Love Your Heart: Advances and Strategies for Caring for Your Most Precious Valentine

Adam D. Gepner, MD

adgepner@wisc.edu

Twitter: @AdamGepner

Disclosures: President/Owner

Beam Healthcare

TELEMEDICINE MOVING FORWARD

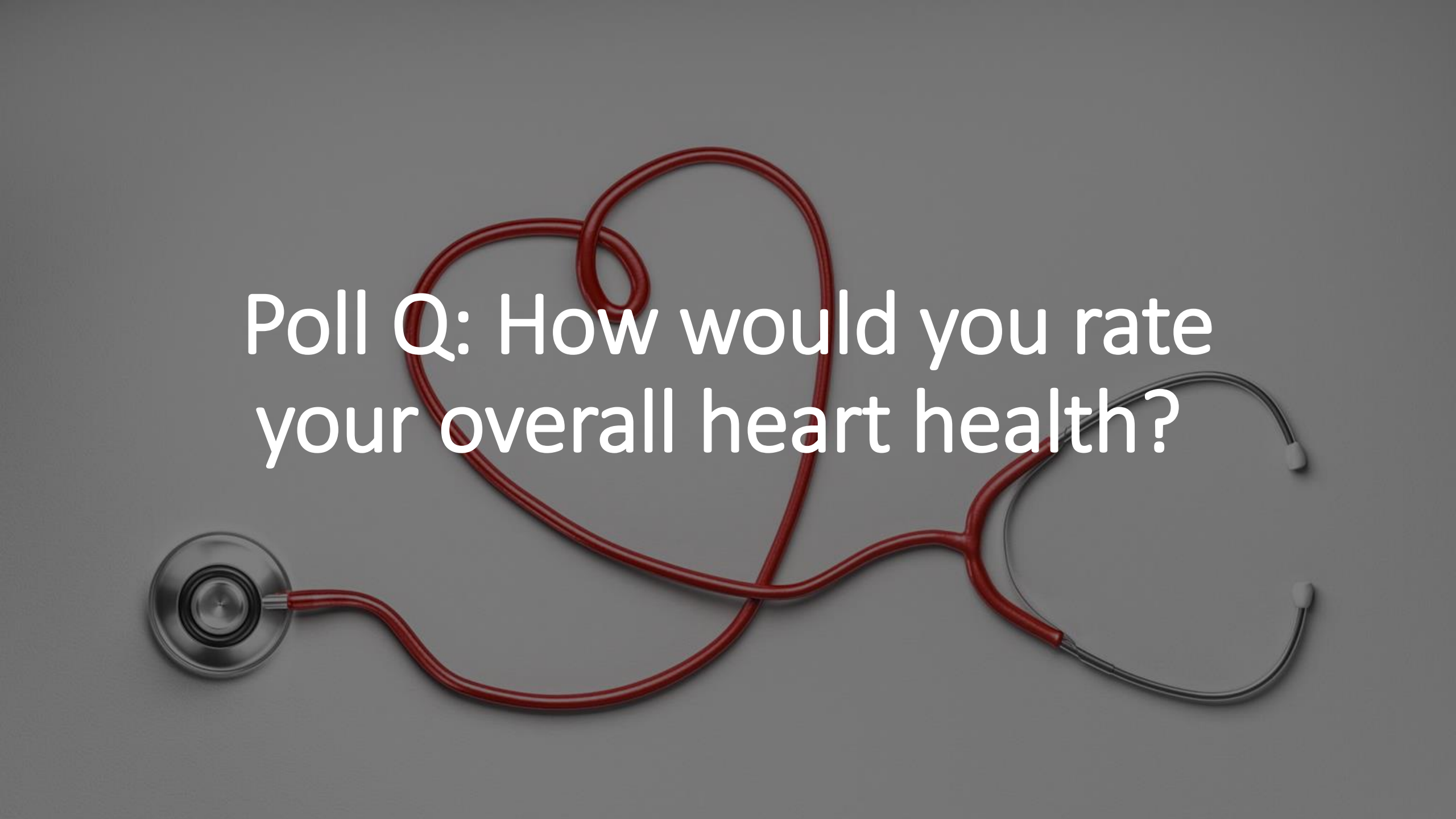
This Presentation is Interactive!

Zoom Poll

You Matter!


Poll Q:
Do you love your heart?

Poll Q:
How young are you?


Poll Q: How would you rate your overall heart health?

Aging Matters

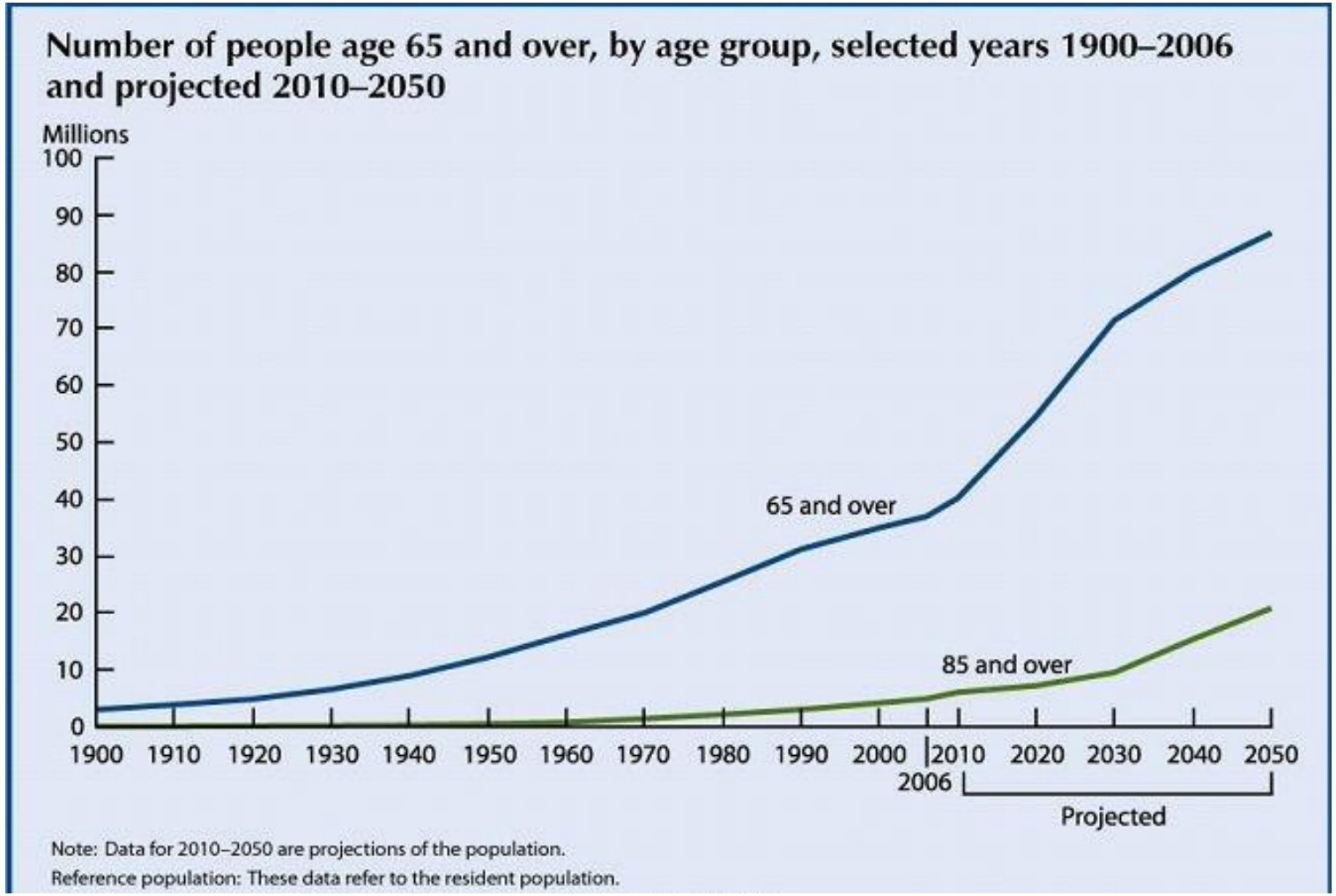
We are Living Longer

More comorbidities

New medications

”Too old” for invasive procedures

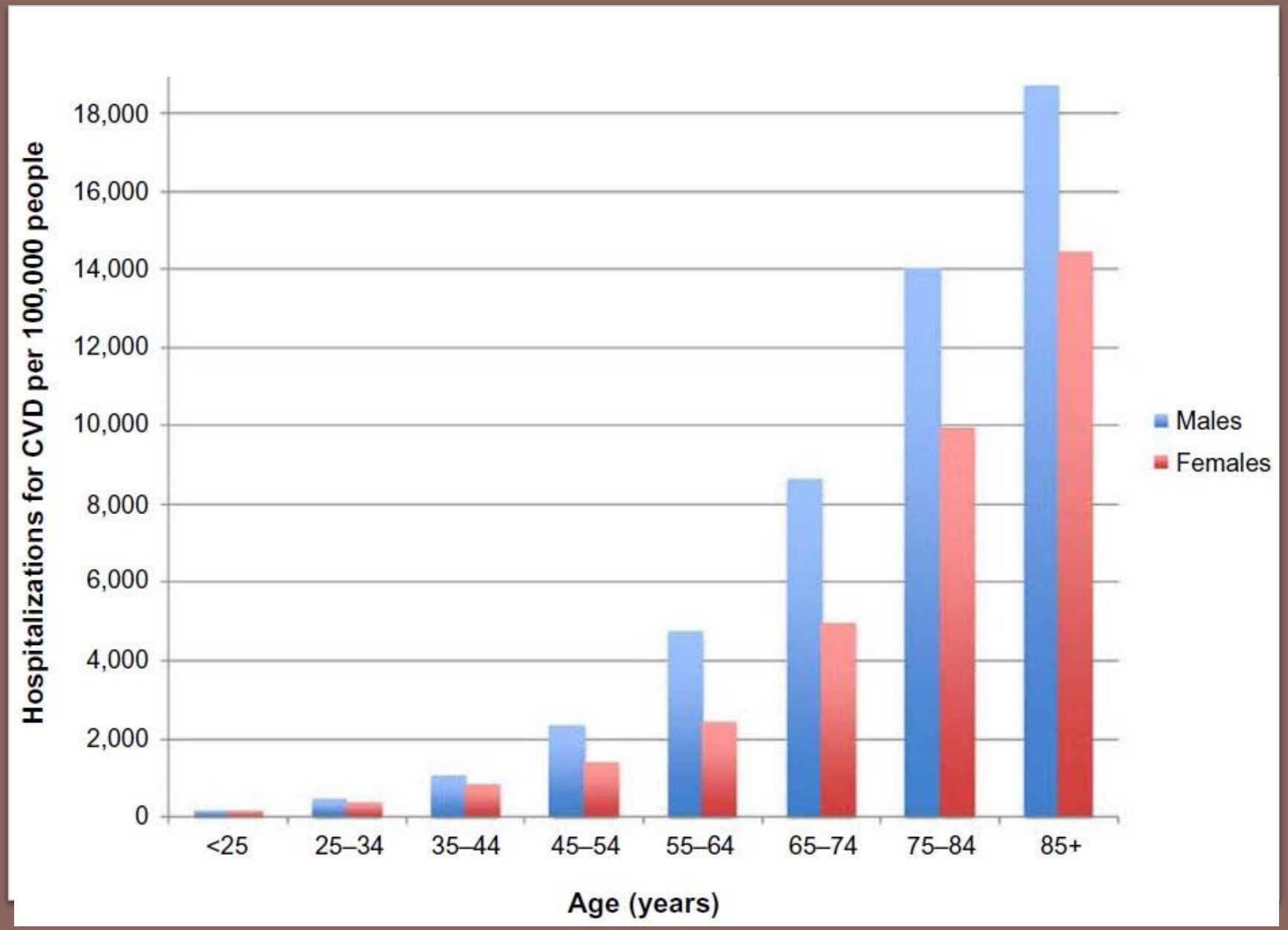
Societal attitudes – aggressive care



Everyone Ages

- Healthy Aging
- Functional Aging

Federal Interagency Forum on Aging-Related Statistics. *Older Americans 2008: Key Indicators of Well-Being*. Washington, D.C.: U.S. Government Printing Office; 2008.


Hospitalizations for CVD per 100,000 people
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
<25
25–34
35–44
45–54
55–64
65–74
75–84
85+
Age (years)
Males
Females

No Surprise!

ESC European Society of Cardiology

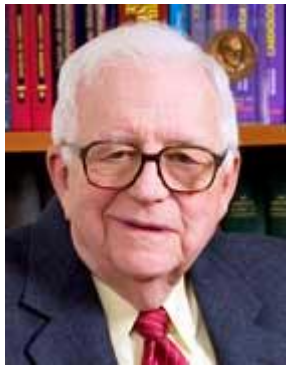
European Heart Journal (2022) **43**, 249–250
https://doi.org/10.1093/eurheartj/ehab532

CARDIOPULSE

Spoiler Alert: He's only 92!

Braunwald's Corner

How to live to 100 before developing clinical coronary artery disease: a suggestion



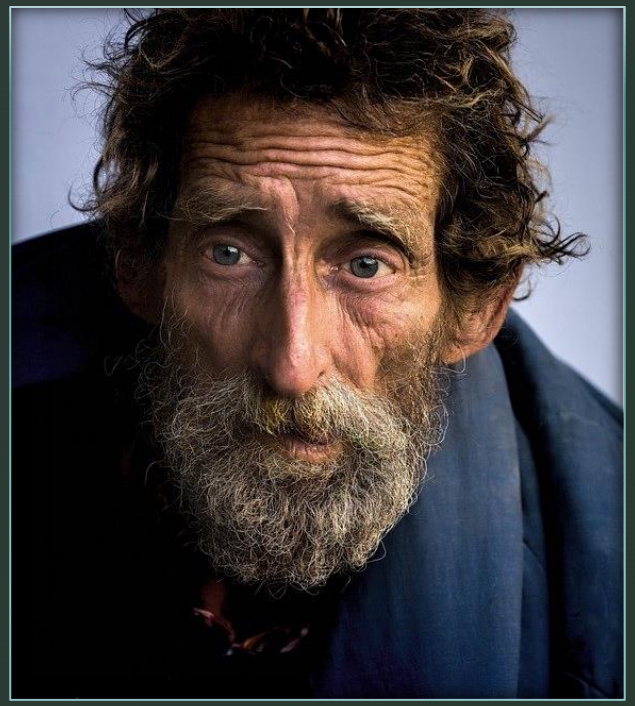
Eugene Braunwald [1,2]*

[1]TIMI Study Group, Division of Cardiovascular Medicine, Brigham and Women's Hospital, Hale Building for Transformative Medicine, Suite 7022, 60 Fenwood Road, Boston, MA 02115, USA; and [2]Department of Medicine, Harvard Medical School, Boston, MA, USA

Poll Q:
What are you doing NOW to stay healthy?

Trail Map

- Aging
- Frailty
- CVD Risk Factors
  - Hypertension
  - Dyslipidemia
- Talking to your provider





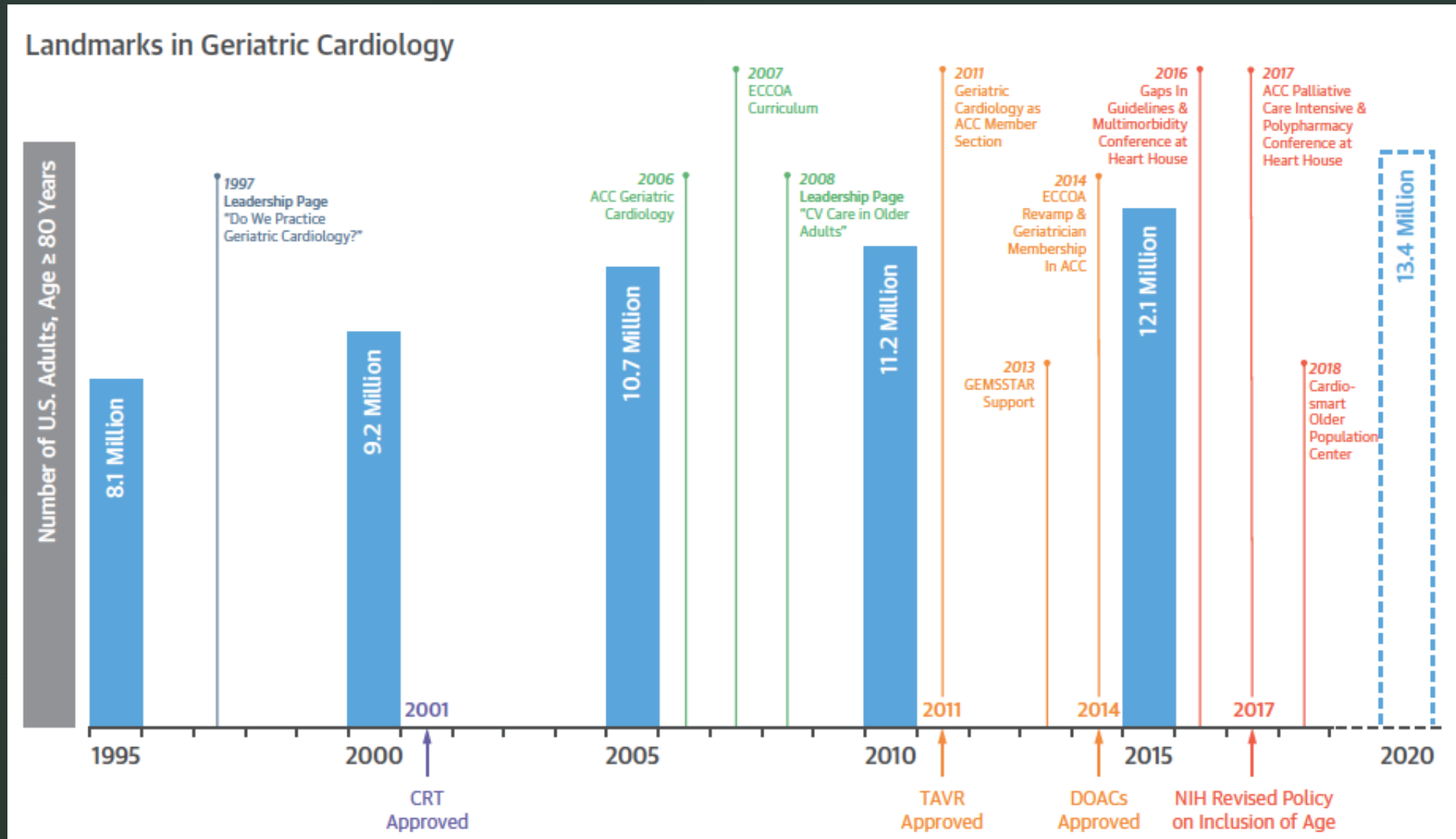

Age is not just a Number

Age: More than a Number

Outcomes?

Most benefit?

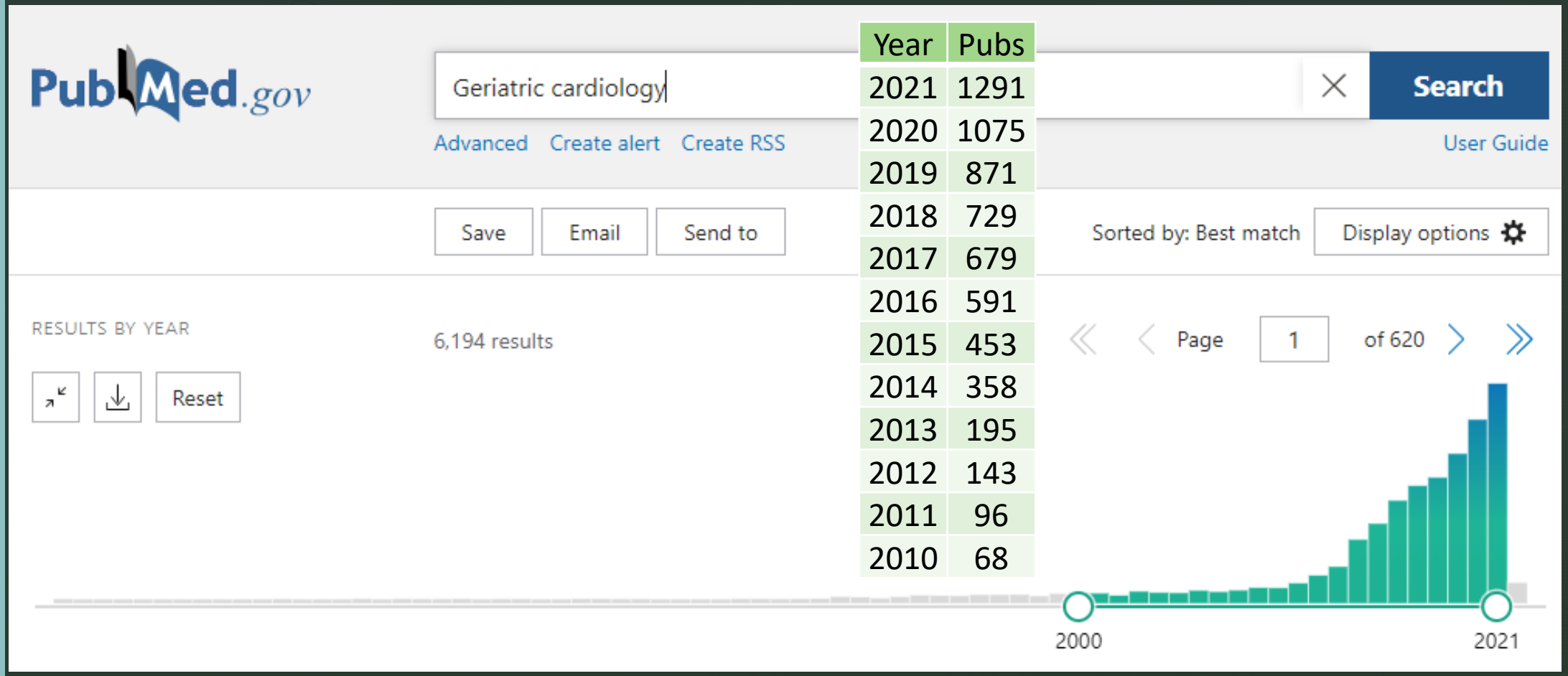
Systematic approach



ACC = American College of Cardiology; CRT = cardiac resynchronization therapy; DOACs = direct oral anticoagulants; ECCOA = essential of cardiovascular care for older adults; GEMSSTAR = grants for early medical/surgical specialists' transition to aging research; NIH = National Institutes of Health; TAVR = transcatheter aortic valve replacement.

