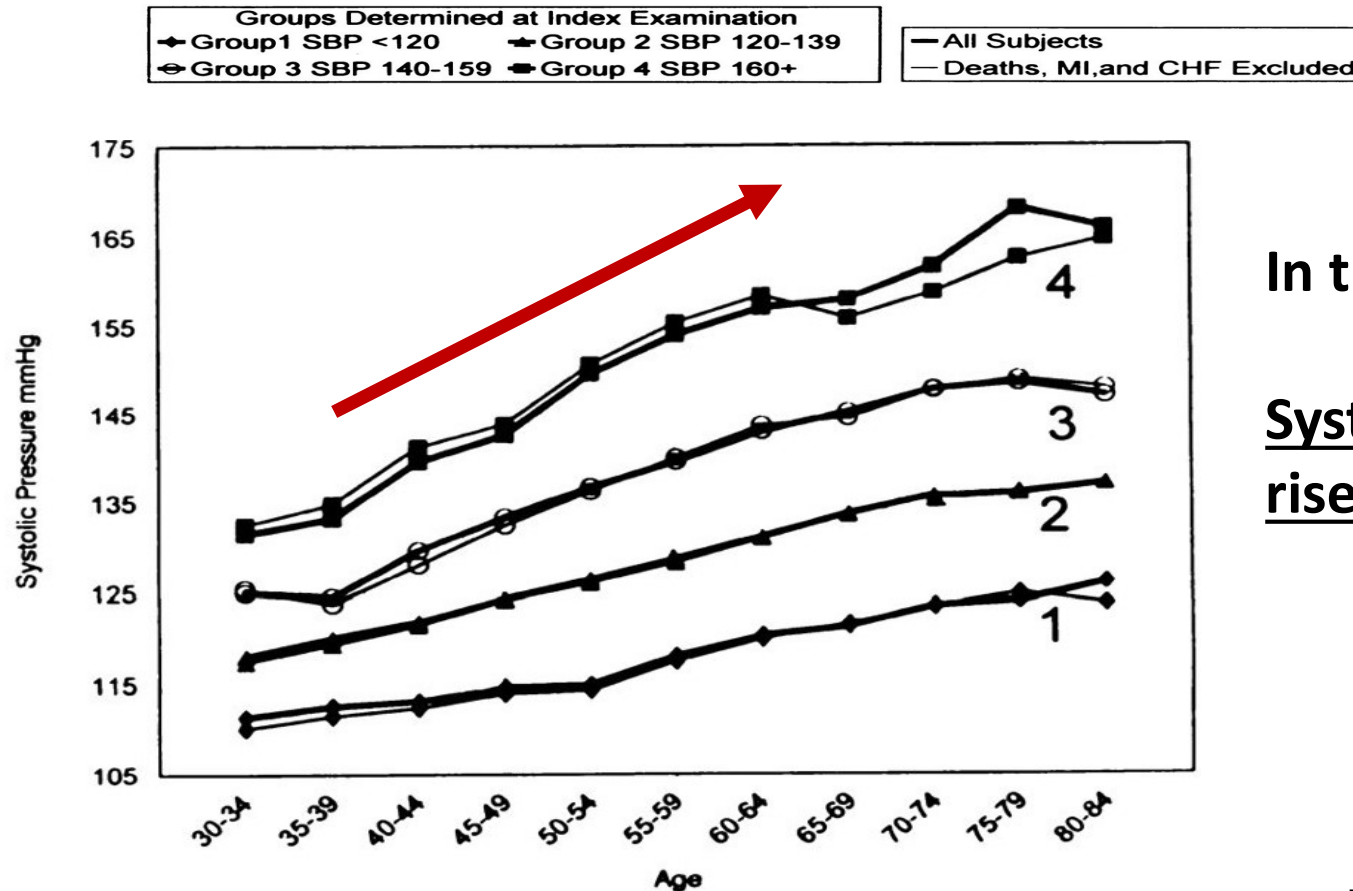
*Individuals with SBP and DBP in two categories should be designated to the higher BP category.