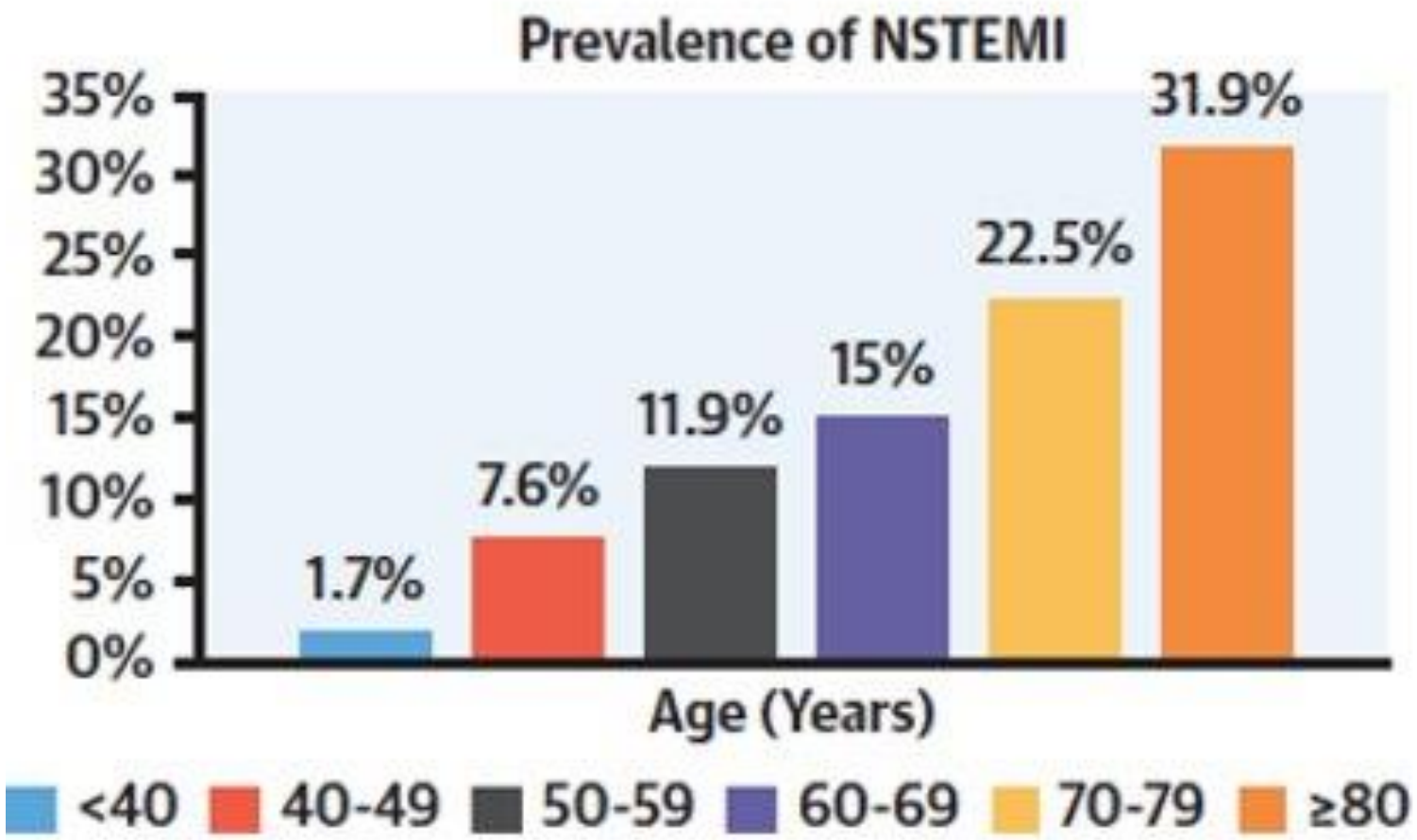
Miller AP, Maurer M, Alexander KP. Geriatric Cardiology: Two Decades of Progress and Strategy for the Future. *J Am Coll Cardiol*. 2018;71(25):2970-2973. doi:10.1016/j.jacc.2018.05.014

Where is the data?

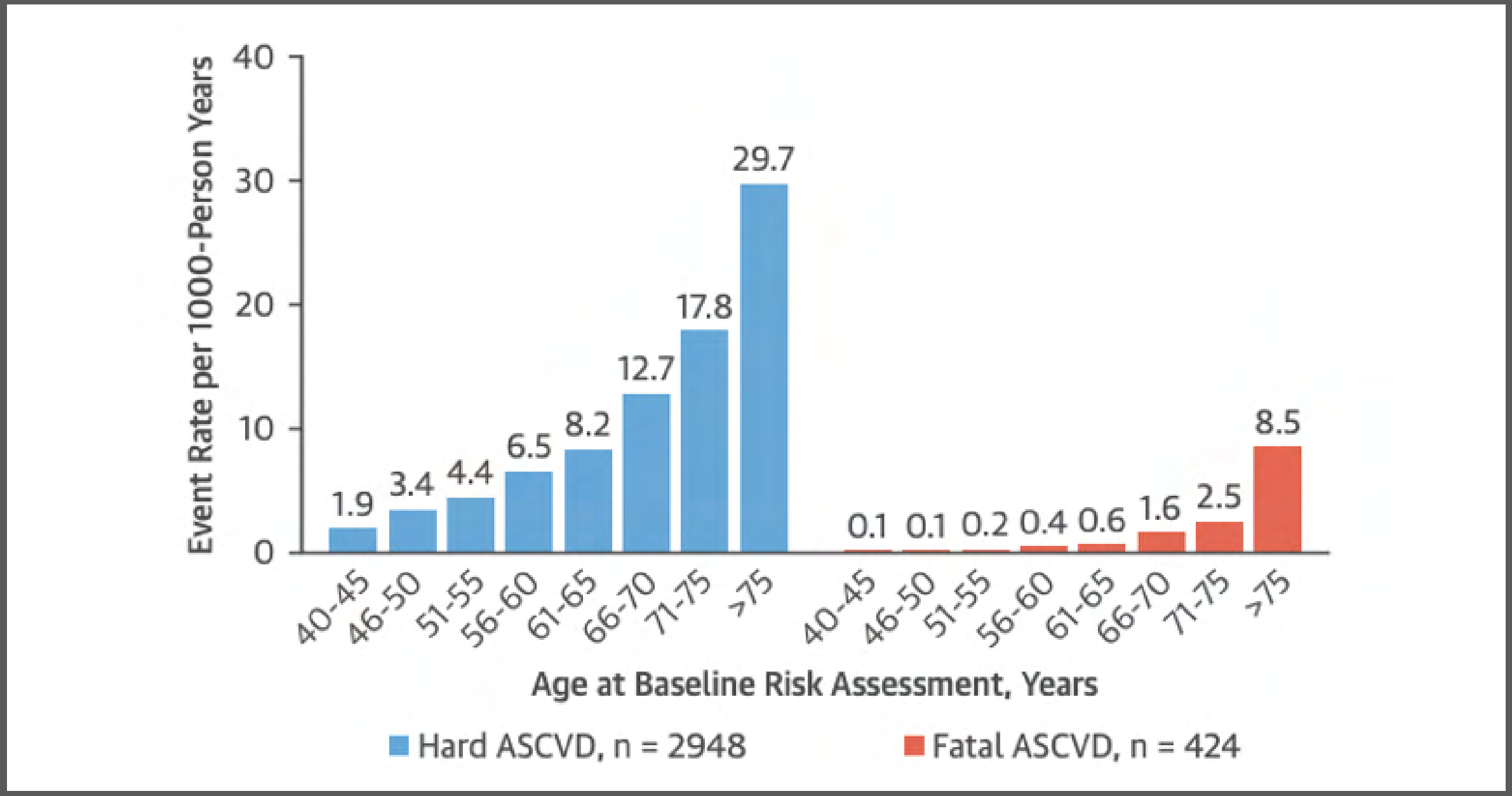


Year	Pubs
2021	1291
2020	1075
2019	871
2018	729
2017	679
2016	591
2015	453
2014	358
2013	195
2012	143
2011	96
2010	68

Risk of Heart Attack Increases with Age!



Orkaby AR, Rich MW. Cardiovascular Screening and Primary Prevention in Older Adults. *Clin Geriatr Med*. 2018;34(1):81-93.
Forman DE, et al. J Am Coll Cardiol. 2020 Sep 29;76(13):1577-1594.



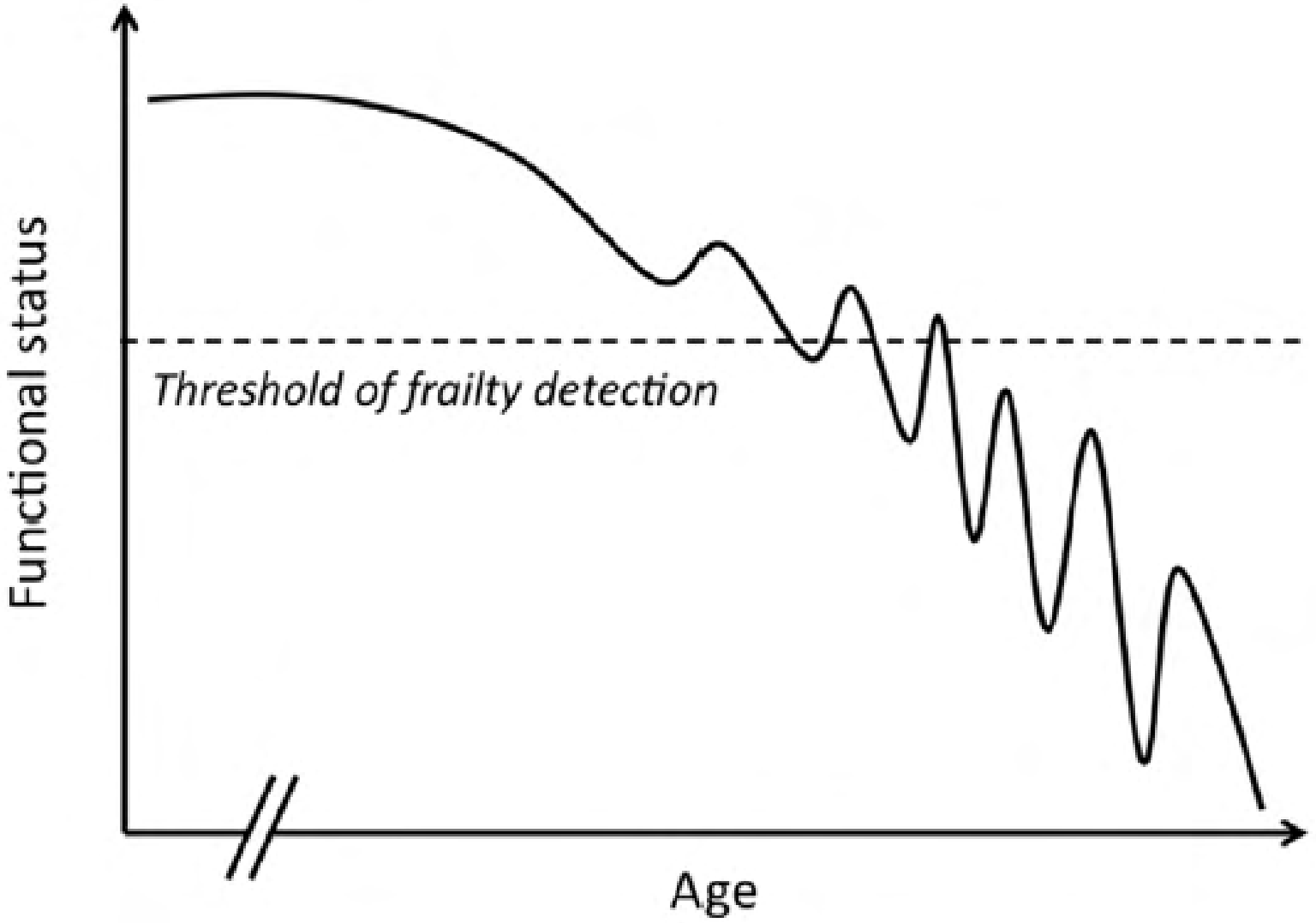
Mortensen MB, Falk E. Primary Prevention With Statins in the Elderly. J Am Coll Cardiol. 2018 Jan 2;71(1):85-94.


Poll Q: What is Frailty?

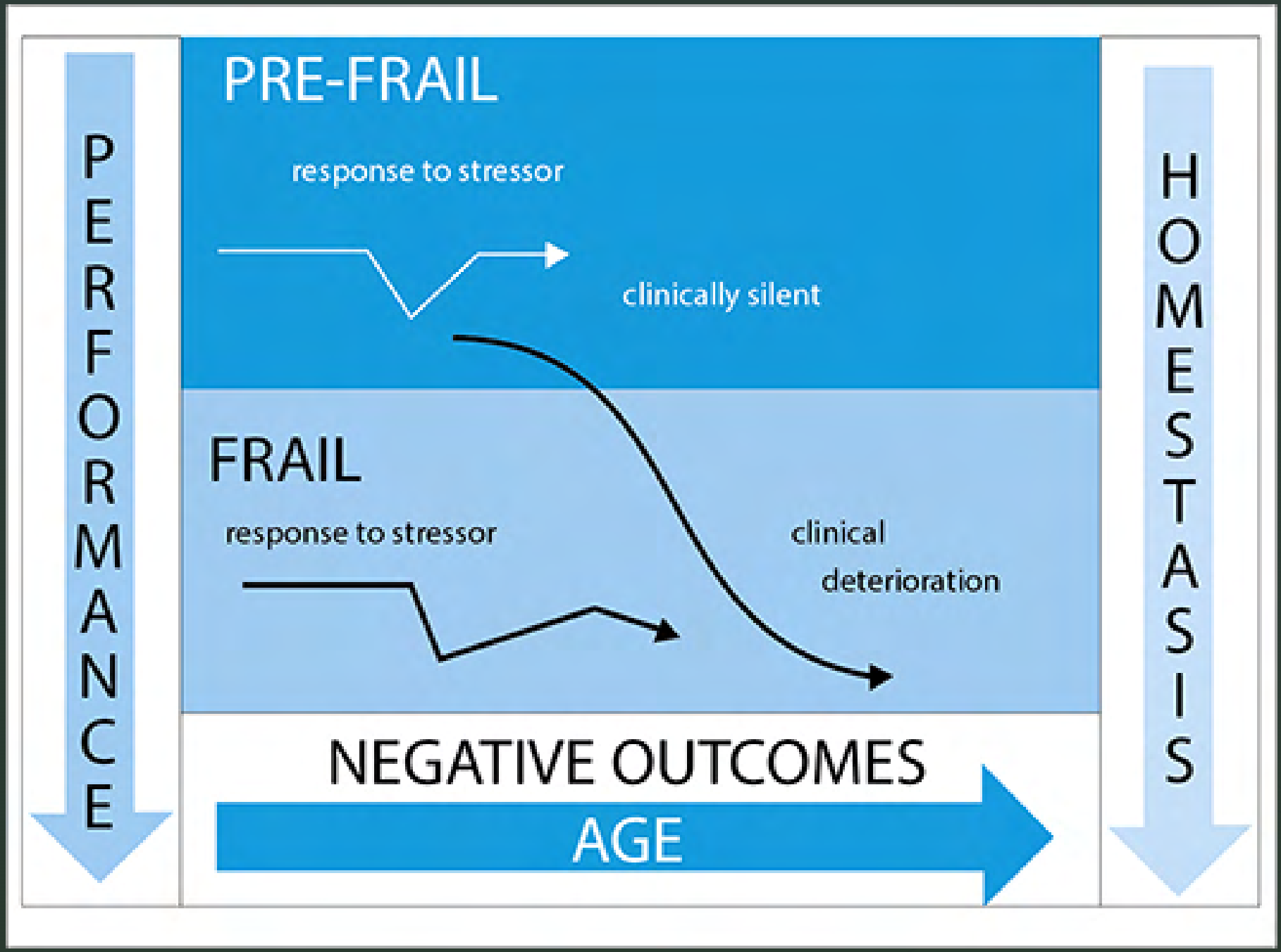
Frailty

No gold standard definition

Increased vulnerability to stressors



Cesari M, Calvani R, Marzetti E. Frailty in Older Persons. *Clin Geriatr Med*. 2017;33(3):293-303. doi:10.1016/j.cger.2017.02.002


PRE-FRAIL
response to stressor
clinically silent
FRAIL
response to stressor
clinical
deterioration
NEGATIVE OUTCOMES
AGE
PERFORMANCE
HOMESTASIS

Poll Q: What is the opposite of Frailty?

Q4: Robust Older Adult: What word comes to mind?

_____

Poll Q:
What is a robust older adult?

Poll Q:
Am I Frail?

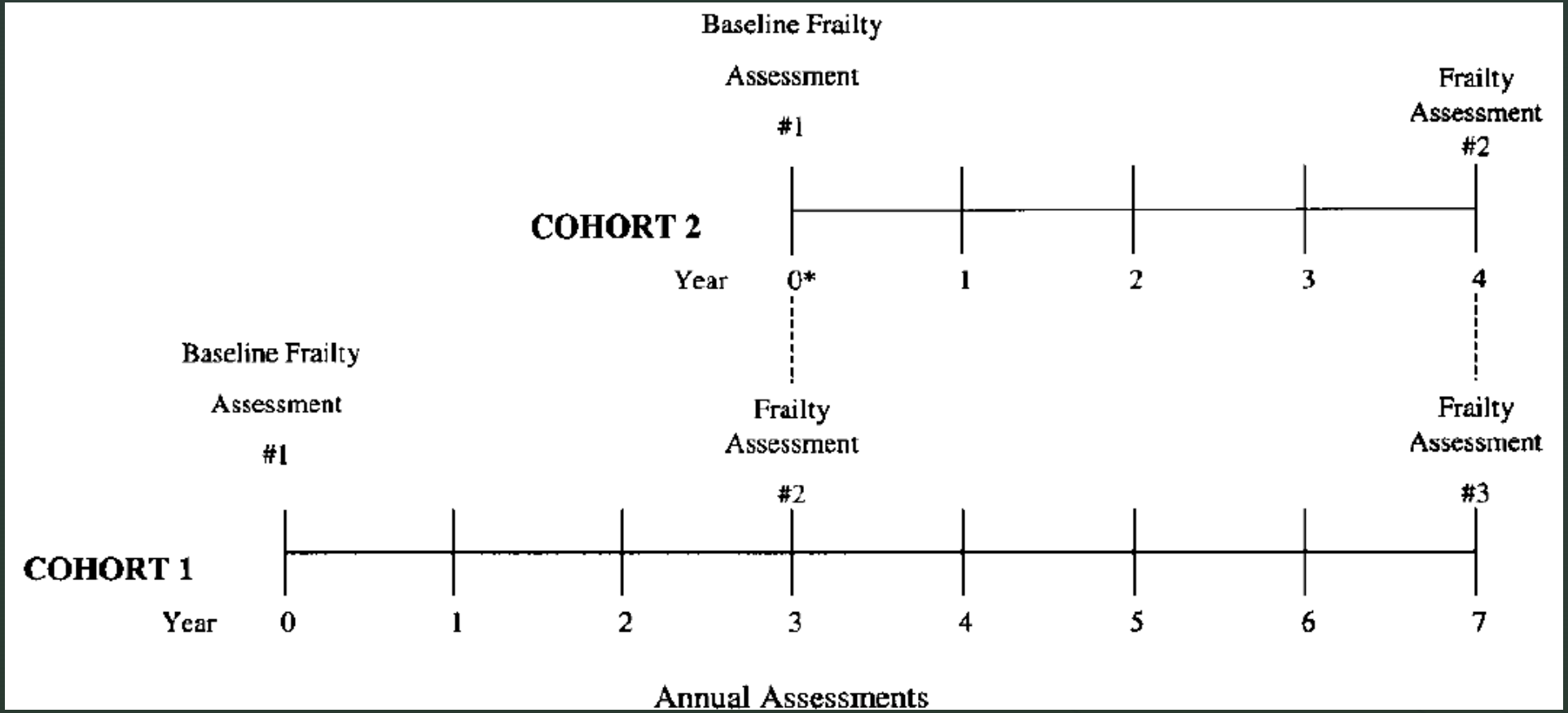
The FRAIL Instrument

Sign/Symptoms	Assessment
Fatigue	Are you fatigued?
Resistance	Cannot walk up one flight of stairs?
Ambulation	Cannot walk one block?
Illnesses	Do you have more than 5 illnesses/conditions?
Loss of weight	Have you lost >5% of your weight in the past 6 months?

≥3 = Frailty; 1 or 2 = Prefrailty; 0 = Robustness

Cesari M, Calvani R, Marzetti E. Frailty in Older Persons. *Clin Geriatr Med*. 2017;33(3):293-303. doi:10.1016/j.cger.2017.02.002

Does Frailty Matter?



- 2 Cohorts of the Cardiovascular Health Study
- 5317 US men and women >65 yo

Fried L.P., Tangen C.M., Walston J., et. al.: Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001; 56: pp. M146-M156.

Does Frailty Matter?

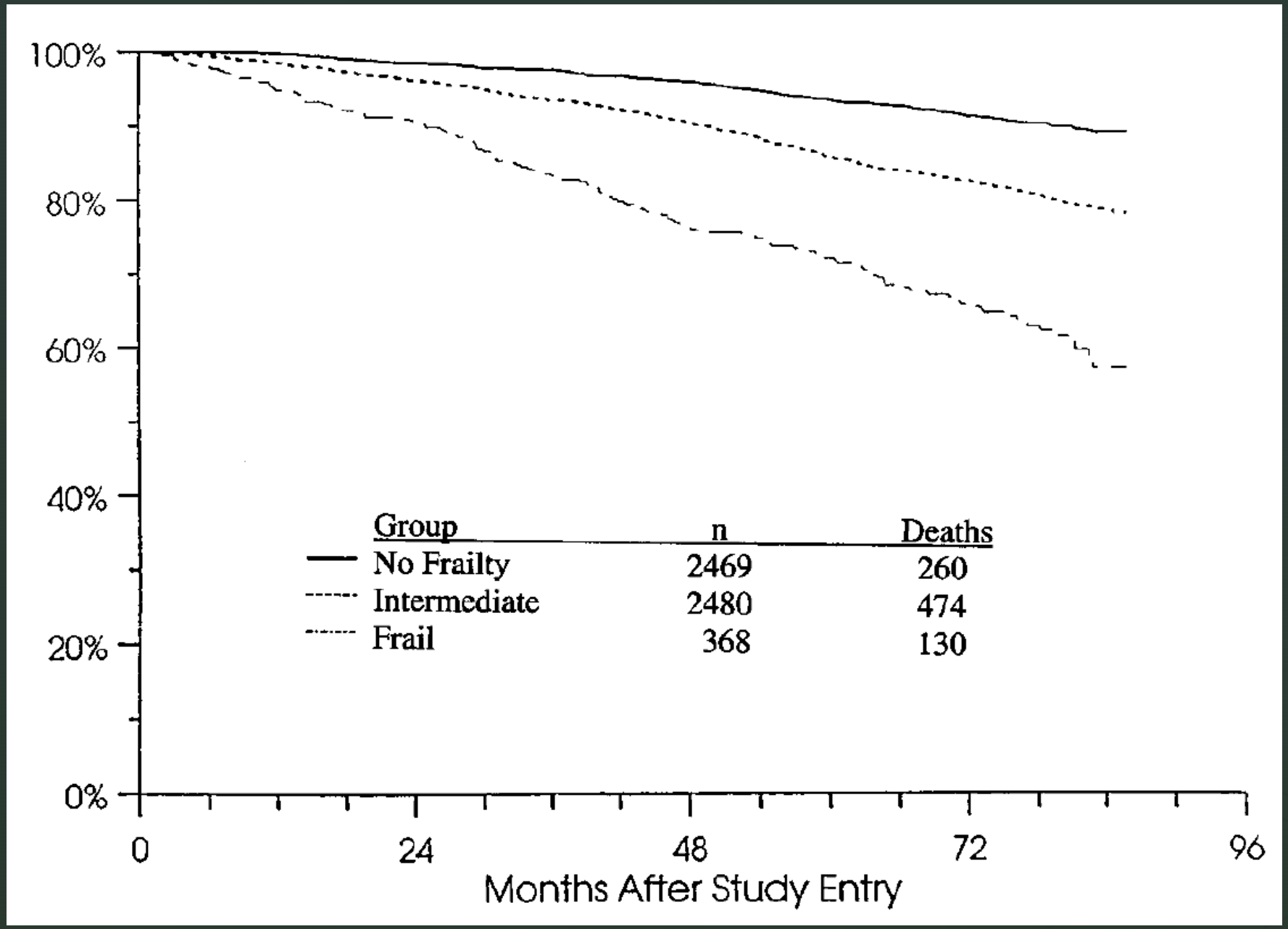
Table 6. Incidence of Adverse Outcomes Associated With Frailty: Kaplan-Meier Estimates at 3 Years and 7 Years* After Study Entry for Both of the Cohorts† ($N = 5317$)

		Died		First Hospitalization		First Fall		Worsening ADL Disability		Worsening Mobility Disability	
Frailty Status at Baseline	(*n*)	3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %
Not Frail	(2469)	3	12	33	79	15	27	8	23	23	41
Intermediate	(2480)	7	23	43	83	19	33	20	41	40	58
Frail	(368)	18	43	59	96	28	41	39	63	51	71
p‡		<.0001		<.0001		<.0001		<.0001		<.0001	

*7-year estimates are only available for the first cohort.
†Only those evaluable for frailty are included.
‡*p* value is based on the 2 degree of freedom log rank test using all available follow-up.

- 5317 US men and women >65 yo
- Data analyzed at 3 and 7 years
  - ↑ Death
  - ↑ Hospitalization
  - ↑ Falls
  - ↓ Mobility

Fried L.P., Tangen C.M., Walston J., et. al.: Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001; 56: pp. M146-M156.



Fried L.P., Tangen C.M., Walston J., et. al.: Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001; 56: pp. M146-M156.

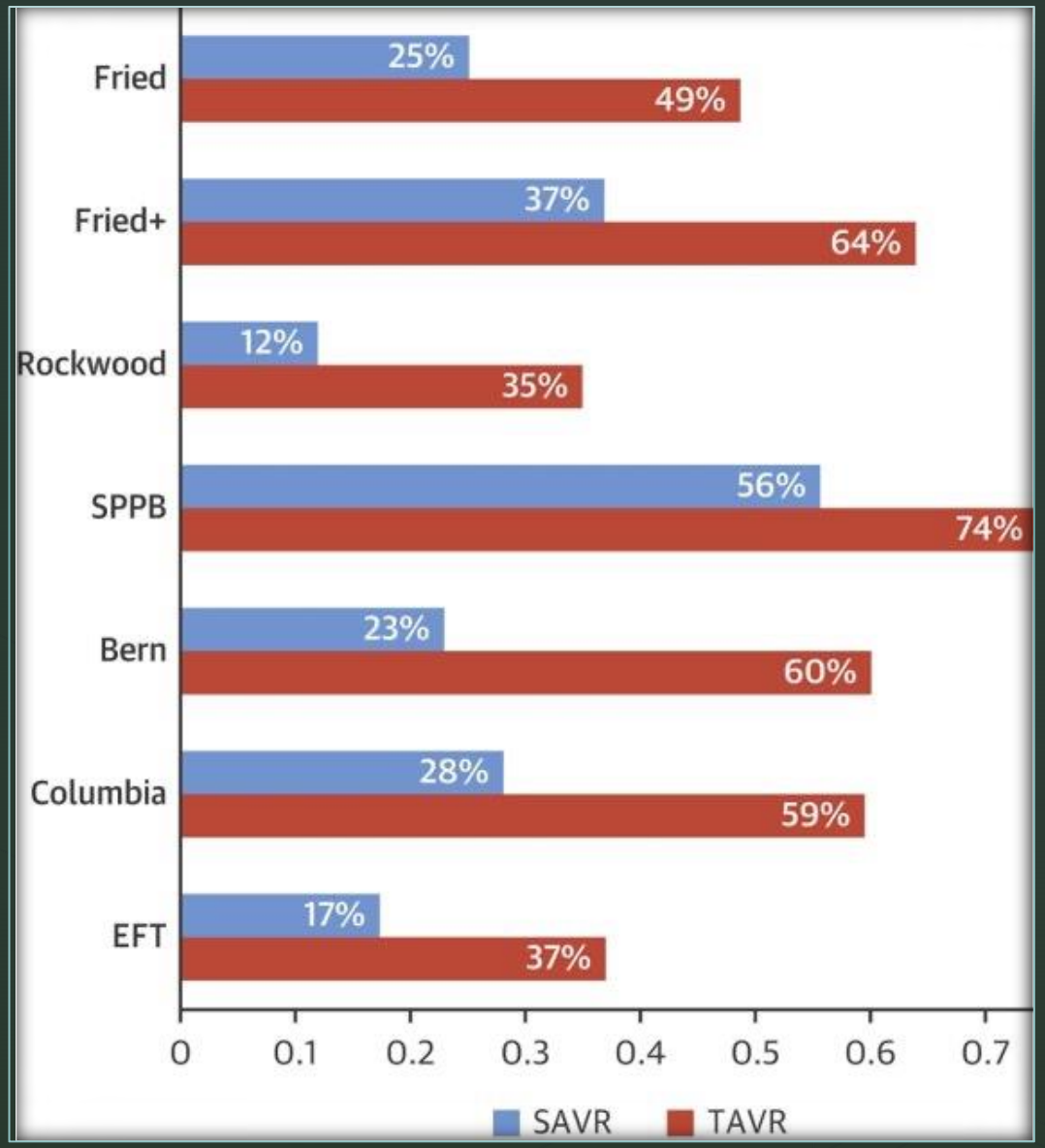
Problems with Frailty

- 40 operational definitions in the literature
  - Historical Data
  - Lab data
  - Functional/Objective data
    - Gait speed
    - Grip strength
    - Chair stands
- No current gold standard

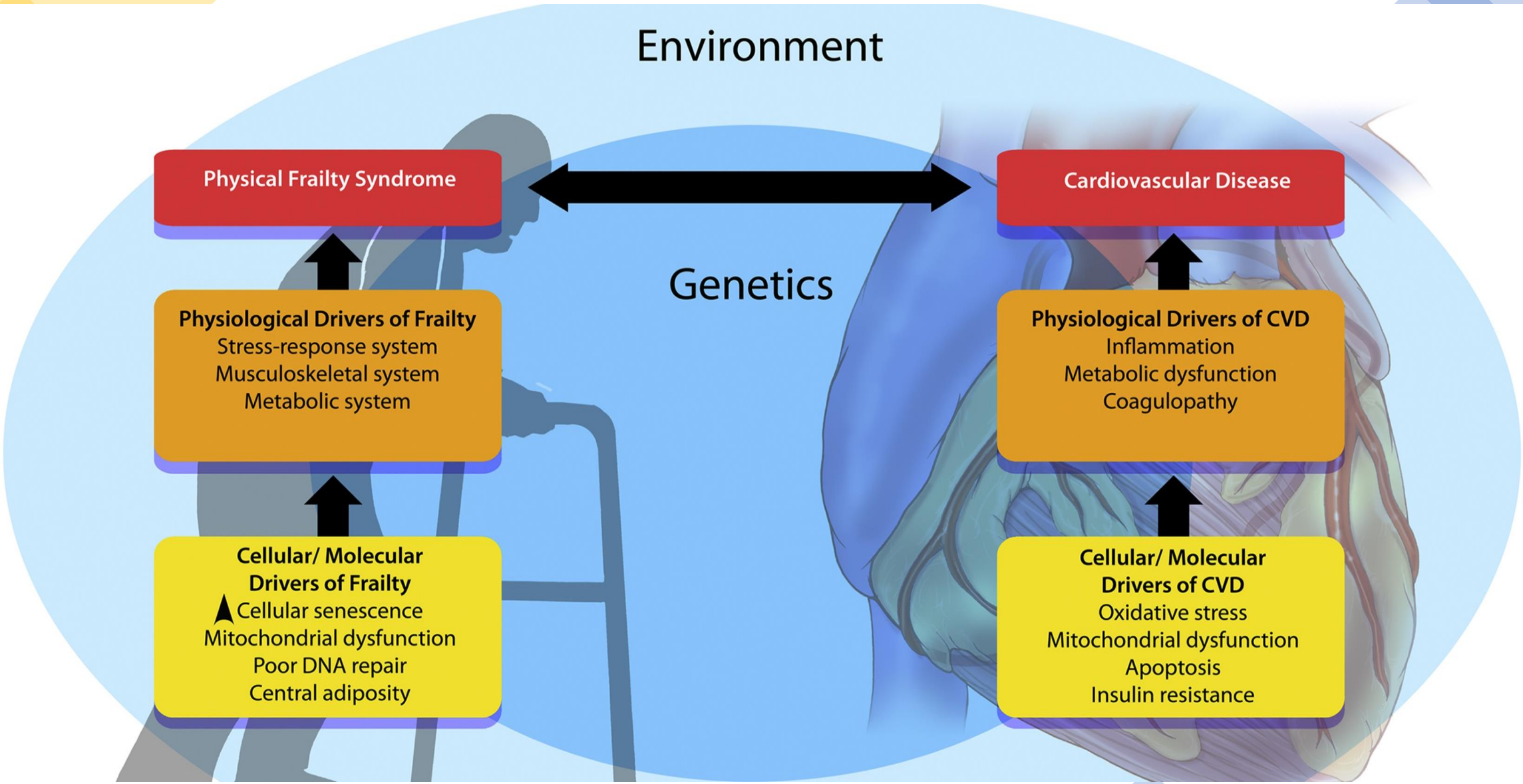
Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA; Cardiovascular Health Study Collaborative Research Group. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001 Mar;56(3):M146-56.
Cesari M, Calvani R, Marzetti E. Frailty in Older Persons. *Clin Geriatr Med*. 2017;33(3):293-303. doi:10.1016/j.cger.2017.02.002

Frailty by the Numbers

- Depends on the instrument
- Prevalence among older adults:
  - 4.0% to 59.1%
- Prevalence of prefrailty
  - 18.7% to 53.1%

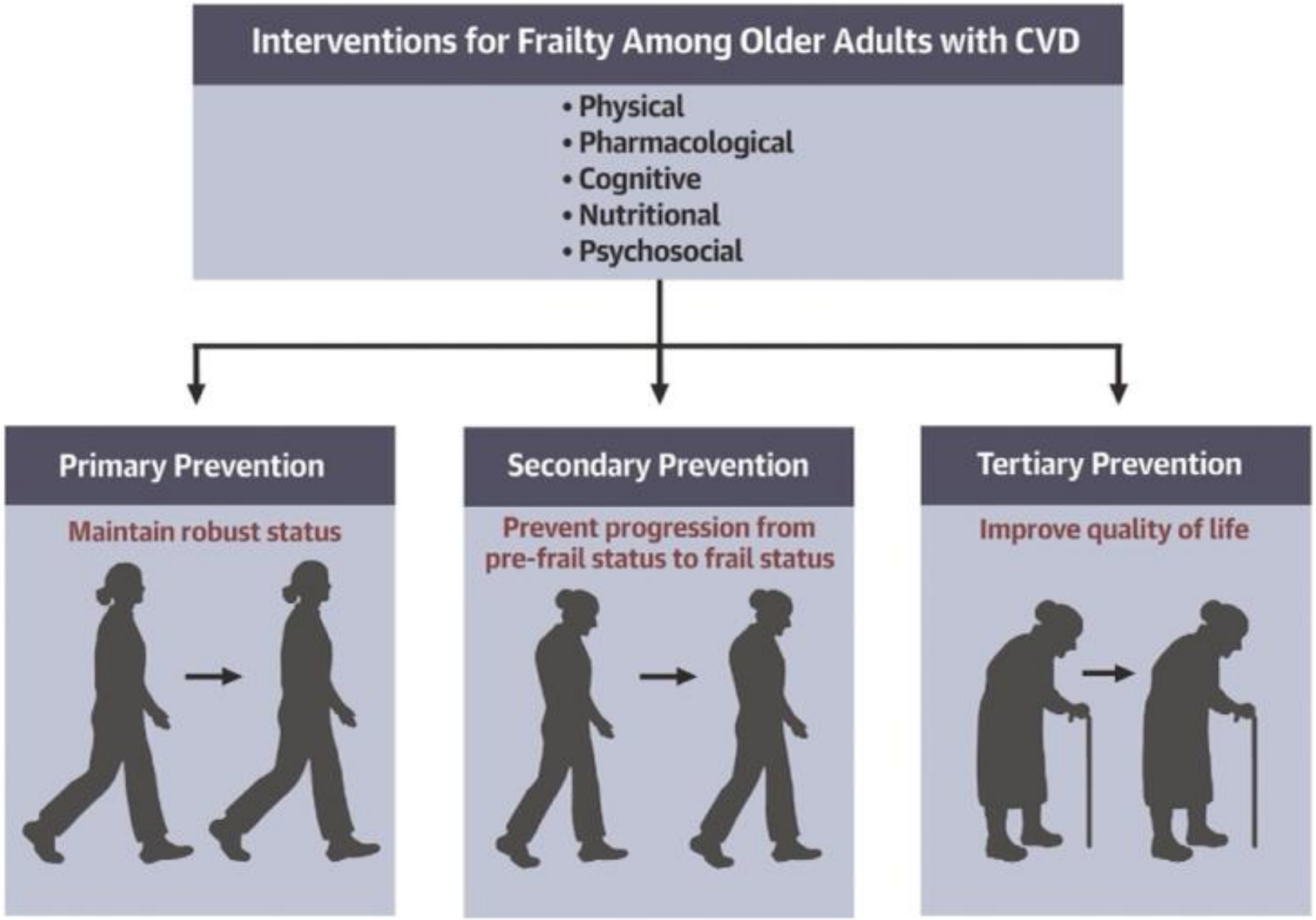


Afilalo J, Lauck S, Kim DH, et al. Frailty in Older Adults Undergoing Aortic Valve Replacement: The FRAILTY-AVR Study. *J Am Coll Cardiol*. 2017;70(6):689-700. doi:10.1016/j.jacc.2017.06.024


Environment
Physical Frailty Syndrome
Cardiovascular Disease
Genetics
Physiological Drivers of Frailty
Stress-response system
Musculoskeletal system
Metabolic system
Physiological Drivers of CVD
Inflammation
Metabolic dysfunction
Coagulopathy
Cellular/ Molecular Drivers of Frailty
Cellular senescence
Mitochondrial dysfunction
Poor DNA repair
Central adiposity
Cellular/ Molecular Drivers of CVD
Oxidative stress
Mitochondrial dysfunction
Apoptosis
Insulin resistance

Can We Prevent Frailty?

CENTRAL ILLUSTRATION: Interventions Aimed at Preventing or Reversing Frailty in Patients With Cardiovascular Disease



Ijaz, N. et al. J Am Coll Cardiol. 2022;79(5):482-503.

Frailty: What can we do about it?

Comprehensive geriatric assessment

Personalized intervention plan

Goals of care!

Harness Technology?

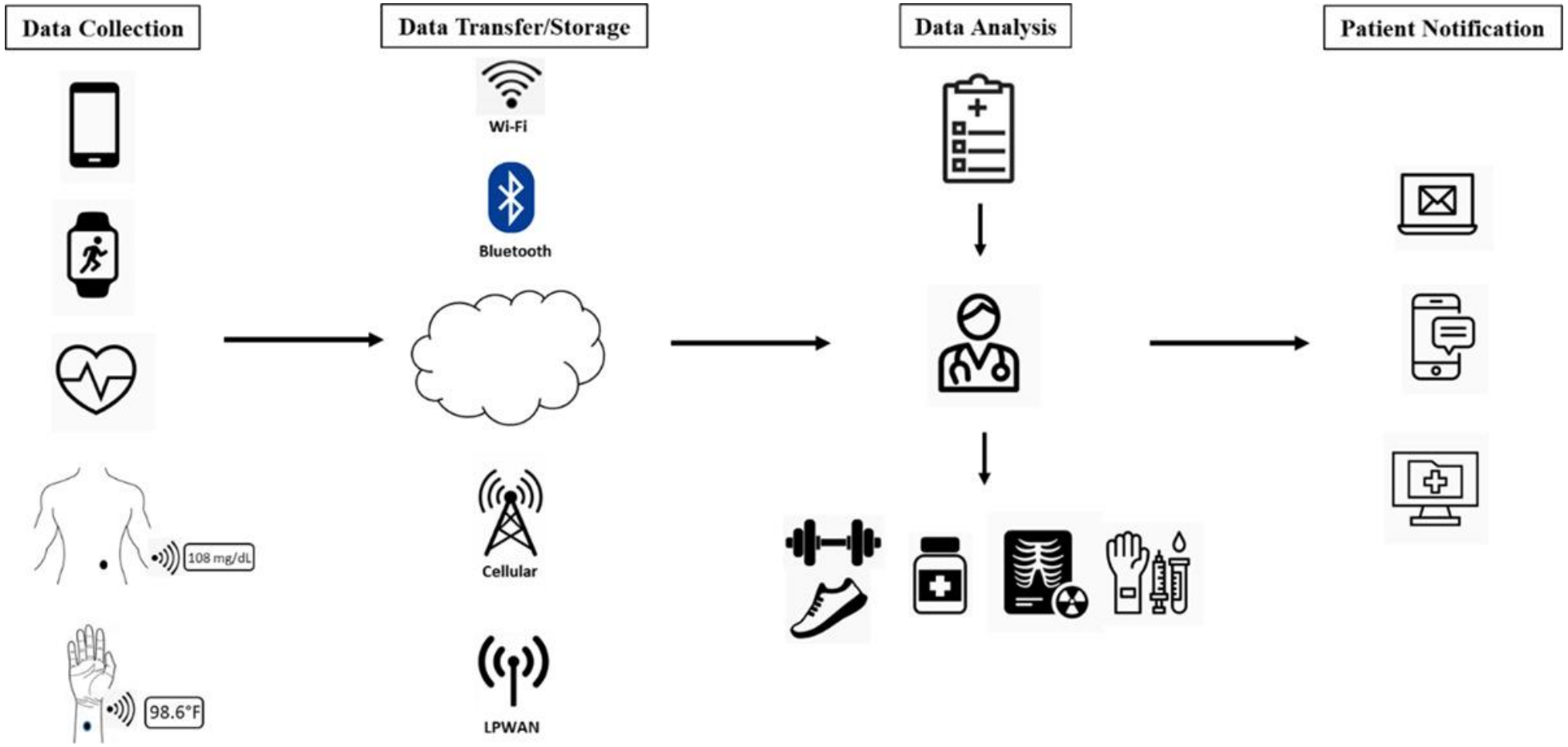
Poll Q:
Have you had a goals of care discussion with your provider?

Harnessing Technology

- 80% of adults >65 own a cell phone
- 67% use the internet
- Americans ≥60 years
  - Spend more time in front of screens
  - Average 4 hours 16 minutes on devices
  - 2-7% own/use fitness trackers

Schorr EN, **Gepner AD,** Dolansky MA, Forman DE, Park LG, Petersen KS, Still CH, Wang TY, Wenger NK; Harnessing Mobile Health Technology for Secondary Cardiovascular Disease Prevention in Older Adults: A Scientific Statement From the American Heart Association. Circ Cardiovasc Qual Outcomes. 2021 May;14(5):e000103.

Harnessing Technology



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Prevention is  !

- Robust older adults treated similarly to younger adults
  - Screen for CVD
  - Aggressive risk factors modification
  - Attention to the increased risk for adverse effects
- Shared decision making
  - Screening and prevention should align with goals and preferences
  - Limited life expectancy?

Orkaby AR, Rich MW. Cardiovascular Screening and Primary Prevention in Older Adults. *Clin Geriatr Med*. 2018;34(1):81-93. doi:10.1016/j.cger.2017.08.003

Exercise!

Moderate intensity 150 minutes/week

Start slow

Active Living Every Day (ALED)

Silver Sneakers

Gerofit for Veterans

GERIFIT
VETERANS IN ACTION!

Age-Appropriate Training:

STRENGTH

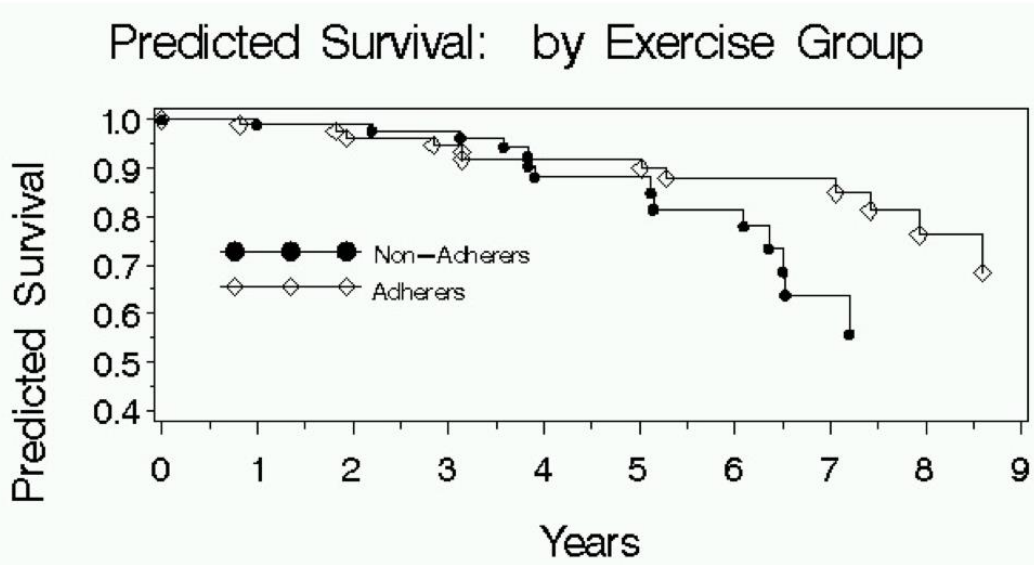
BALANCE

FLEXIBILITY

CARDIOVASCULAR FITNESS

Gerofit Outcomes: Increased Survival

- 70 Veterans enrolled in Gerofit
- **25% lower 10 year mortality**
- Compared to Gerofit dropouts; <6 months (n=65).