Current Blood Pressure Recommendations



Systolic Blood Pressure and Age

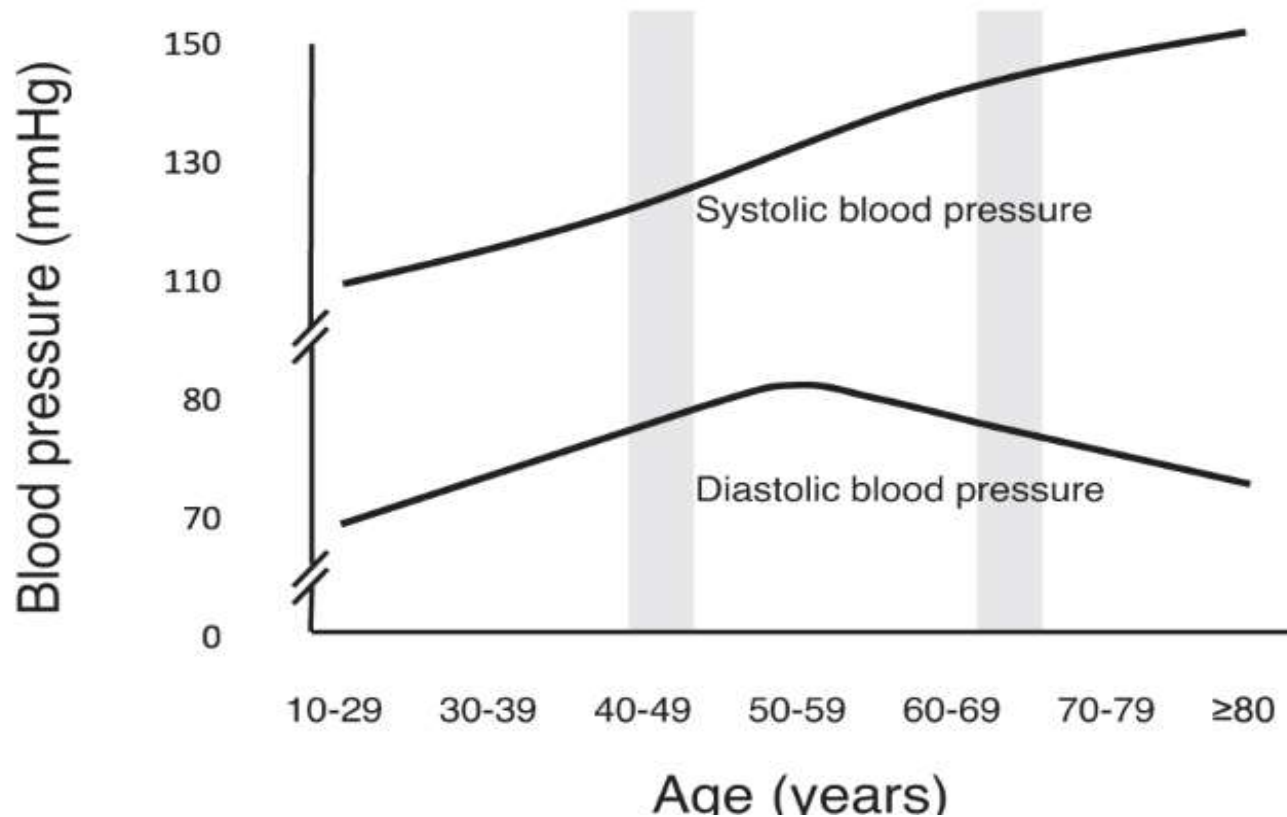
Data from the Framingham Heart Study (USA)



In the USA,

Systolic Blood Pressure
rises with age !

Is the rise in blood pressure during ageing inevitable ?