Adjusted for sex, race, age, and CVD risk factors

JAGS, 2002

Morey, et.al

Medication Assessment

- Comprehensive assessment of cardiac and noncardiac medications
- Identification of potentially harmful drug interactions
- Collaboration with clinical pharmacist

Cardiovascular History

(eg, hypertension, valvular heart disease, arrhythmia, heart failure, coronary artery disease, peripheral arterial disease)

Psychosocial Assessment

- Family and social support (living situation, primary caretaker)
- Use of assistive devices
- Coping strategies

Geriatric Assessment

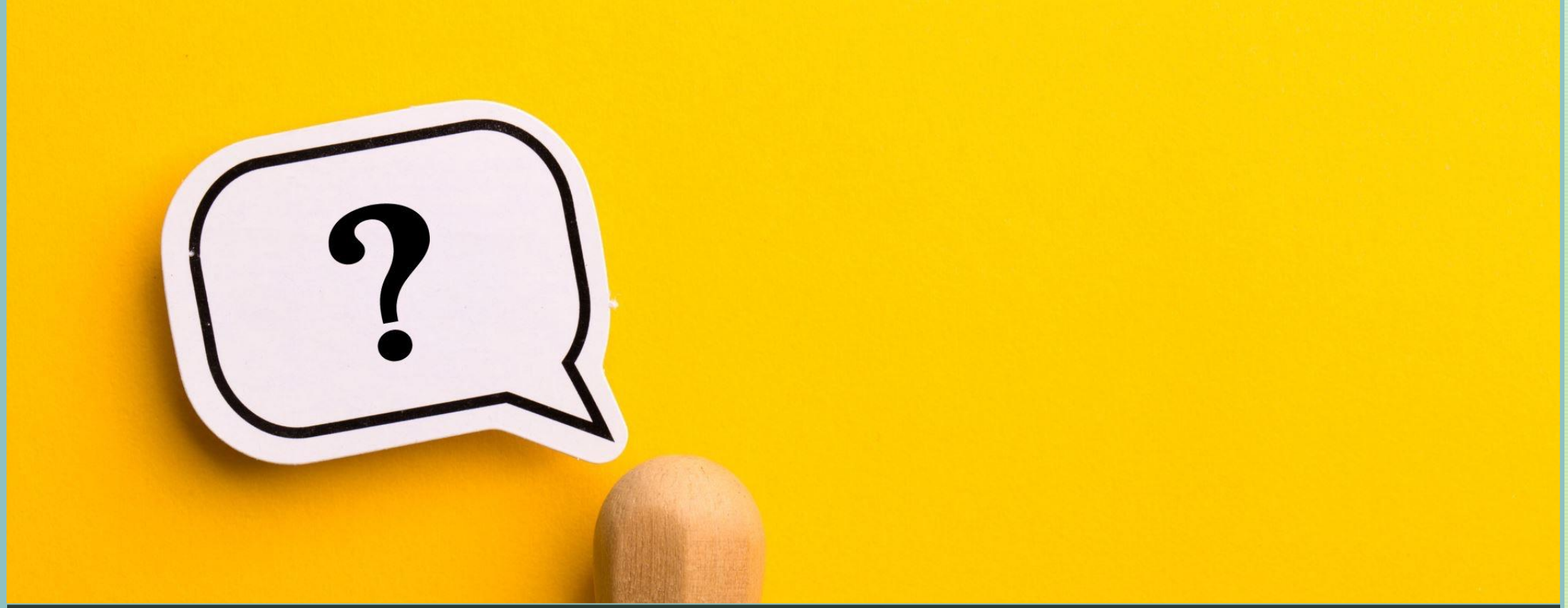
- Frailty
- Disability
- Incontinence
- Cognitive impairment
- Vision/hearing impairment
- Fall history
- Depression
- Multimorbidity

Care Preferences

Explicit elicitation of patient preferences, and setting specific attainable goals

Selecting optimal therapeutic options

- Collaborative (with patient, family, and other expert clinicians)
- Goal-directed
- Personalized but evidence-based



Let's Talk About Risk Factors

Hypertension

- Poll Q:
  Do you have high blood pressure?

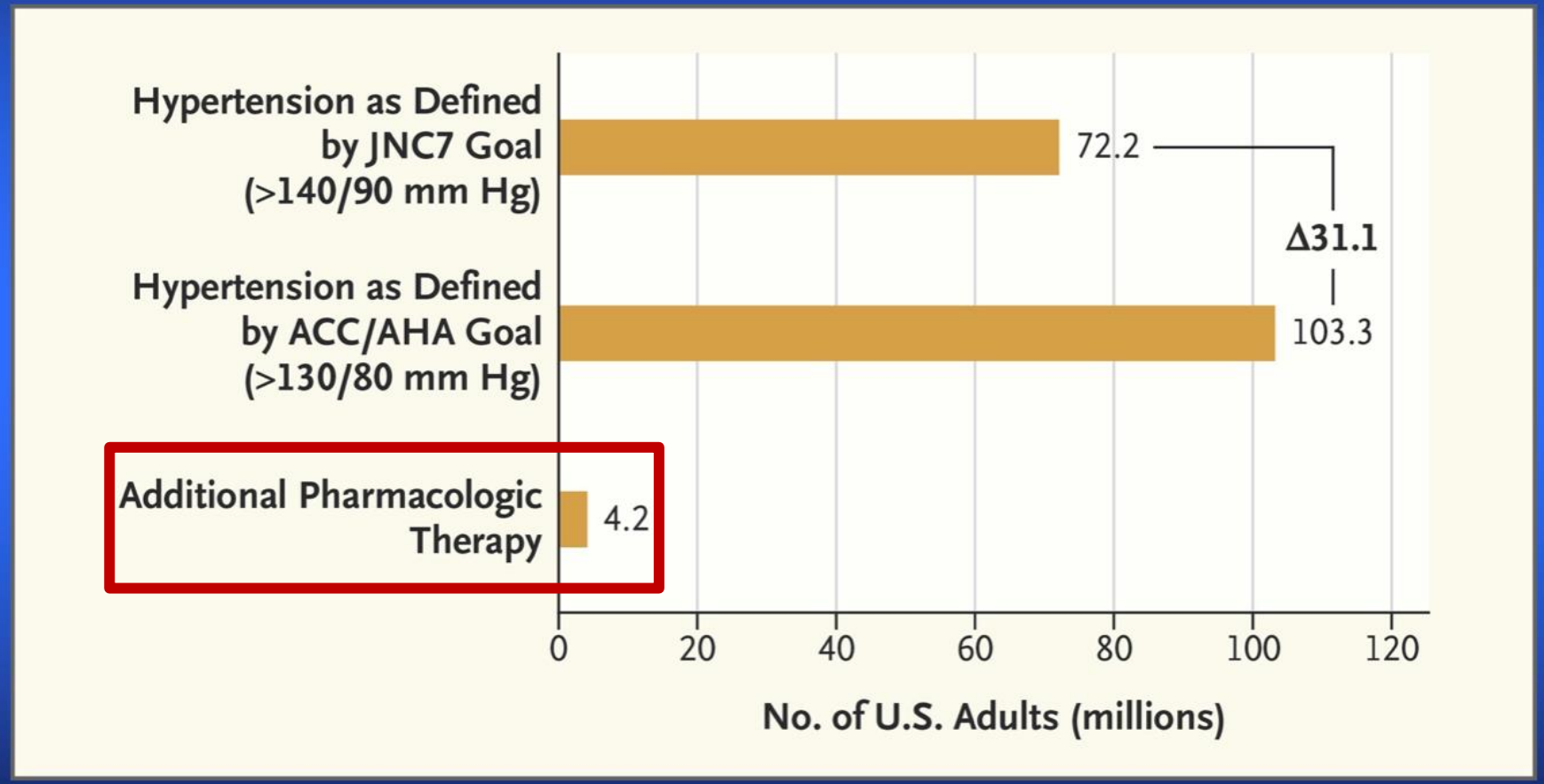
The Dirty Truth

- Heart Disease is the No. 1 cause of death in the US
  - Public enemy #1: **Hypertension**
  - 11% → 38% in 10 years

Heart disease and stroke statistics 2020 update: a report from the American Heart Association

Muntner P et al. Circulation. 2018 Jan 9;137(2):109-118.

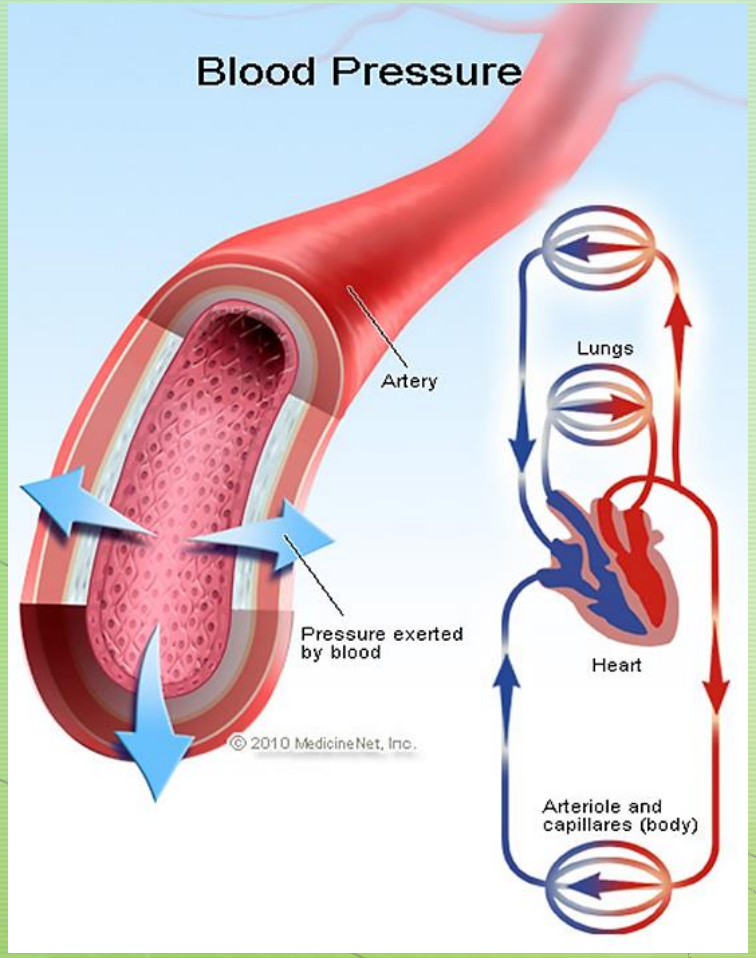
More meds?



Ritchey MD, Gillespie C, Wozniak G, Shay CM, Thompson-Paul AM, Loustalot F, Hong Y. Potential need for expanded pharmacologic treatment and lifestyle modification services under the 2017 ACC/AHA Hypertension Guideline. J Clin Hypertens (Greenwich). 2018 Oct;20(10):1377-1391. Muntner P et al. Circulation. 2018 Jan 9;137(2):109-118.

Blood Pressure 101

- **Fluid pushed into vessels**
- **Force against artery walls**



www.nhlbi.nih.gov/health/health-topics/topics/hbp/
Figure: www.emedicinehealth.com/high_blood_pressure/article_em.htm

What is *High* Blood Pressure?

High blood pressure can be normal

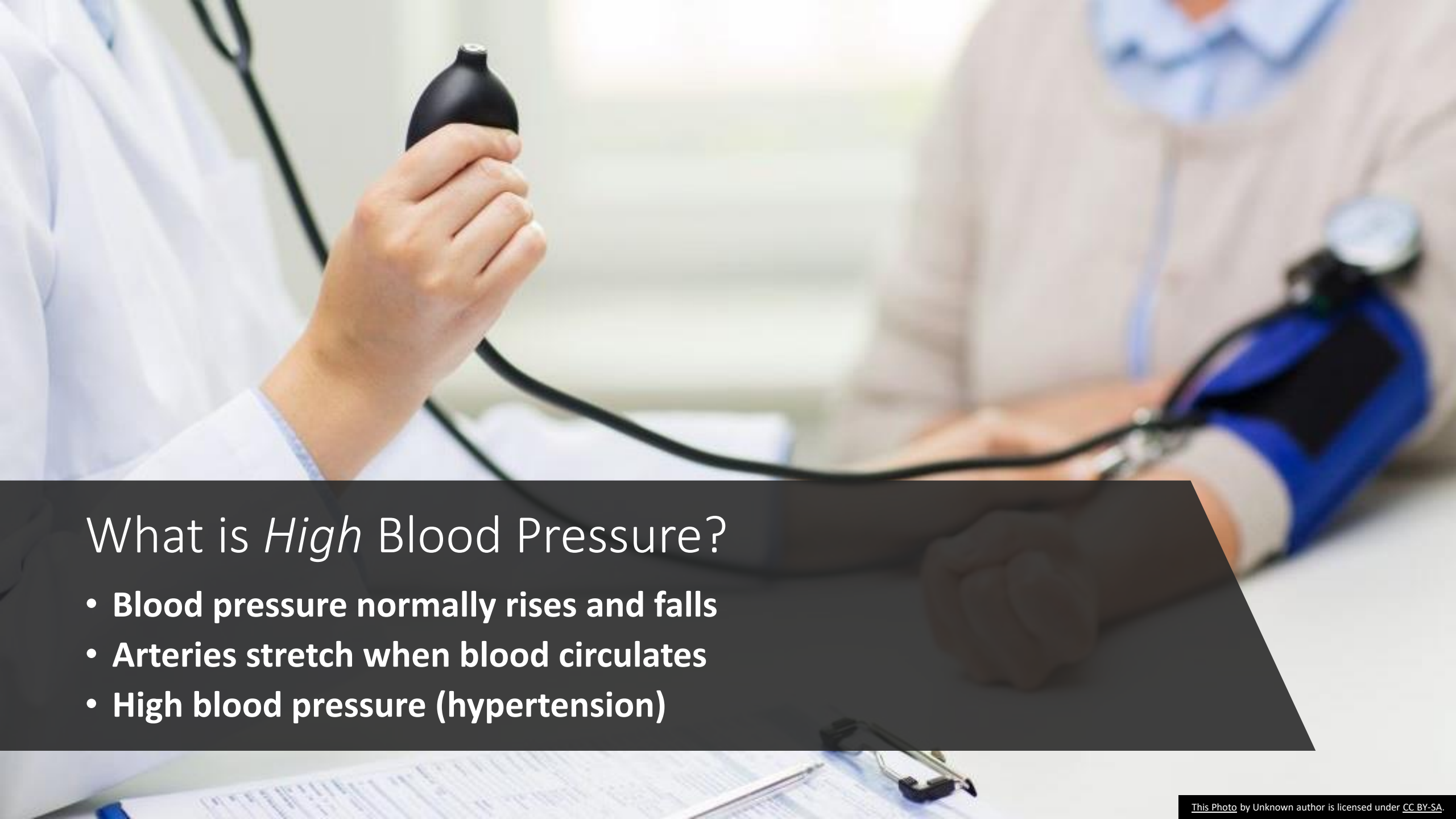
- **Blood pressure normally rises and falls**
- **Arteries stretch when blood circulates**
- **More pressure = more stretch**

Hypertension:

- **loss of regulatory control**
- **Increase arterial resistance**

WHAT TO DO IF YOU'RE BEING CHASED BY A BEAR WHILE ON FIRE

www.BearmageddonNews.com BNN



What is *High* Blood Pressure?

- **Blood pressure normally rises and falls**
- **Arteries stretch when blood circulates**
- **High blood pressure (hypertension)**

Who Cares?

u·biq·ui·tous
/yo͞o'bikwətəs/

Adjective
Present, appearing, or found everywhere: "his ubiquitous influence".

Synonyms
omnipresent

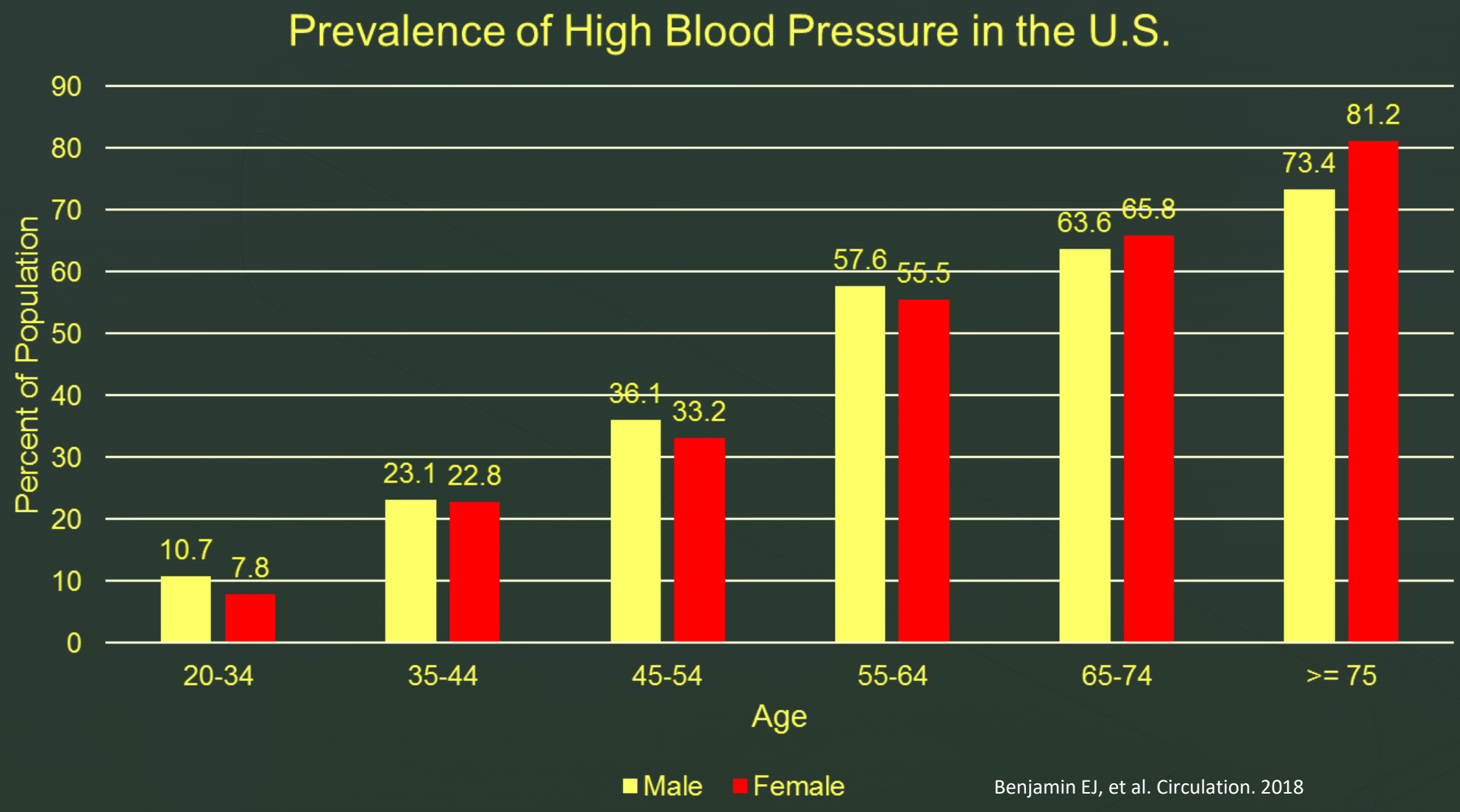
45% of US adults

>1/3 of Veterans

65% over age 60!

Heart disease and stroke statistics 2018 update: a report from the American Heart Association

Hypertension = Ubiquitous



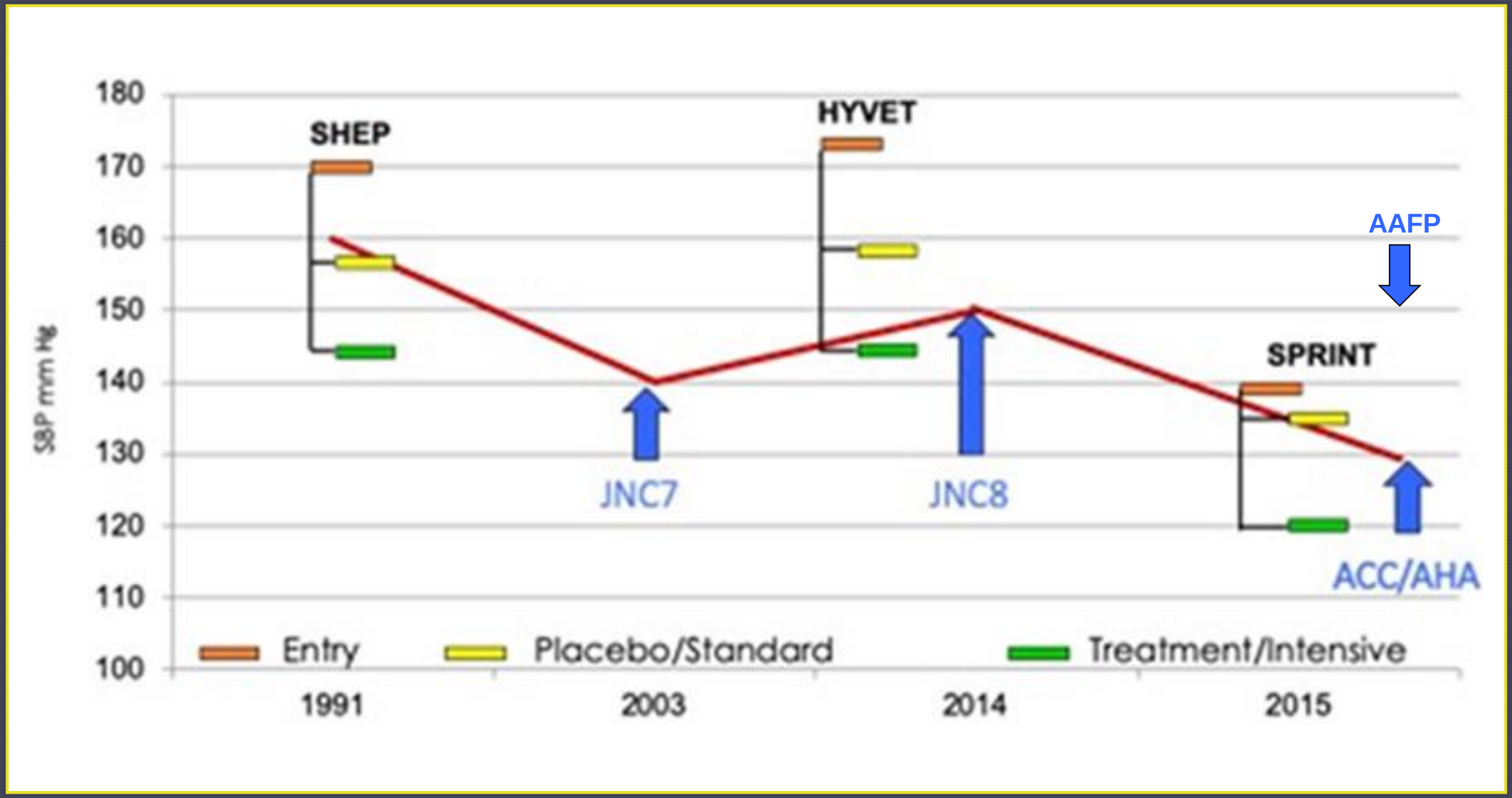
Benjamin EJ, et al. Circulation. 2018


RIP
My provider forgot to mention,
You can die from
HYPERTENSION

What do the numbers mean?

- **Systolic pressure (top number)**
  - **Pressure in the arteries when the heart contracts (systole)**
- **Diastolic pressure (bottom number)**
  - **Pressure when the heart relaxes**
  - **The ventricular cavity is refilling with blood (diastole)**

American Heart Association. www.heart.org/



Adapted from Supiano et al. Circulation. 2019;140: 976-978.

HTN Guideline Controversy

Subgroup	AHA/ACC 2017	ACP/AAFP	ESC/ESH	HTN Canada	ADA
Low Risk	< 130	< 150		< 140	< 140
High Risk	< 130	< 140		< 120	< 130
Age < 60	< 130		< 130-120	< 140	
Age ≥ 60	< 130	< 150	< 140-130	< 140	

2017 AHA/ACC Guidelines not endorsed by AAFP and ACP

Concerns for older adults and BP targets

2017 Hypertension Guidelines:

Blood Pressure Classification	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)	
Normal	<120	and	<80
Elevated*	120-129	and	<80
Stage 1 Hypertension	130-139	or	80-89
Stage 2 Hypertension	≥140	or	≥90

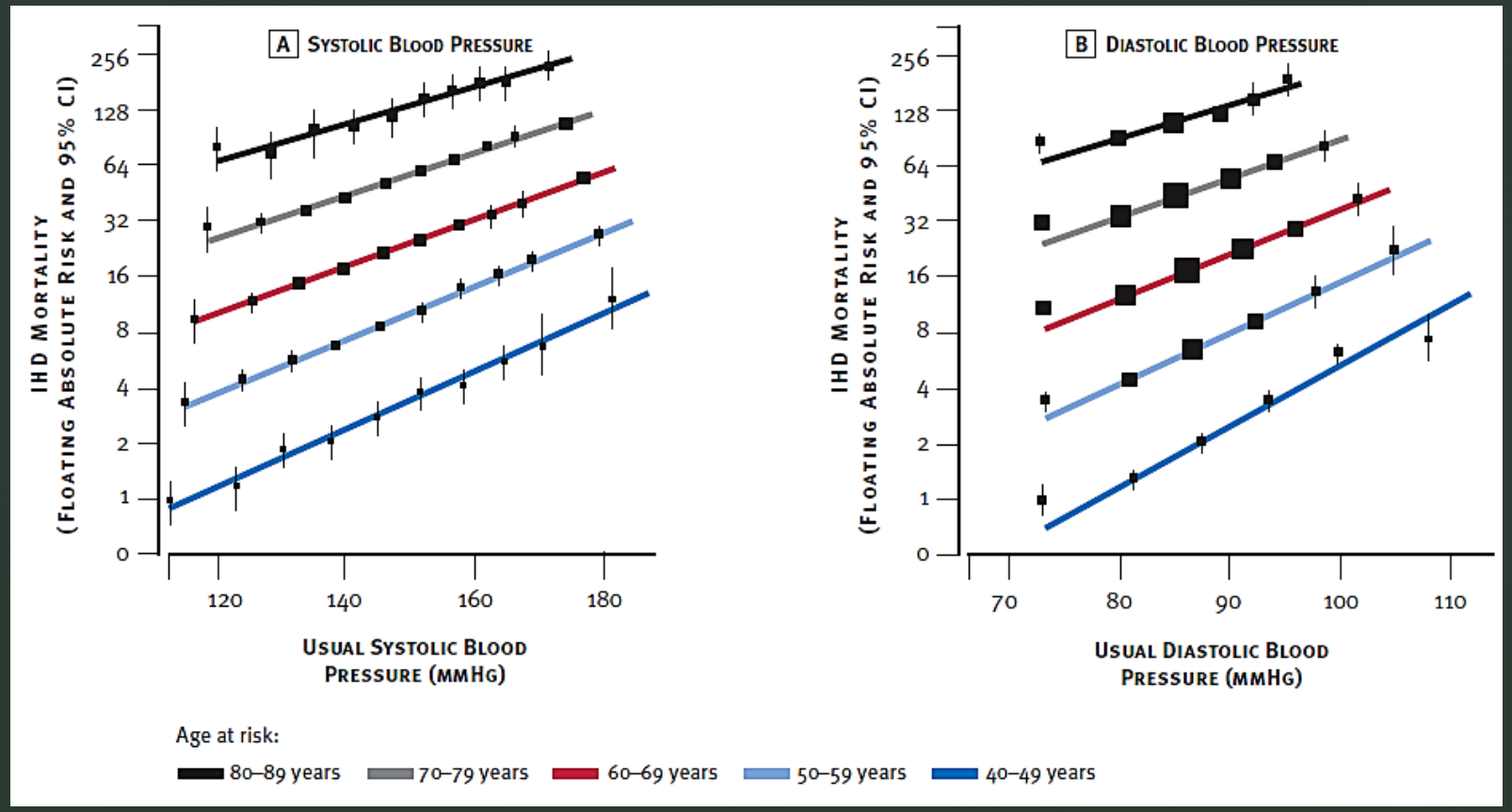
*Prior guidelines: "pre-hypertension"

Hypertension Diagnosis:

average ≥130/80 mmHg on at least 2 visits

Roger VL, et al. *Circulation*. 2012;125:e2-e220
Whelton PK, et al. *Hypertension*. 2017

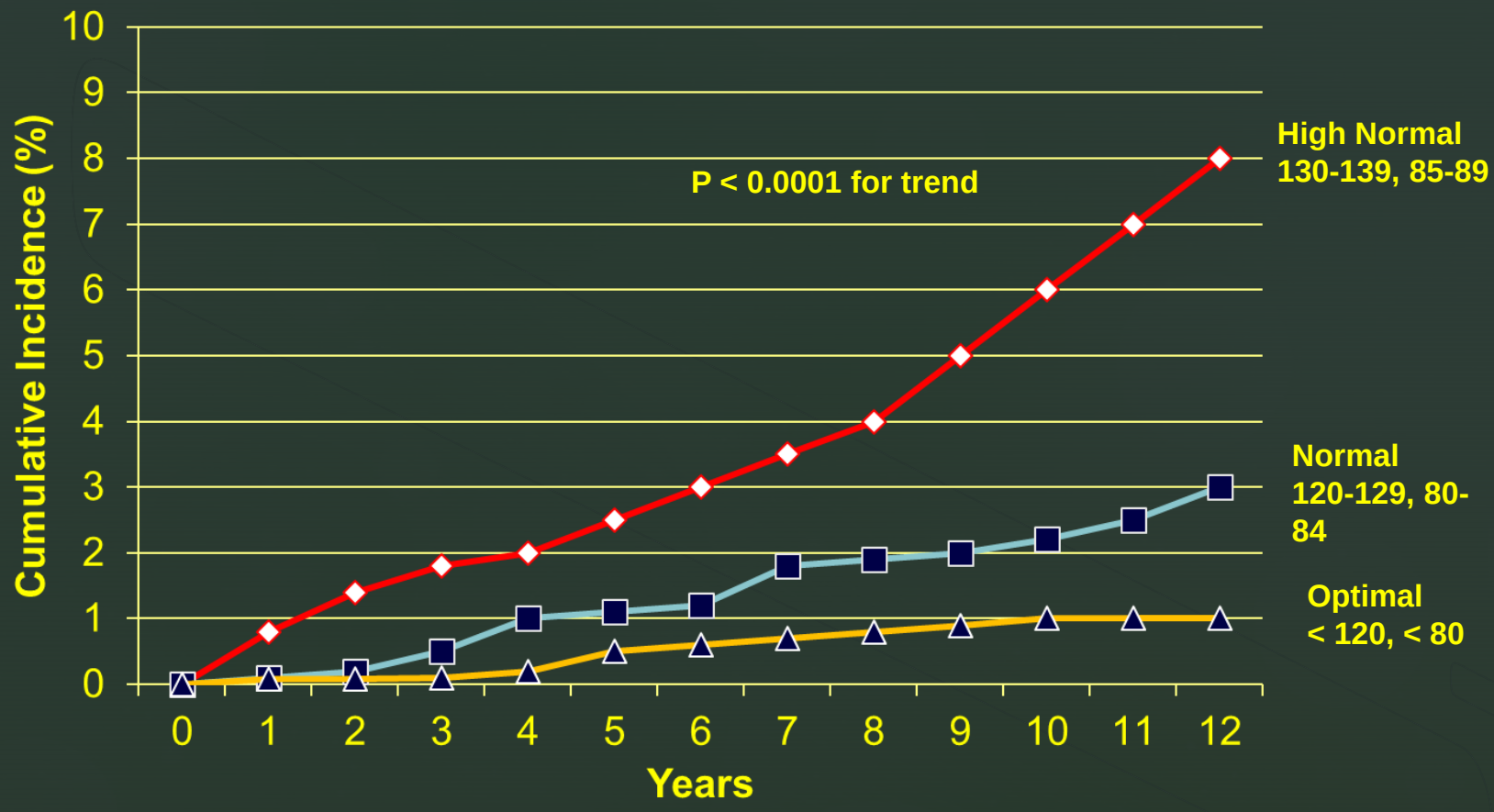
Rationale for HTN Guidelines



- This 115/75 mmHg “threshold” is seen across age categories

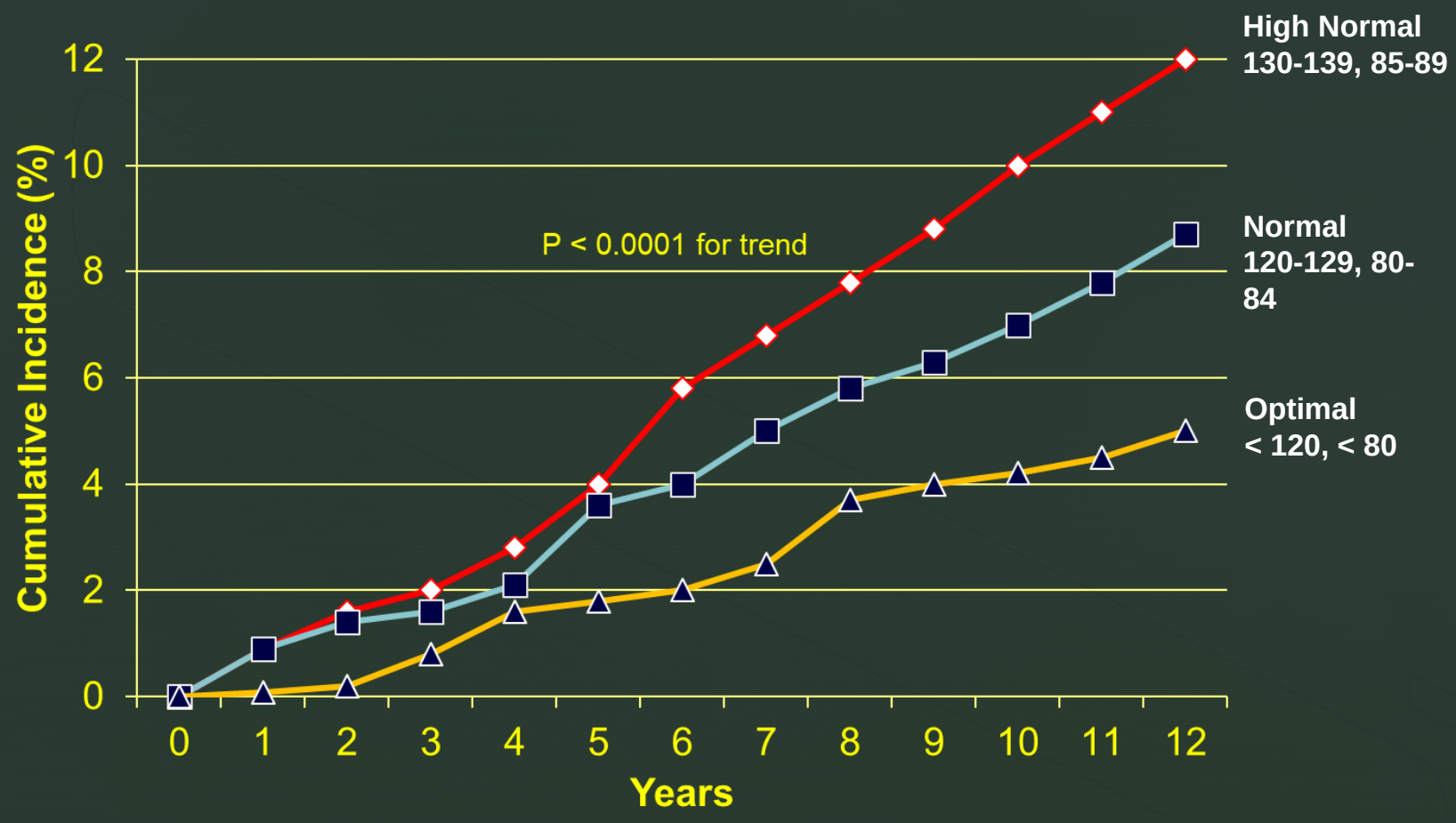
Data from the Framingham Heart Study

Women without HTN



Data from the Framingham Heart Study
Recreated from Vasan RS et al. N Engl J Med 2001;345:1291-1297

Men without HTN



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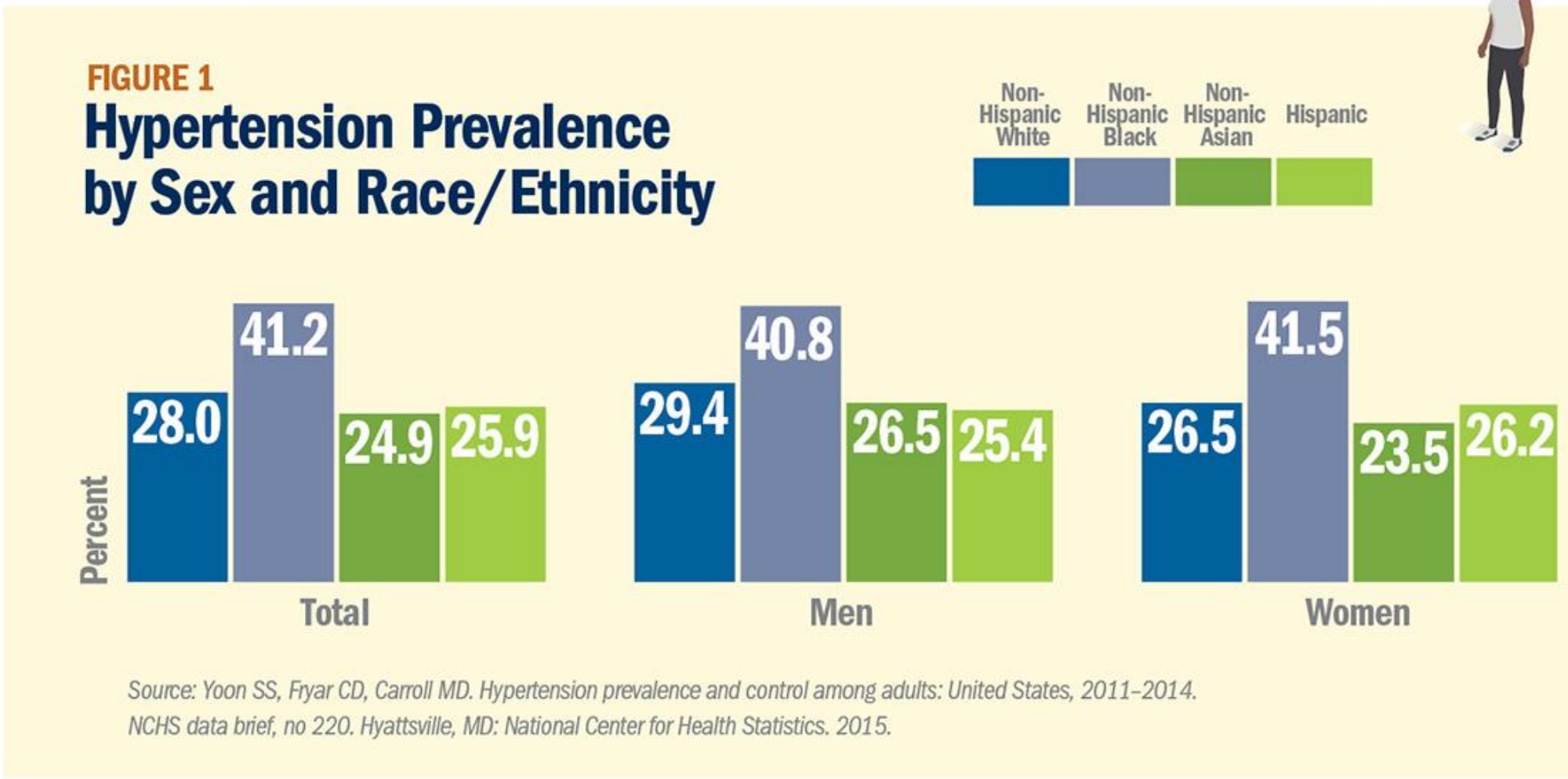
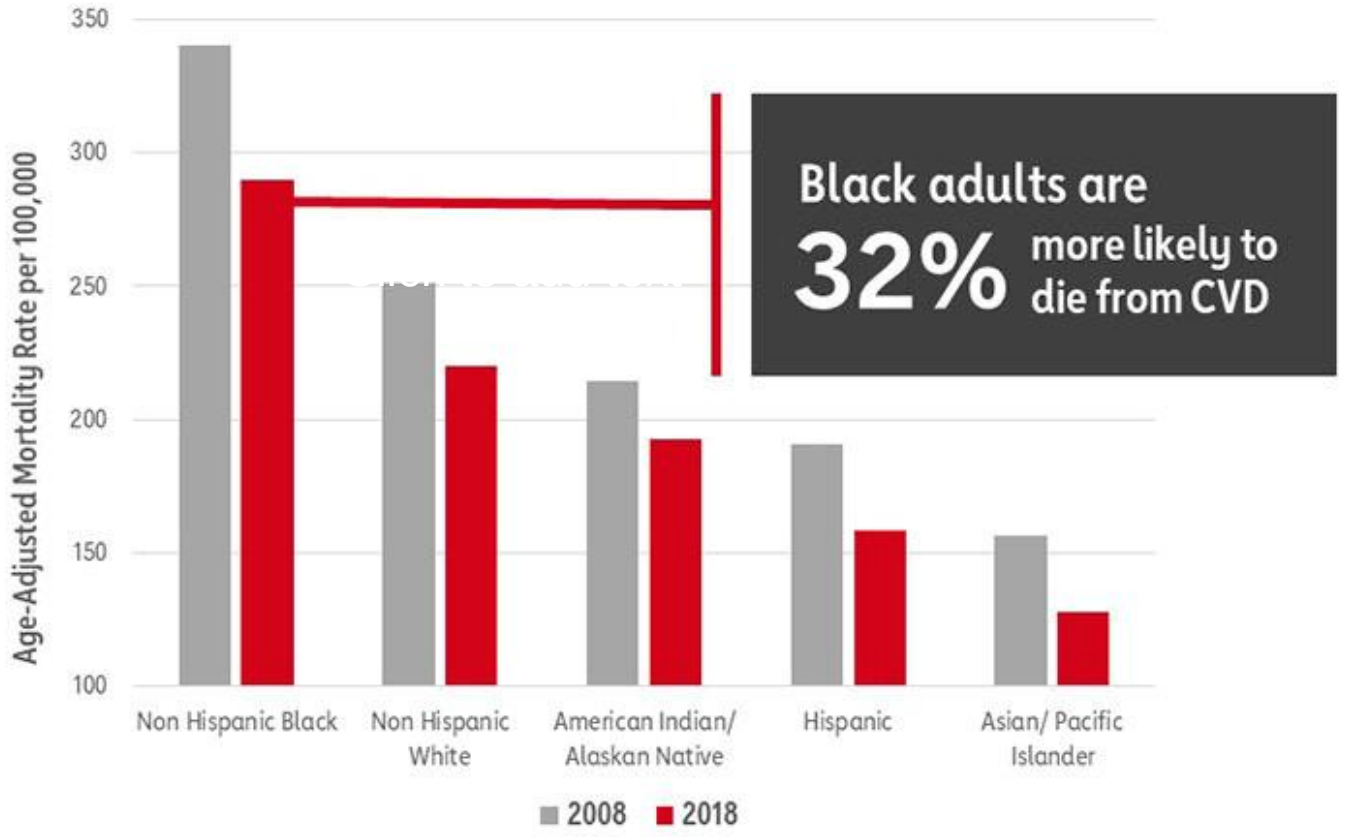


What about race and ethnicity?

AGE-ADJUSTED TOTAL CVD MORTALITY RATES by Race/Ethnicity



Case: Mr. C

66 yo M

- No other PMH
- Clinic BP:
  - 154/92 mmHg
- Clinic Wt:
  - 237 lbs
  - BMI: 37

- Loves:
  - Cleaning
  - French fries
  - Brady old fashioneds
- Hates:
  - Dirt
  - Pills

Key Steps	Specific Instructions
Step 1: Properly prepare the patient	1. Have the patient relax, sitting in a chair (feet on floor, back supported) for >5 min. 2. The patient should avoid caffeine, exercise, and smoking for at least 30 min before measurement. 3. Ensure patient has emptied his/her bladder. 4. Neither the patient nor the observer should talk during the rest period or during the measurement. 5. Remove all clothing covering the location of cuff placement. 6. Measurements made while the patient is sitting or lying on an examining table do not fulfill these criteria.
Step 2: Use proper technique for BP measurements	1. Use a BP measurement device that has been validated, and ensure that the device is calibrated periodically. 2. Support the patient's arm (e.g., resting on a desk). 3. Position the middle of the cuff on the patient's upper arm at the level of the right atrium (the midpoint of the sternum). 4. Use the correct cuff size, such that the bladder encircles 80% of the arm, and note if a larger- or smaller-than-normal cuff size is used. 5. Either the stethoscope diaphragm or bell may be used for auscultatory readings

Key Steps	Specific Instructions
Step 3: Take the proper measurements needed for diagnosis and treatment of elevated BP/hypertension	1. At the first visit, record BP in both arms. Use the arm that gives the higher reading for subsequent readings. 2. Separate repeated measurements by 1–2 min. 3. For auscultatory determinations, use a palpated estimate of radial pulse obliteration pressure to estimate SBP. Inflate the cuff 20–30 mm Hg above this level for an auscultatory determination of the BP level. 4. For auscultatory readings, deflate the cuff pressure 2 mm Hg per second, and listen for Korotkoff sounds.
Step 4: Properly document accurate BP readings	1. Record SBP and DBP. If using the auscultatory technique, record SBP and DBP as onset of the first Korotkoff sound and disappearance of all Korotkoff sounds, respectively, using the nearest even number. 2. Note the time of most recent BP medication taken before measurements.
Step 5: Average the readings	Use an average of ≥2 readings obtained on ≥2 occasions to estimate the individual's level of BP.
Step 6: Provide BP readings to patient	Provide patients the SBP/DBP readings both verbally and in writing.

Garbage in Garbage out!

We don't know!

Key Steps	Specific Instructions
Step 1: Properly prepare the patient ✗	2. The patient should avoid **caffeine**, exercise, and smoking for at least 30 min before measurement. 3. Ensure patient has emptied his/her **bladder**. 4. Neither the patient nor the observer should **talk** during the rest period or during the measurement.
Step 5: Average the readings ✗	Use an average of ≥2 readings obtained on ≥2 occasions to estimate the individual's level of BP.

What next?

- Ensure accurate BP measurements
- 135/86 mmHg!
- Counseling?
- Risk? Meds?
- Follow up and reassess?