HEART HEALTH

Amazon Tsimane People Have the Healthiest Hearts

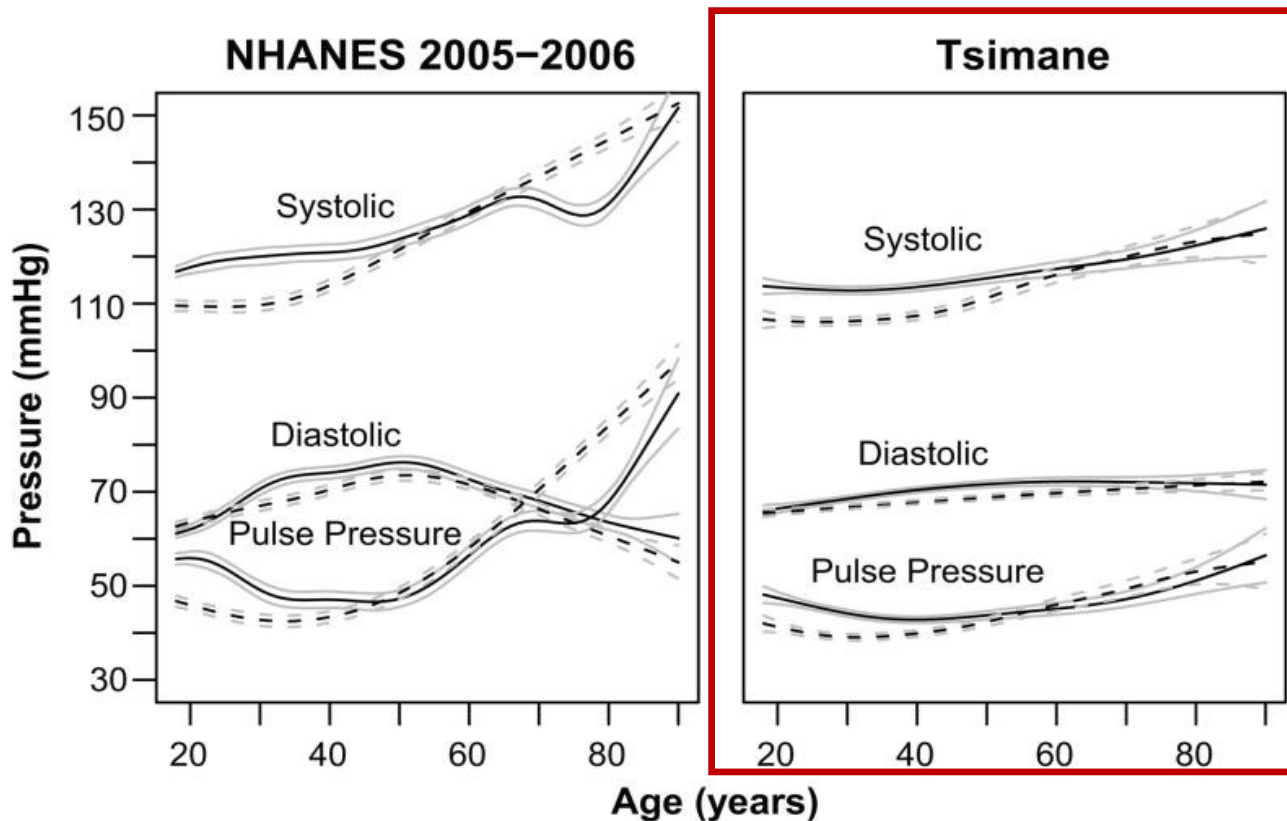
The people with the healthiest hearts in the world are the Tsimane people of Bolivia, researchers reported Friday.

“The Tsimane people walk, ride bikes or canoe everywhere. Their staple foods are home-grown rice, plantains and corn. If they want meat, they go catch it. And they don’t watch television.”

NBC, news March 17, 2017



Data from a Bolivian Tribe (Forager-Horticulturalists)



In contrast to the USA,
in Tsimane (Amazon Tribe),
Systolic Blood Pressure
does not rise with age !

In Tsimane, rise in blood pressure varies by distance to market and body mass index !



Data from WHI

Systolic Blood Pressure and Survival to Age 90 years

Aim: To determine the probability to survive to age 90 for various systolic blood pressure levels. Or in other words:

“Which blood pressure gives you the highest probability to reach 90 years ?”