Mr. C…

Normal BP
< 120/80

Promote optimal lifestyle

Reassess in 1 year (class IIa)

Elevated BP
120-129 /<80

Non-pharmacologic Tx (Class I)

Reassess in 3-6 mos (class I)

Stage I HTN
130-139 /80-89

Clinical ASCVD Risk score ≥ 10%

No

Non-Pharmacologic Tx (Class I)

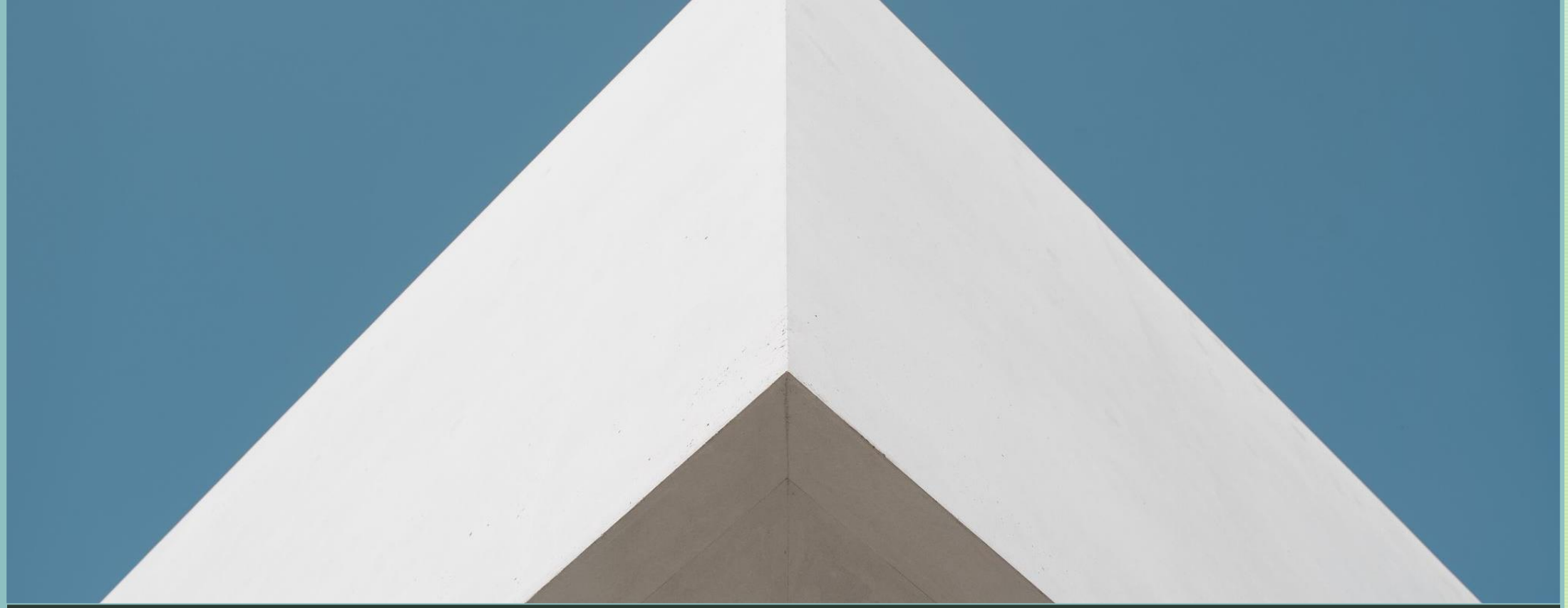
Yes

Non-pharmacologic Therapy + BP lowering medications (Class I)

Stage II HTN
≥140/90

Reassess 1 month (Class I)

Whelton PK, et al. *Hypertension.* 2017



The Cornerstone

Impact: The Big 4

1. Obesity
2. Diet
3. Substance use
4. Exercise

Small Changes = Big Results #1

1. **Obesity**
2. **Diet**
3. **Substance use**
4. **Exercise**

Intervention	Goal	Impact
Weight Loss	Ideal body weight	-1 mmHg per kg

Small Changes = Big Results #2

1. **Obesity**
2. **Diet**
3. **Substance use**
4. **Exercise**

Intervention	Goal	Impact
Weight Loss	Ideal body weight	-1 mmHg per kg
Healthy diet	DASH	-11 mmHg
↓ sodium	<1500 mg/day	-5/6 mmHg
↑ potassium	3500-5000 mg/day	-4/5 mmHg

Small Changes = Big Results #3

1. **Obesity**
2. **Diet**
3. **Substance use**
4. **Exercise**

Intervention	Goal	Impact
Weight Loss	Ideal body weight	-1 mmHg per kg
Healthy diet	DASH	-11 mmHg
↓ sodium	<1500 mg/day	-5/6 mmHg
↑ potassium	3500-5000 mg/day	-4/5 mmHg
Alcohol reduction	Men <2 drinks/day Women <1 drink/day	-4 mmHg

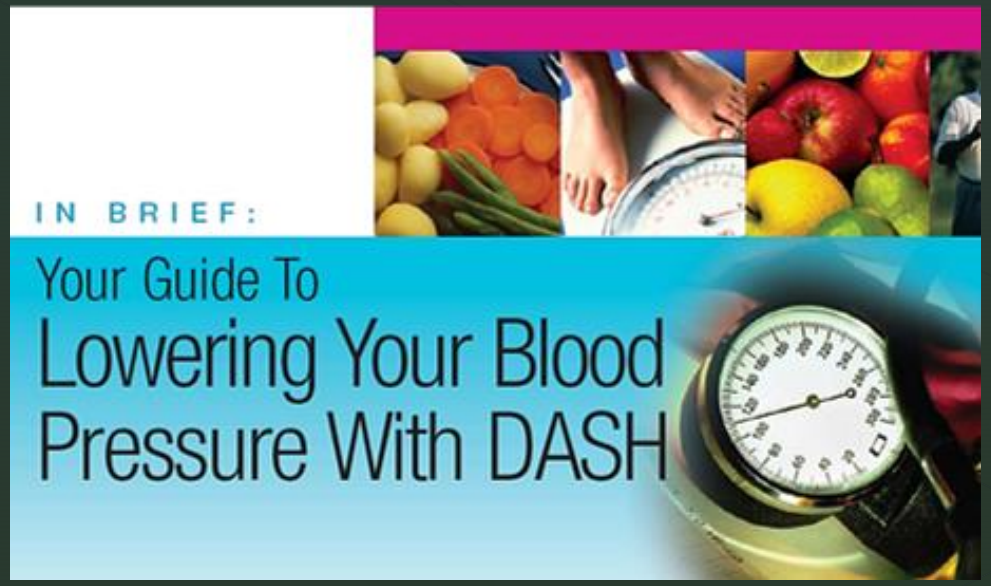
Small Changes = Big Results #4

1. **Obesity**
2. **Diet**
3. **Substance use**
4. **Exercise**

Intervention	Goal	Impact
Weight Loss	Ideal body weight	-1 mmHg per kg
Healthy diet	DASH	-11 mmHg
↓ sodium	<1500 mg/day	-5/6 mmHg
↑ potassium	3500-5000 mg/day	-4/5 mmHg
Alcohol reduction	Men <2 drinks/day Women <1 drink/day	-4 mmHg
Aerobic exercise	90-150 min/wk	-5/8 mmHg
Dynamic resistance	90-150 min/wk (3 sets, 10 reps)	-4 mmHg
Isometric resistance	Hand grip exercises	-5 mmHg

DASH Diet

Dietary Approaches to Stop Hypertension



Appel LJ, et al. *J Clin Hypertens (Greenwich)*. 2009;11:358-368
www.nhlbi.nih.gov/health/public/heart/hbp/dash/dash_brief.pdf

DASH Diet

- Low in saturated fat, cholesterol
- Fruits, vegetables, and low-fat dairy products
- Reduce red meat, sweets, and sugar- containing beverages
- Decrease blood pressure in 2 weeks

Appel LJ, et al. *J Clin Hypertens (Greenwich)*. 2009;11:358-368
www.nhlbi.nih.gov/health/public/heart/hbp/dash/dash_brief.pdf

Follow up and Reassess!

- Returns to clinic 1 months later!
- Cut down on brandy
- Following the DASH (low sodium)
- Cleaning more aggressively!
- Home blood pressure 120-125/80-85 mmHg
- No PILLS!

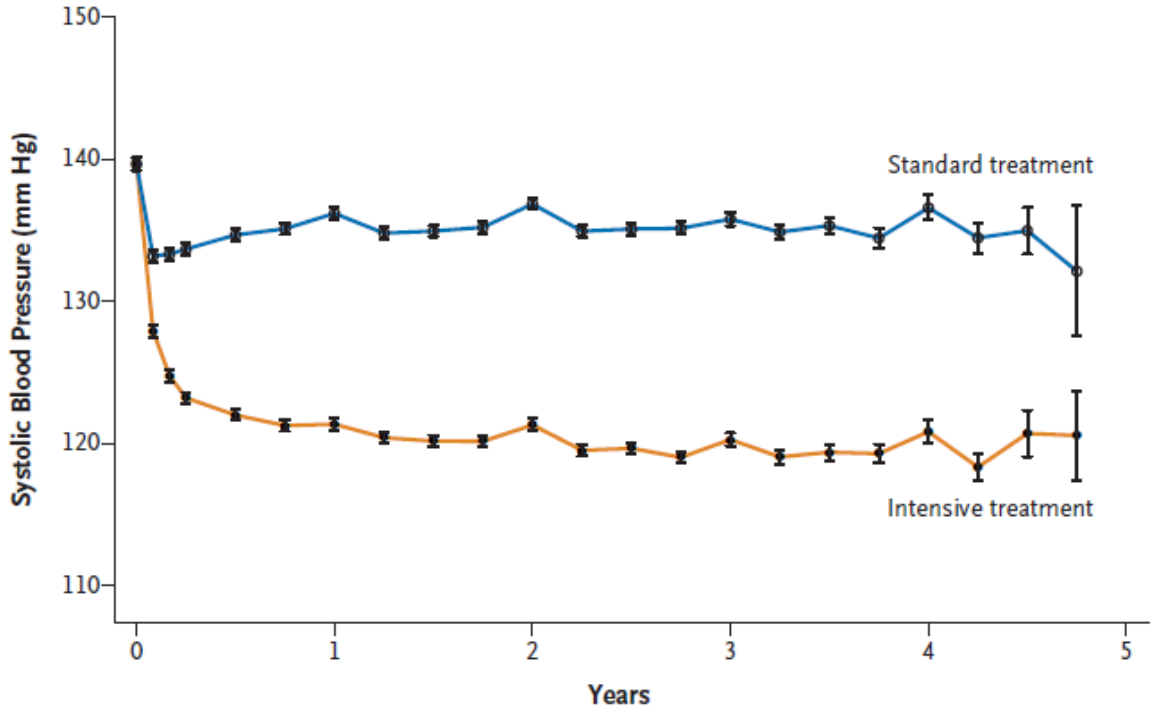
But...Lots of us need Medication for HTN

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*

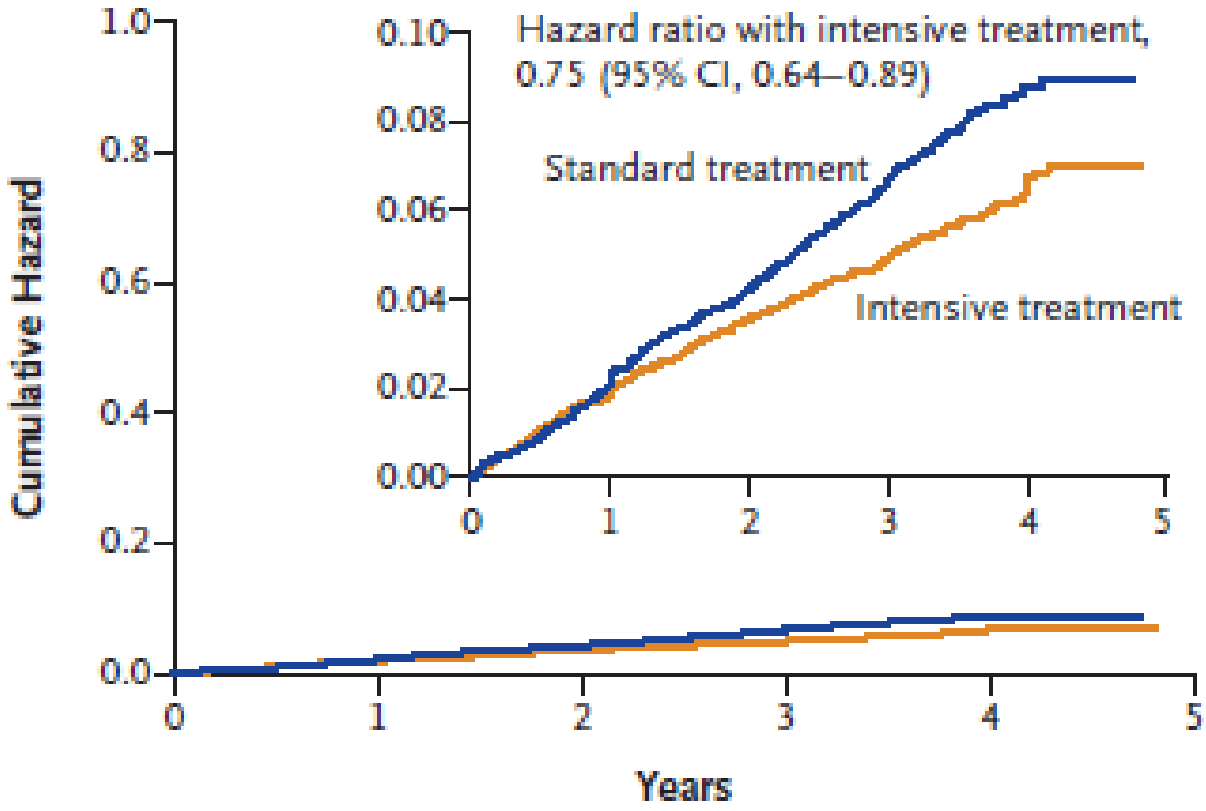


No. with Data										
Standard treatment	4683	4345	4222	4092	3997	3904	3115	1974	1000	274
Intensive treatment	4678	4375	4231	4091	4029	3920	3204	2035	1048	286
Mean No. of Medications										
Standard treatment	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
Intensive treatment	2.3	2.7	2.8	2.8	2.8	2.8	2.8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

Figure 2. Systolic Blood Pressure in the Two Treatment Groups over the Course of the Trial.

The systolic blood-pressure target in the intensive-treatment group was less than 120 mm Hg, and the target in the standard-treatment group was less than 140 mm Hg. The mean number of medications is the number of blood-pressure medications administered at the exit of each visit. I bars represent 95% confidence intervals.

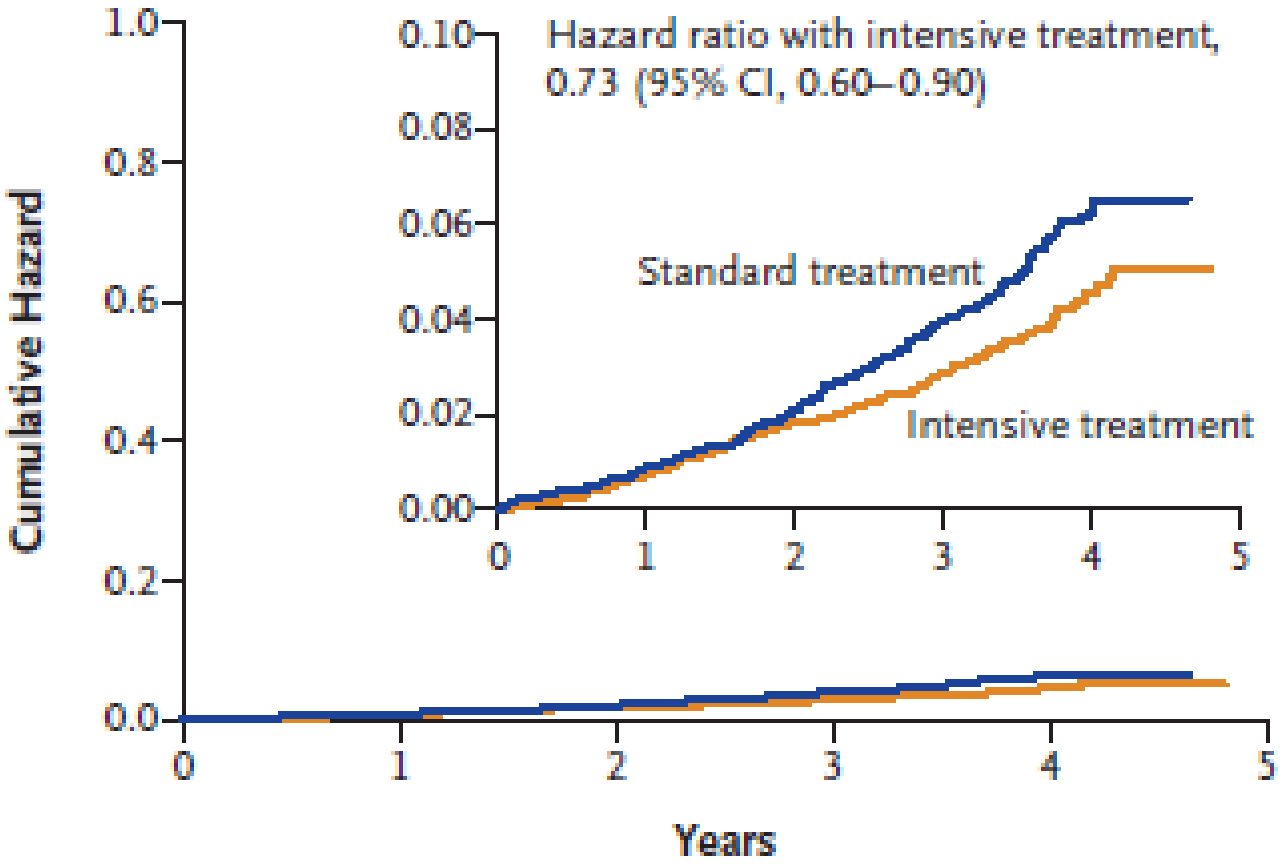
A Primary Outcome



No. at Risk

Standard treatment	4683	4437	4228	2829	721
Intensive treatment	4678	4436	4256	2900	779

B Death from Any Cause

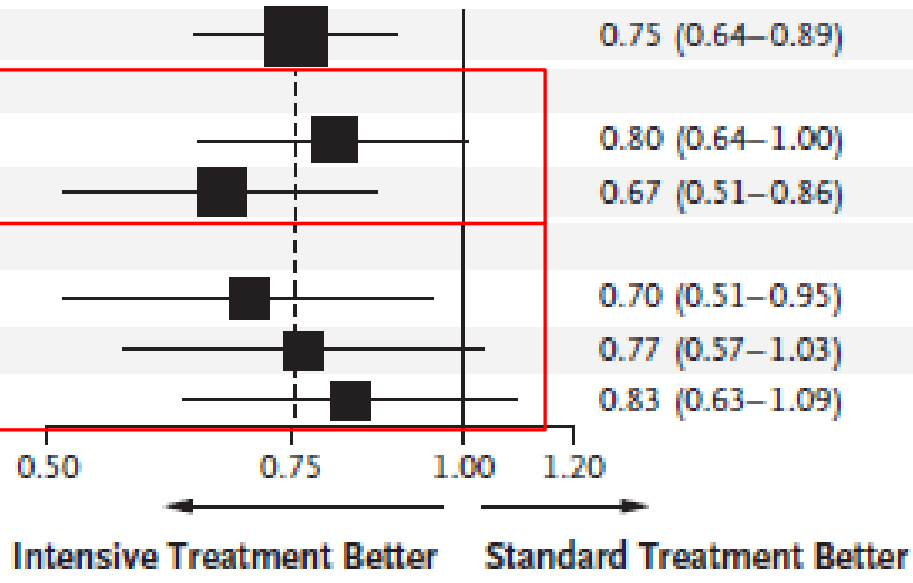


No. at Risk

Standard treatment	4683	4528	4383	2998	789
Intensive treatment	4678	4516	4390	3016	807

Lower BP = Fewer Deaths

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)	
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)	
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)	



Hypertension in Sprint

- Adults 75 years or older
- Treating to a systolic BP target <120 mm Hg vs <140 mmHg
- No effect on:
  - Gait speed
  - Changes in mobility limitation.

Odden MC, Peralta CA, Berlowitz DR, et al. Effect of Intensive Blood Pressure Control on Gait Speed and Mobility Limitation in Adults 75 Years or Older: A Randomized Clinical Trial. *JAMA Intern Med*. 2017;177(4):500-507. doi:10.1001/jamainternmed.2016.9104

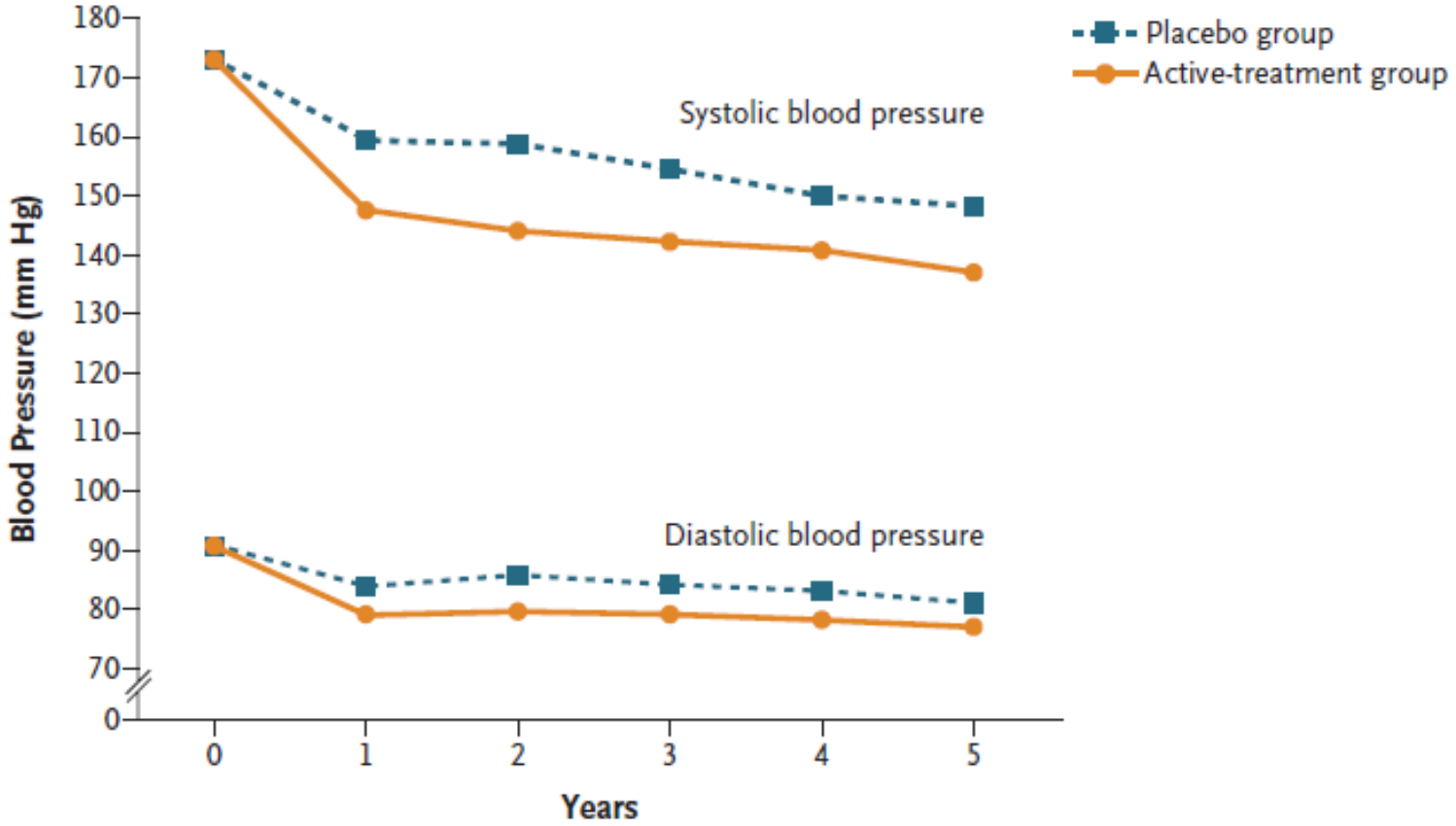
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 1, 2008 VOL. 358 NO. 18

Treatment of Hypertension in Patients 80 Years of Age or Older

Nigel S. Beckett, M.B., Ch.B., Ruth Peters, Ph.D., Astrid E. Fletcher, Ph.D., Jan A. Staessen, M.D., Ph.D., Lisheng Liu, M.D., Dan Dumitrascu, M.D., Vassil Stoyanovsky, M.D., Riitta L. Antikainen, M.D., Ph.D., Yuri Nikitin, M.D., Craig Anderson, M.D., Ph.D., Alli Belhani, M.D., Françoise Forette, M.D., Chakravarthi Rajkumar, M.D., Ph.D., Lutgarde Thijs, M.Sc., Winston Banya, M.Sc., and Christopher J. Bulpitt, M.D., for the HYVET Study Group*

- >80 yo with BP of >160 mmHg
- SBP goal <150 mmHg

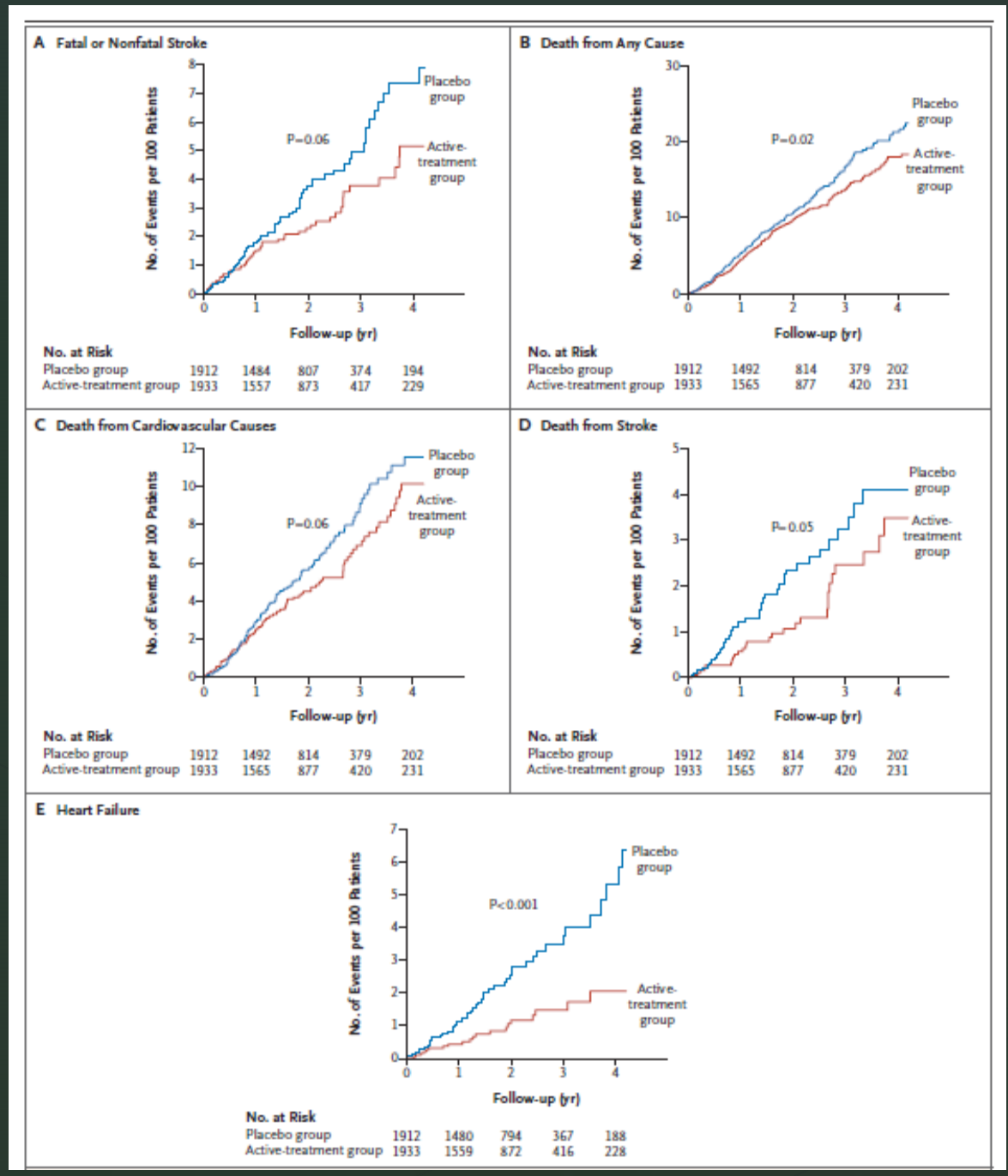


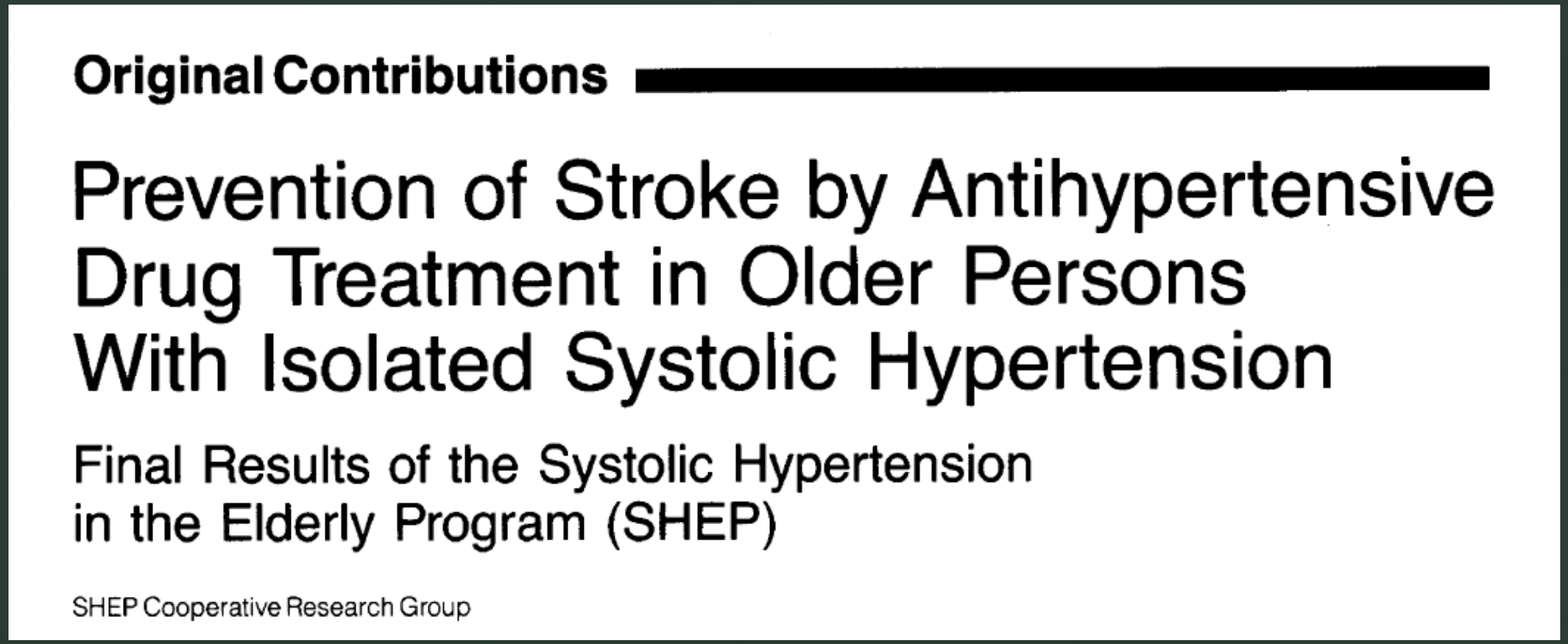
No. at Risk

Placebo group	1912	1468	701	330	191	116
Active-treatment group	1933	1540	754	373	207	118

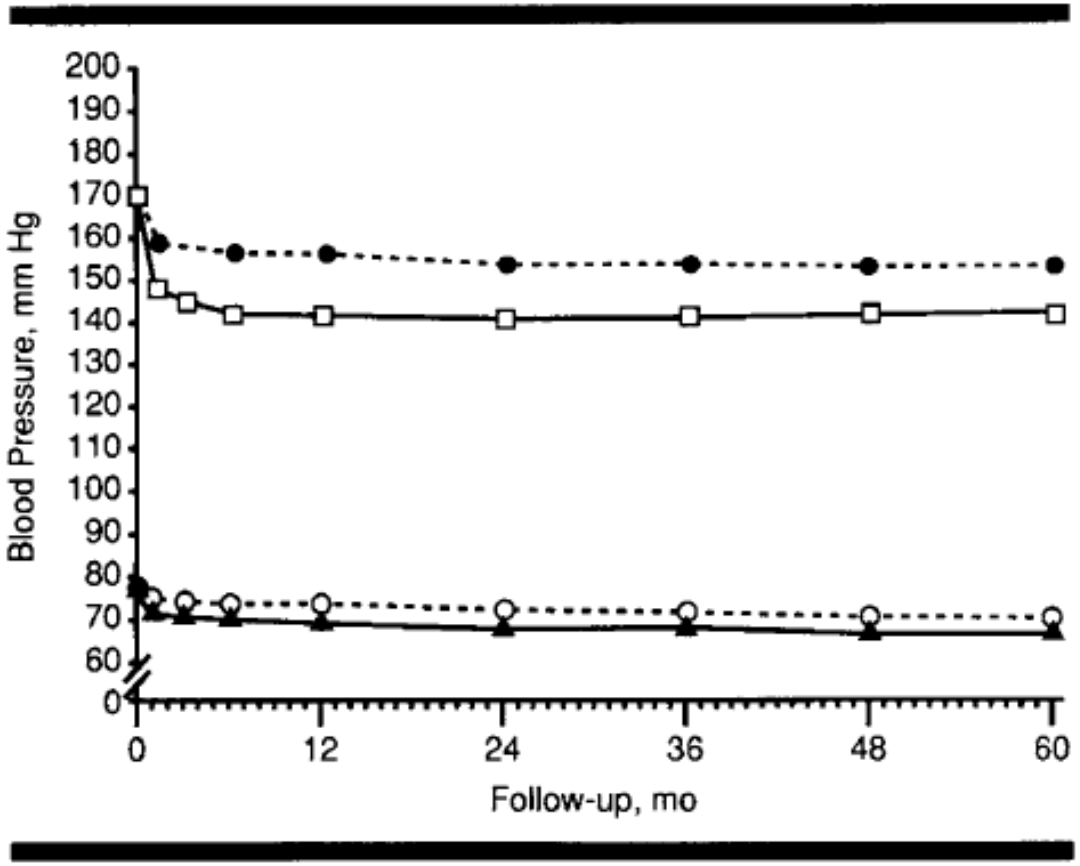
Figure 2. Mean Blood Pressure, Measured while Patients Were Seated, in the Intention-to-Treat Population, According to Study Group.

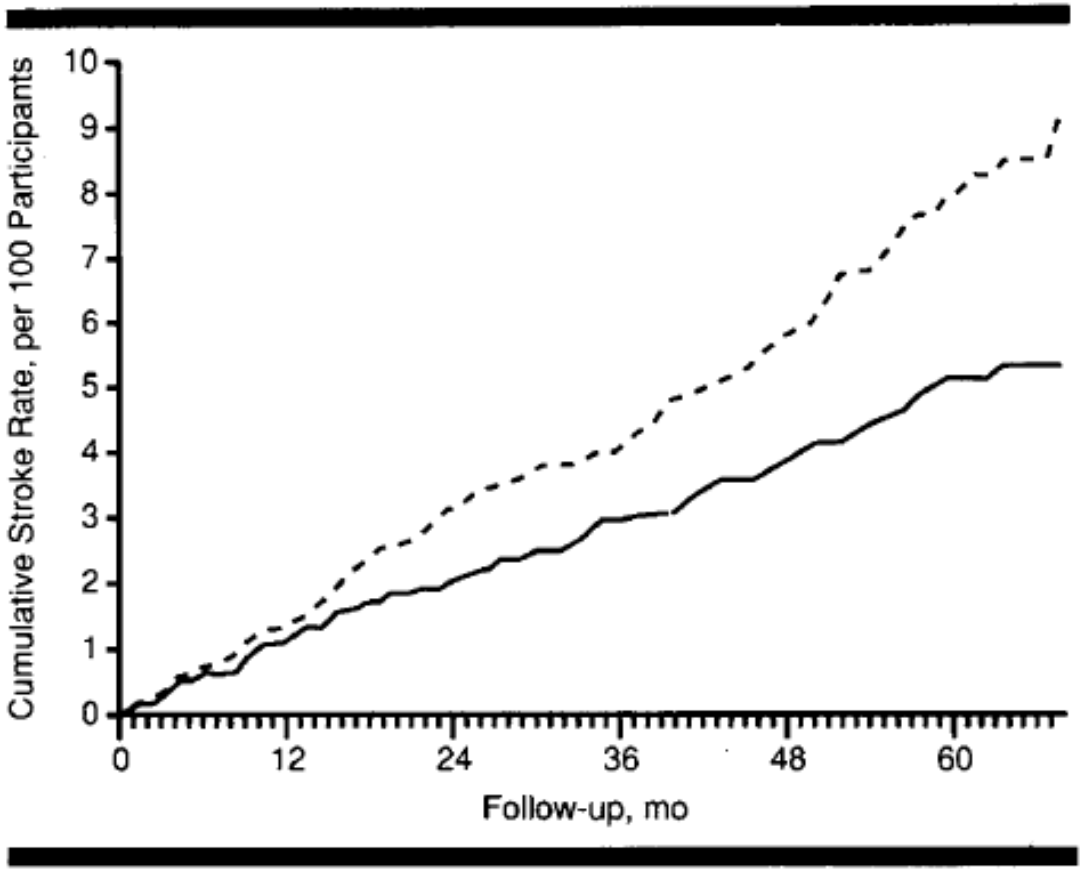
- After ~4 years of follow up
- Better BP control meant:
  - Fewer strokes
  - Less heart failure
  - Fewer Deaths!




Original Contributions
Prevention of Stroke by Antihypertensive Drug Treatment in Older Persons With Isolated Systolic Hypertension
Final Results of the Systolic Hypertension in the Elderly Program (SHEP)
SHEP Cooperative Research Group

- >60 yo SBP >160


Blood Pressure, mm Hg
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
0
0
12
24
36
48
60
Follow-up, mo

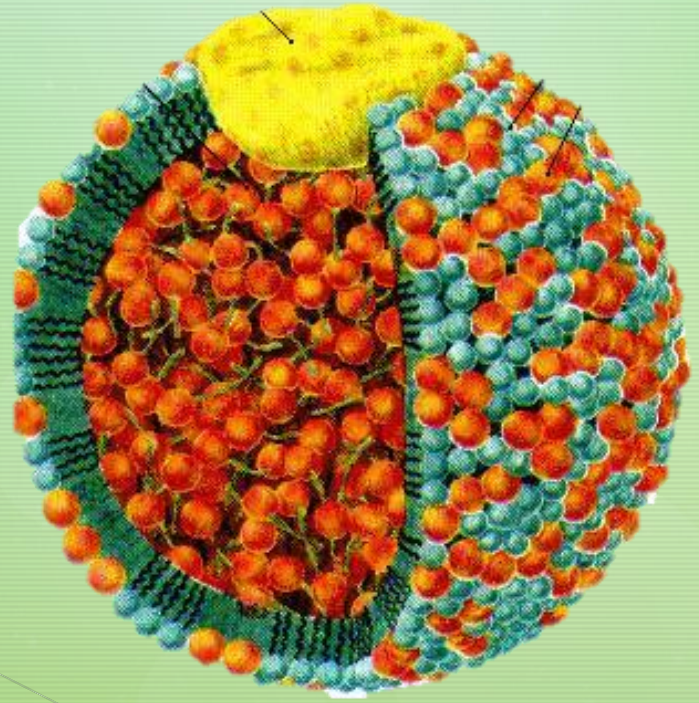

Cumulative Stroke Rate, per 100 Participants
10
9
8
7
6
5
4
3
2
1
0
0
12
24
36
48
60
Follow-up, mo

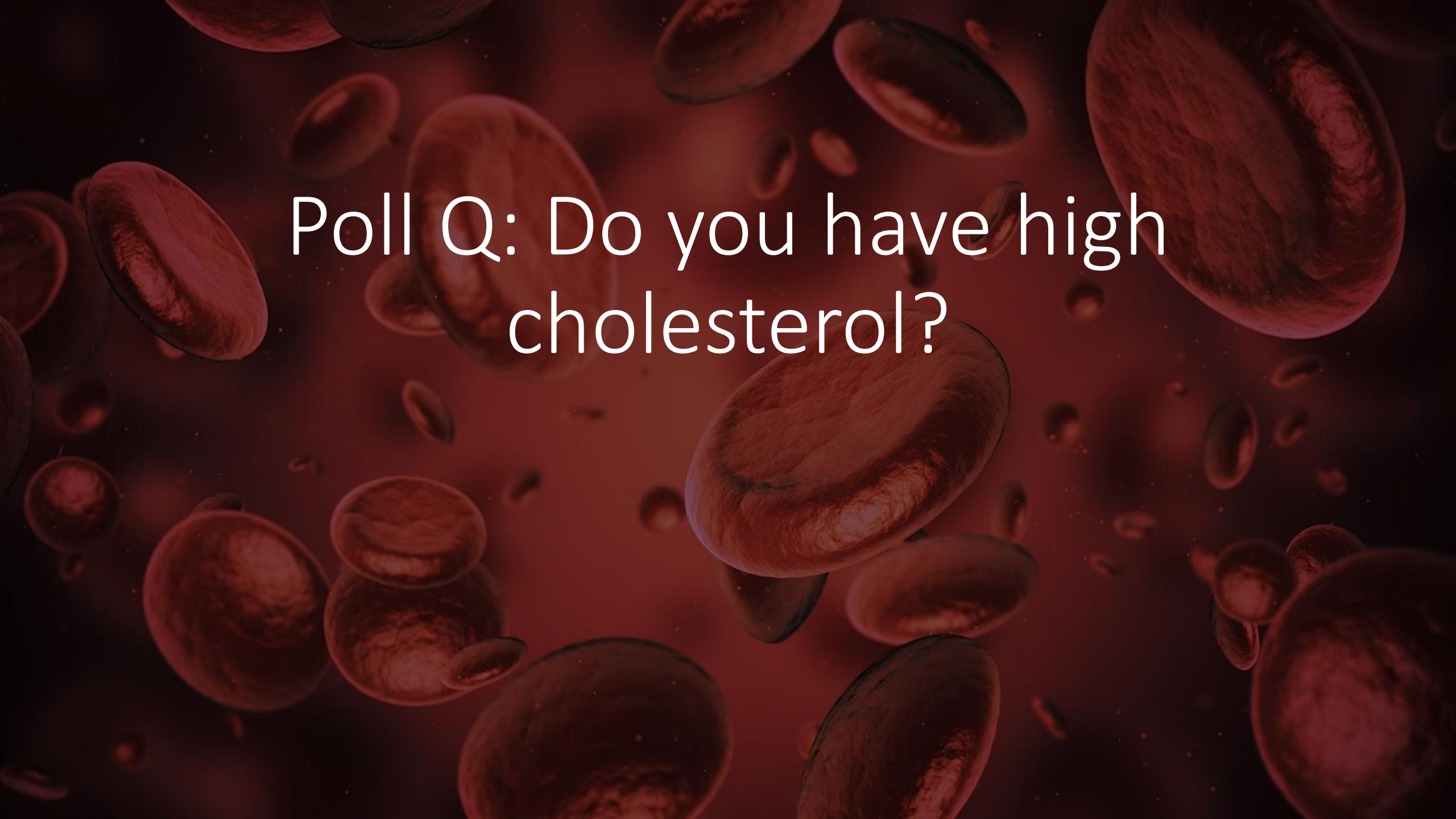
Summary: One Size...

Fits None.

- Hypertension kills – Major CVD risk factor!
- Garbage in Garbage out!
- Get good data!
- Confirm with home BP!
- Diet/Lifestyle are important for everyone!
- Talk to your provider about Hypertension!

Dyslipidemia (Cholesterol)



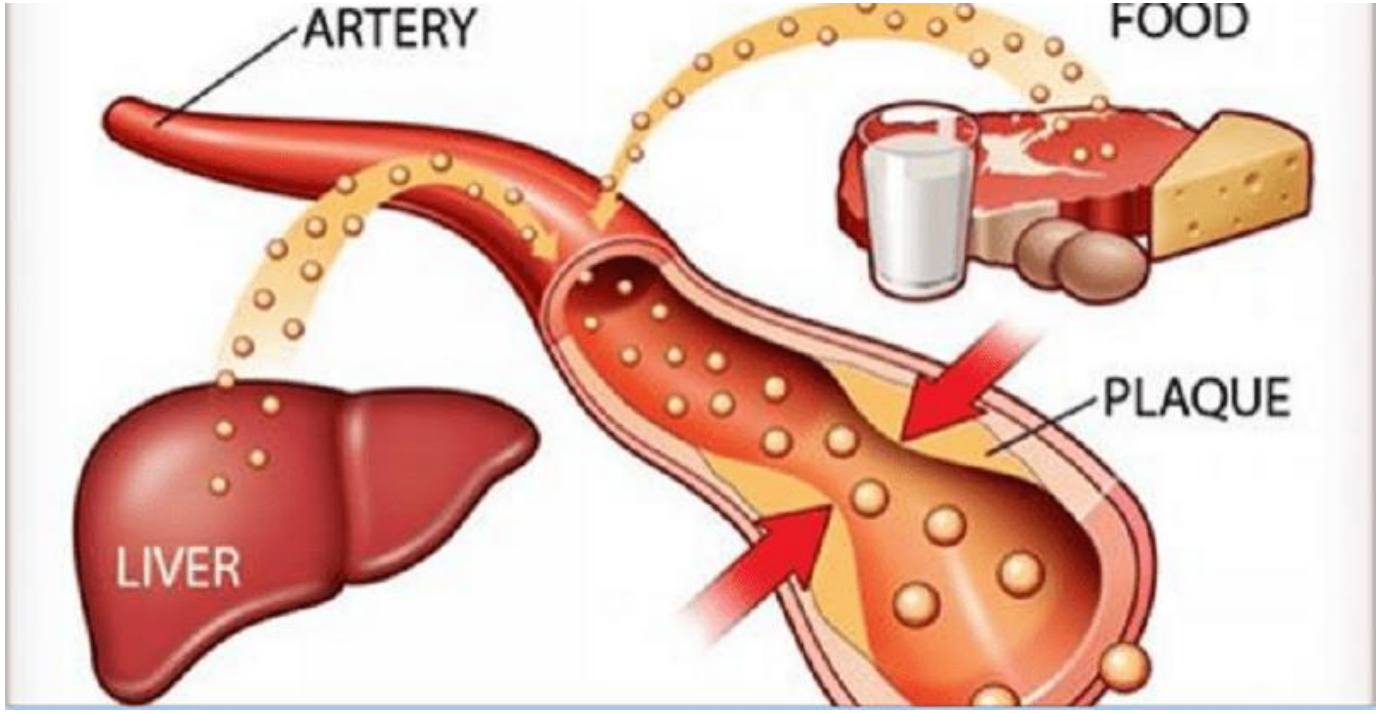

Poll Q: Do you have high cholesterol?

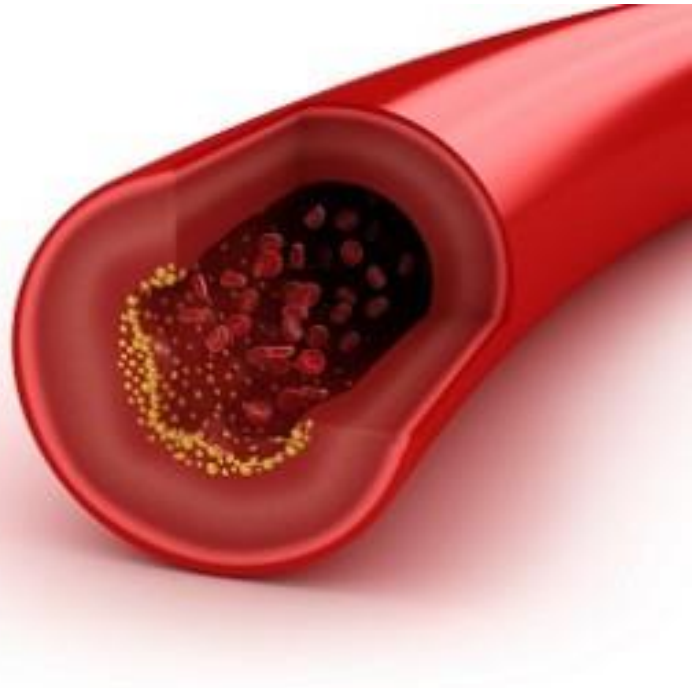
Poll Q: Do you take medication for cholesterol?