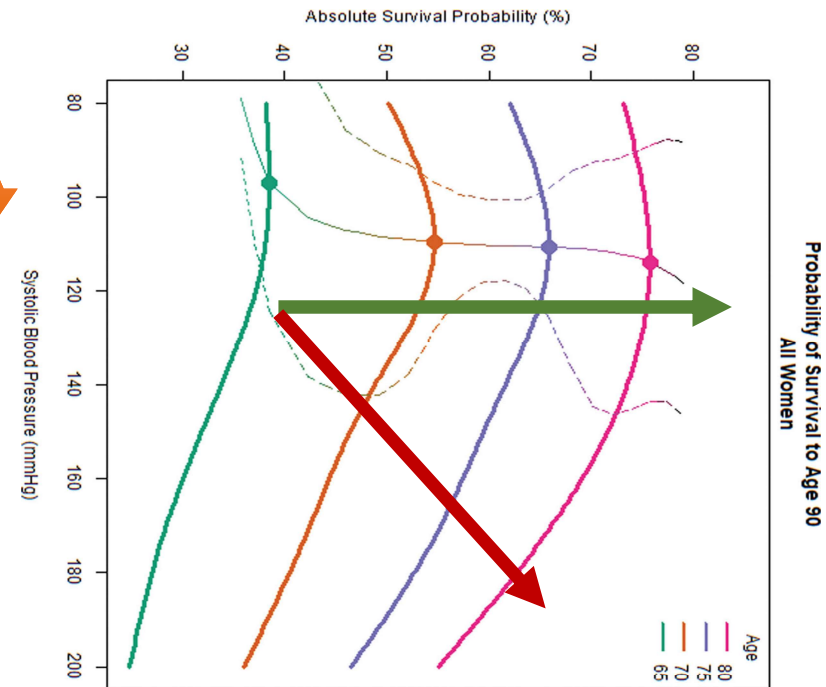
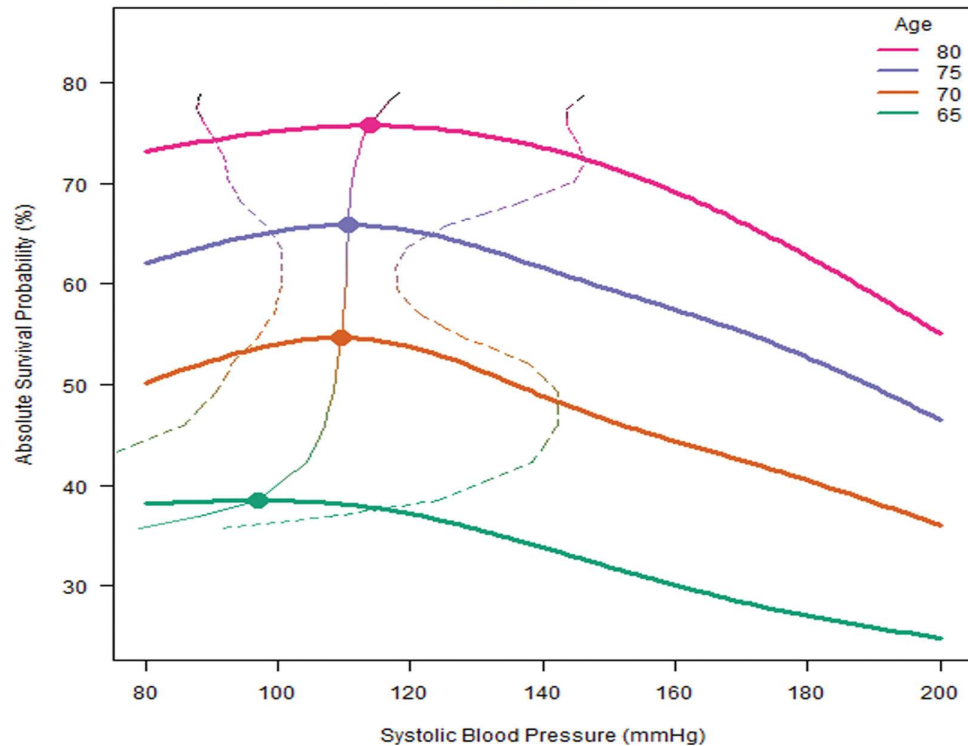
Methods: We analyzed blood pressure data from 16,570 WHI participants who were aged 65 or older and without history of cardiovascular disease, diabetes or cancer.

Question

What is the probability of surviving to age 90 for given blood pressure and age in older women?



Probability of Survival to Age 90
All Women



Those who reached age 90, had relatively constant blood pressure over time !

Conclusion

An SBP level below 130 mmHg was found to be associated with longevity among older women independent of BP medication. The longer SBP was controlled at a level between 110 and 130 mmHg, the higher the survival probability to age 90.

Time in Target Range

Time in target range expresses the amount of time blood pressure measurements are within a certain window.

The recommended target range was defined as

Systolic Blood Pressure ≥ 110 and < 130 mmHg

The upper limit of 130 mmHg was specifically selected to match current guideline-recommended blood pressure target levels in older persons.

Time in Target Range of SBP (≥ 110 and <130 mmHg) and Survival Probability to age 90 years by age and blood pressure medication status (% , 95% confidence interval)

Age (years)	Amount of Time, Blood Pressure is in Target Range		
	0% Never in Target Range	40 % of time in target range	100% of time in target range
Overall (N=16,570)			
75 years	66 (64,69)	71 (69,72)	77 (74,79)
65 years	30 (26,34)	35 (32,37)	43 (38,48)
Not on BP medication (N=10,815)			
75 years	71 (68,74)	74 (72,75)	78 (75,81)
65 years	37 (32,42)	40 (37,43)	45 (40,50)
On BP medication (N=5,755)			
75 years	62 (57,66)	66 (64,69)	73 (67,78)
65 years	18 (13,24)	24 (20,28)	35 (25,45)



Key Message

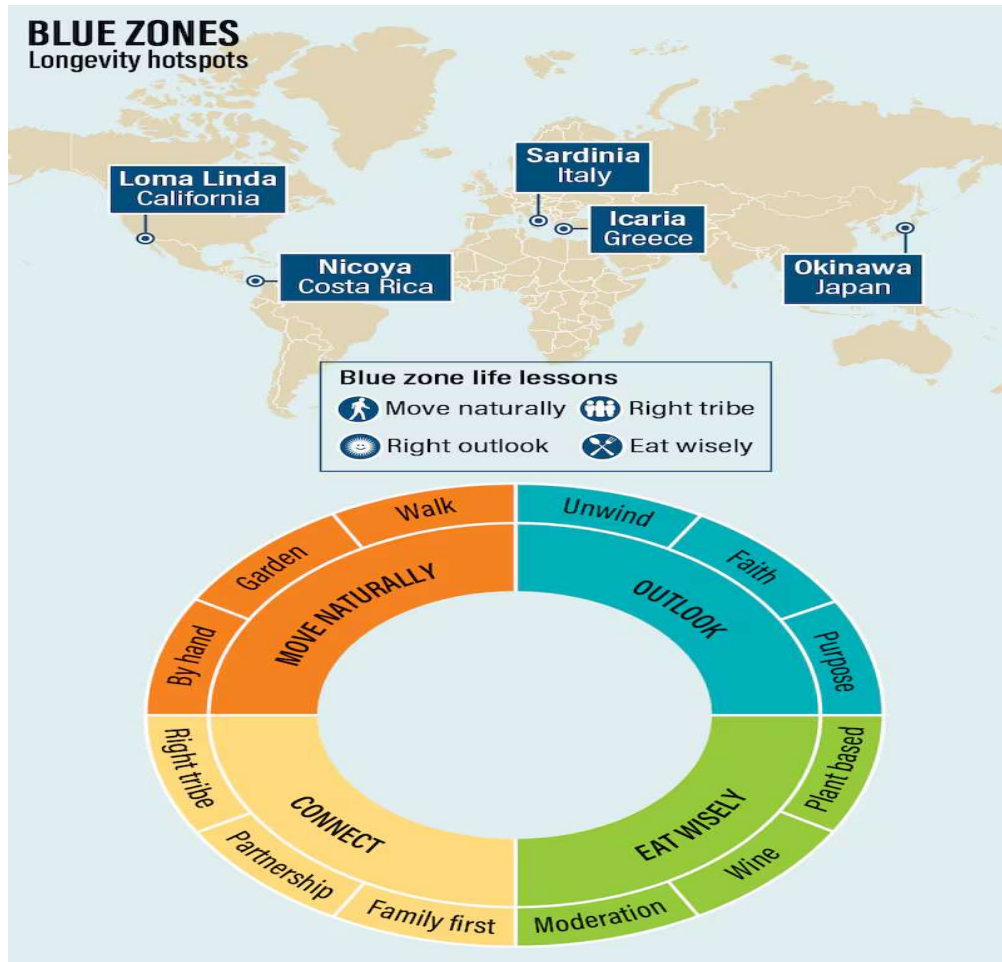
Our findings emphasize the **significance of blood pressure control and the need for a constant relatively low systolic blood pressure (below 130mmHg) to reach 90 years of age.**

→ **The rise in blood pressure at later life is neither physiological nor inevitable, which emphasizes the need for preventive strategies.**

The **younger women were in the range of age studied here, the more significant tight blood pressure control** became with respect to survival which was particularly apparent in women who were already on blood pressure medication.



Blue Zones – Longevity Hotspots



A blue zone is a region in the world where people are claimed to have exceptionally long lives beyond the age of 100

due to a lifestyle combining

- *physical activity,*
- *low stress,*
- *rich social interactions,*
- *a local whole foods diet,*
- *and low disease incidence.*

The name blue zones derived simply during the original survey by scientists, who "used a blue pen on a map to mark the villages with long-lived population."



What To Know About High Blood Pressure as You Age

Points to remember:



The chance of having high blood pressure increases as you age.



Most people with high blood pressure don't have signs or symptoms.



Serious health problems can develop if high blood pressure is left untreated.

What you can do:



Get your blood pressure checked frequently.



Eat a healthy diet and exercise regularly.



Ask your doctor if you need medication to manage your blood pressure.

Learn more about high blood pressure and older adults at www.nia.nih.gov/high-blood-pressure.

Thank you !



Bernhard Haring, MD MPH
Department of Medicine IV
Clinic Hietzing
Vienna / Austria
bernhard.haring@meduniwien.ac.at