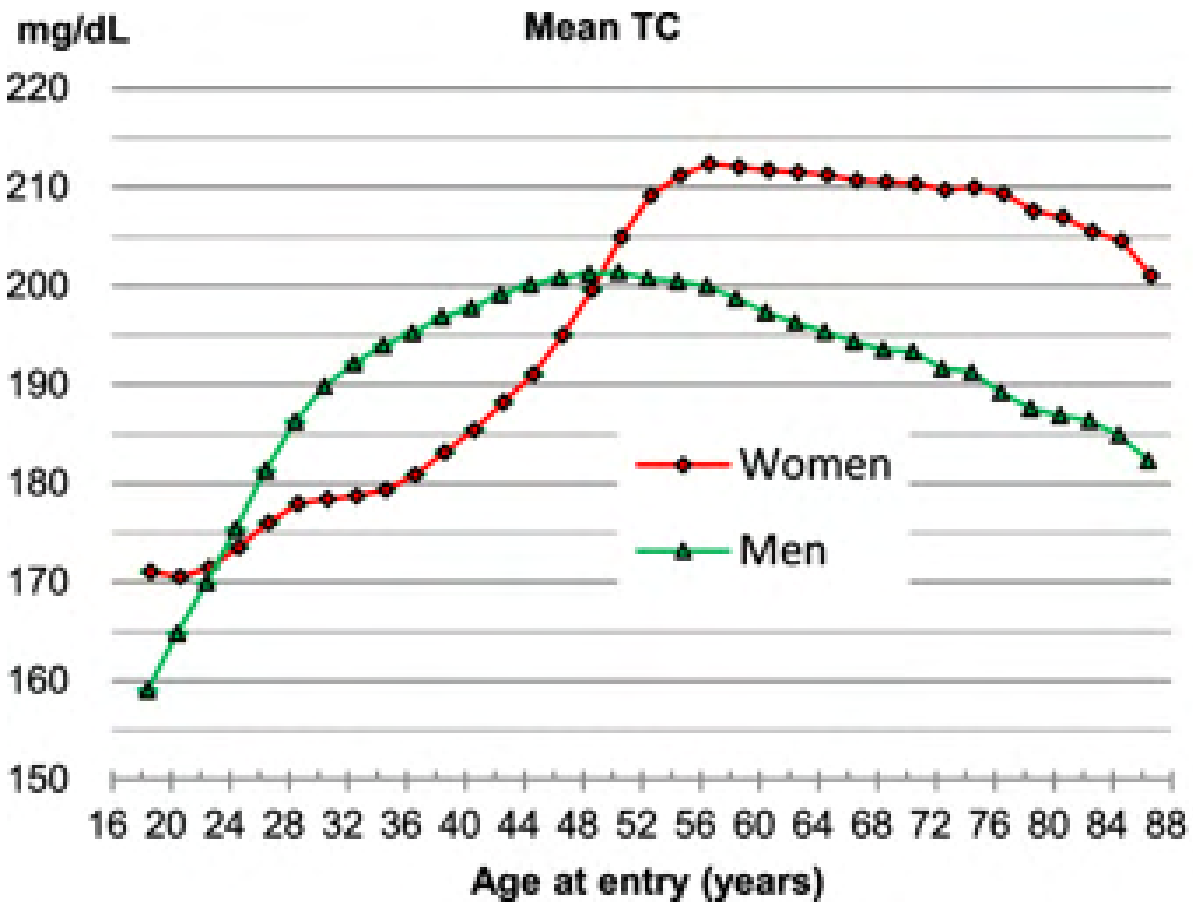
Cholesterol 101

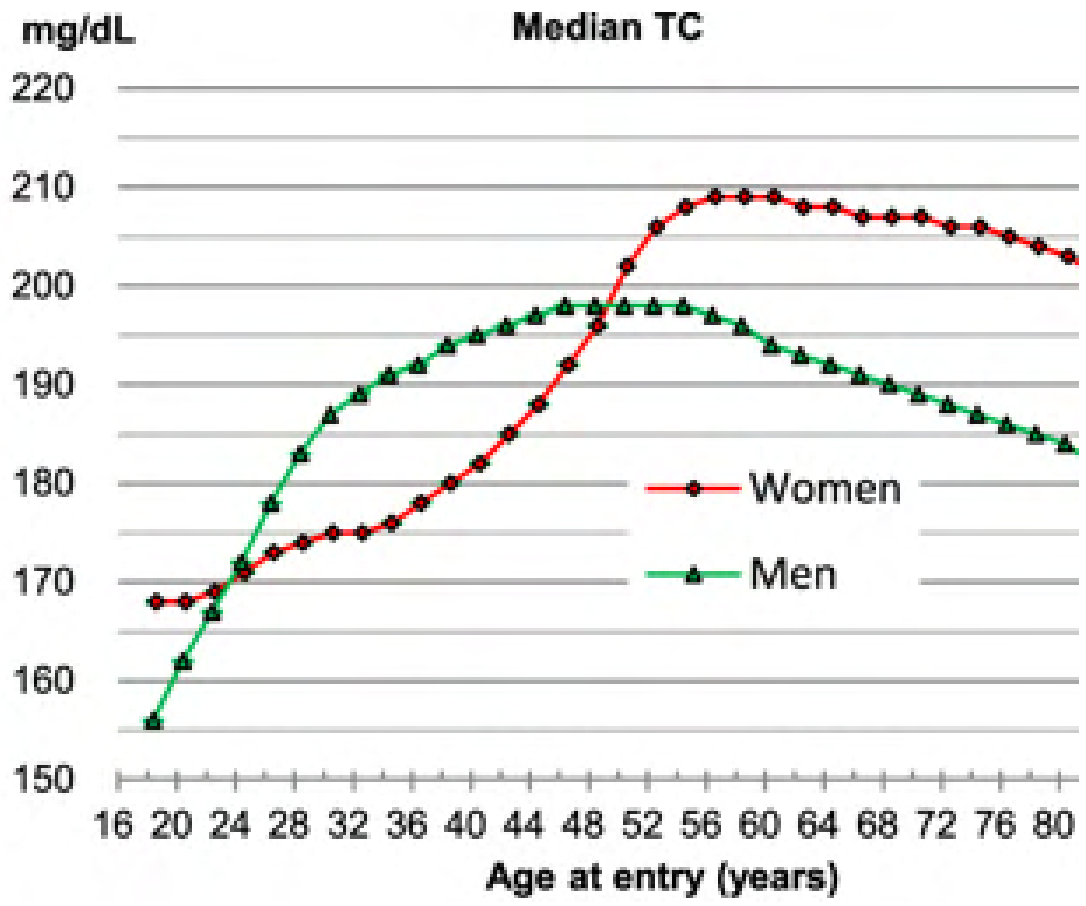
- Needed to build cells and produce hormones
- 2 sources:
  - LIVER
  - DIET
- Total (TC)
- Good (HDL-C)
- Bad (LDL-C)
- Triglycerides (circulating fats)

Cholesterol 101





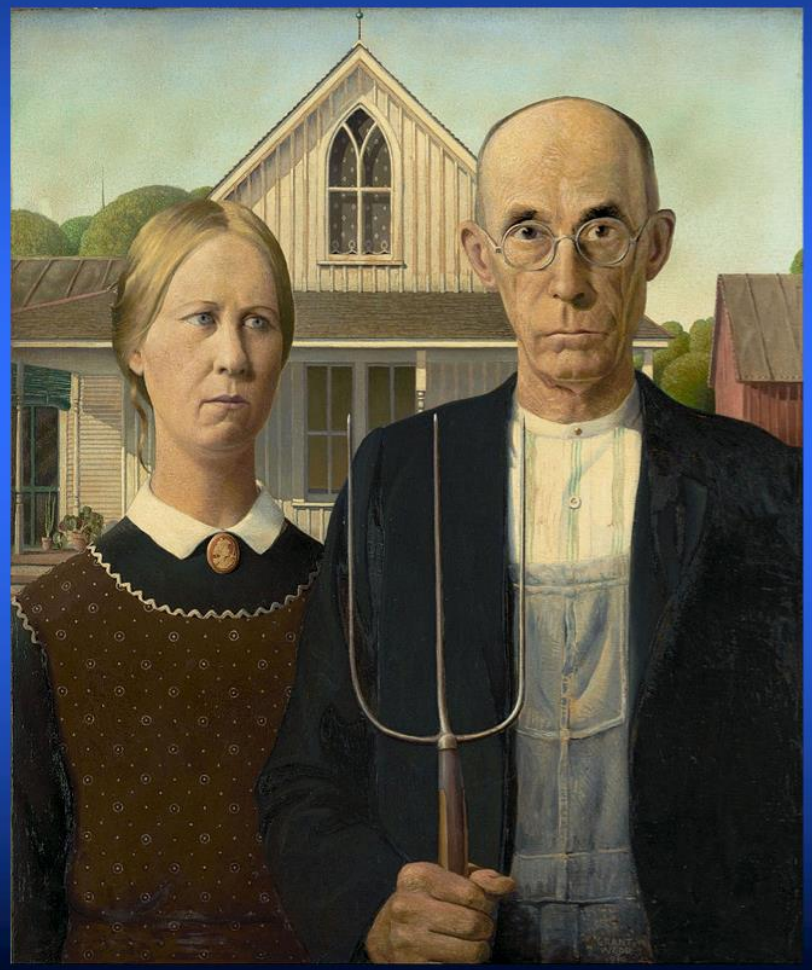




Cholesterol Through the Years

My Patient: GW

- 65 yo Farmer
  - HTN (110/70 mmHg)
- Fasting Lipid Panel
  - TC: 130 mg/dL
  - HDL-C: 50 mg/dL
- Loves:
  - Farming
  - Begonias
- Hates:
  - Statins
  - Smiling



The Facts!

ASCVD #1 cause of death in older adults

- 60% over 85
- Statin use increased 4x in past 10 years

28 statin trials

- N=186,854
- <8% were over 75

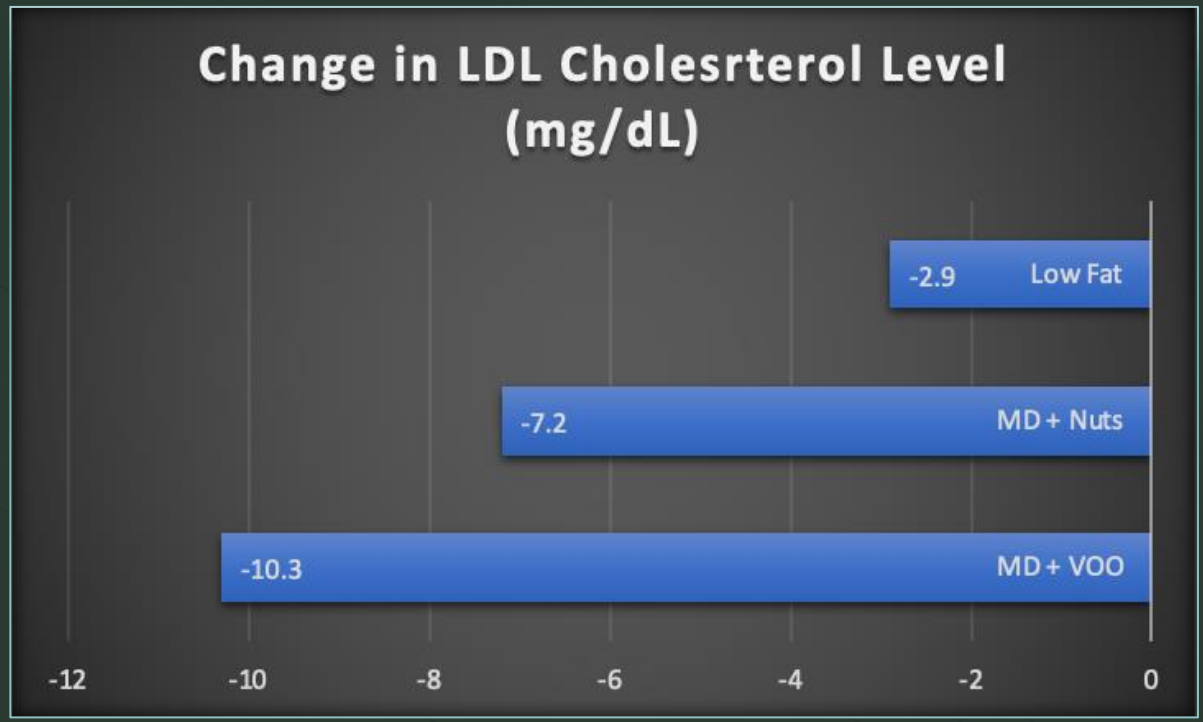
By 2030 -> $70 billion more

The Low Down on LDL

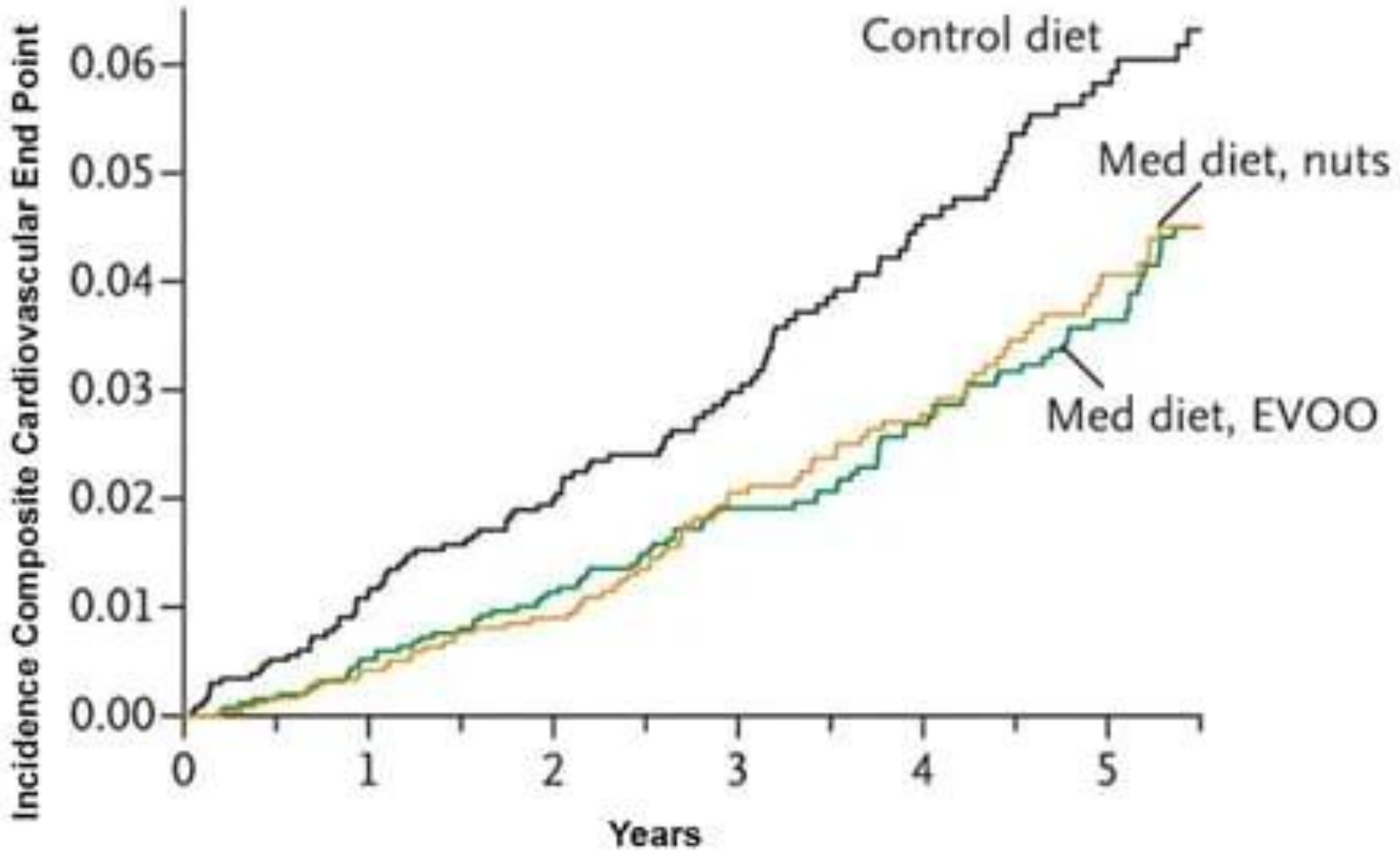
- CVD risk increases as LDL increases
  - CAD, Stroke/TIA
- Lifestyle is KEY

DIET and LDL (BAD) CHOLESTEROL

- RCT n=372 x 3 months
- Mediterranean Diet + virgin olive oil
  - −10.3 U/L [−13.9 to −6.6]
  - Mediterranean Diet + nuts
  - −7.2 U/L [−11.4 to −3.1]
- Low-fat diet group
  - −2.9 U/L [−6.7 to 1.0]



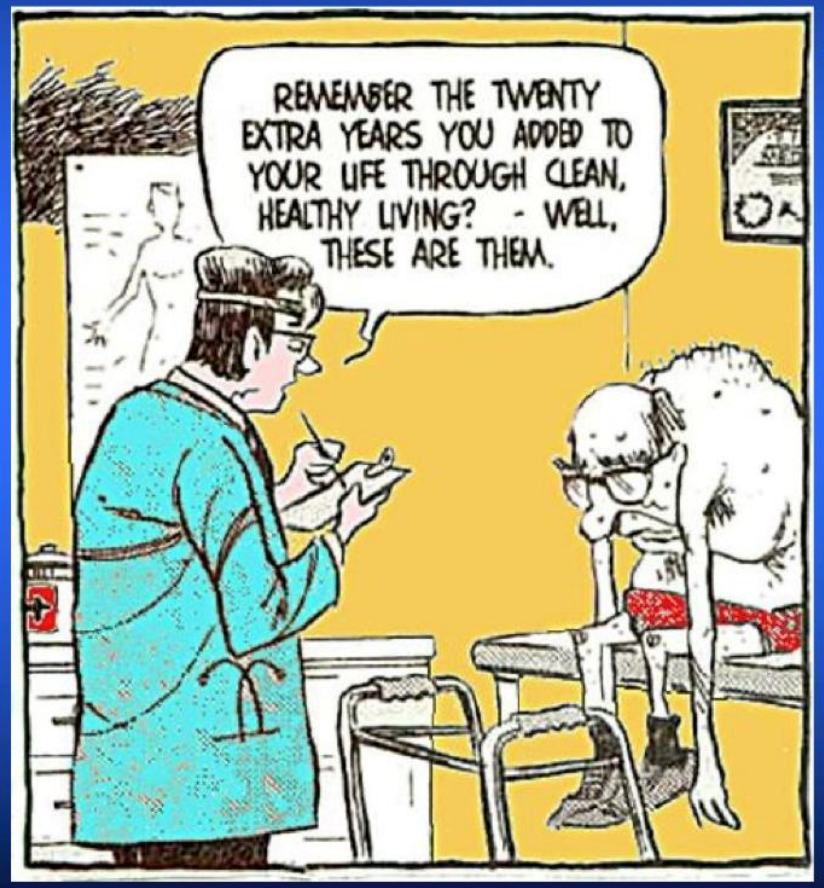
Fitó M, Guxens M, Corella D, et al. Effect of a Traditional Mediterranean Diet on Lipoprotein Oxidation: A Randomized Controlled Trial. *Arch Intern Med.* 2007;167(11):1195–1203. doi:10.1001/archinte.167.11.1195



Estruch R, et al. Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra Virgin Olive Oil or Nuts. The New England Journal of Medicine, 2018.

What about statin therapy?

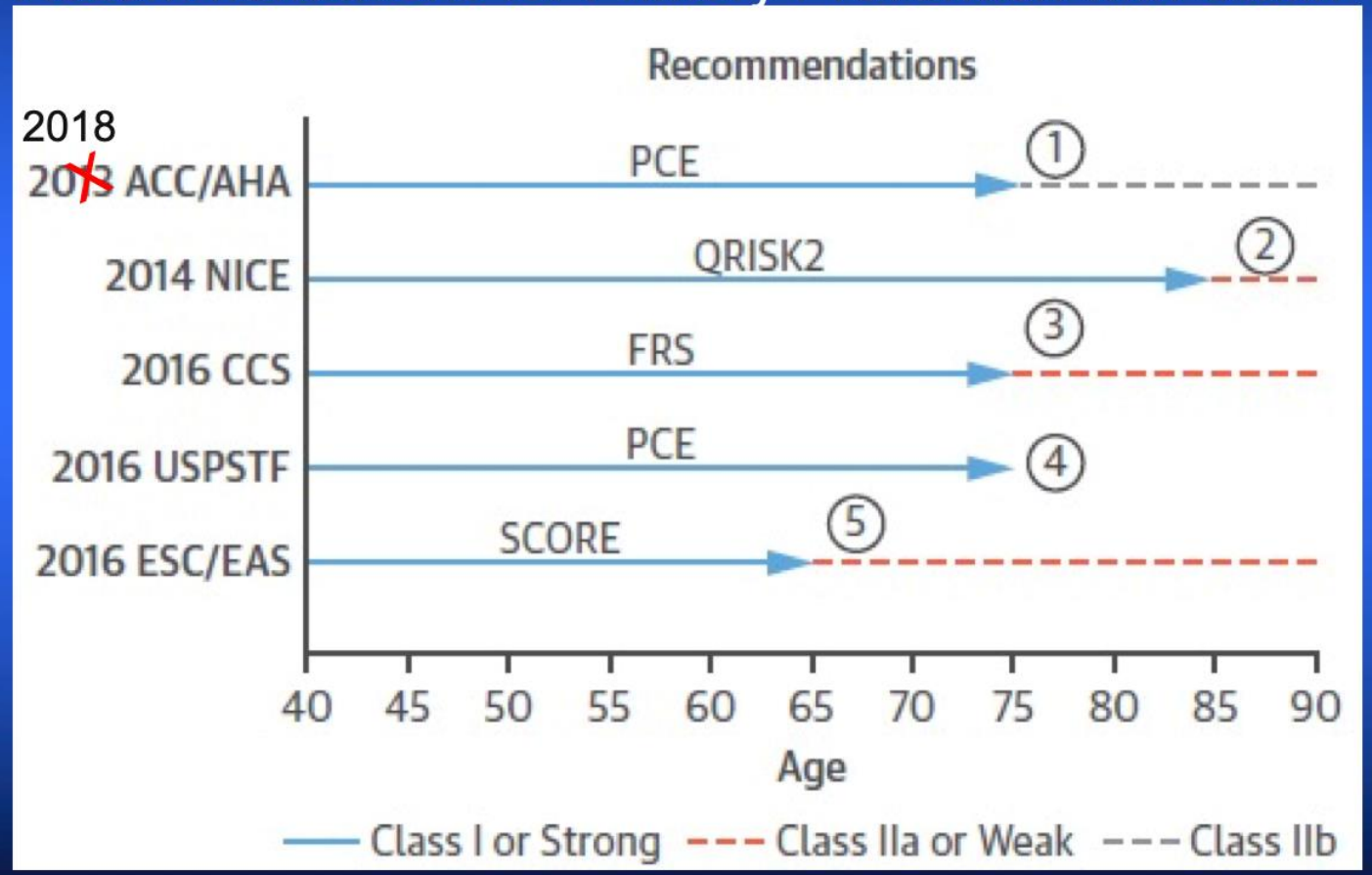
Challenge #1: Defining Risk…



- Moderate Risk of ASCVD (>7.5% over 10 years)
  - Men > 65
  - woman > 71
- Statin for Everyone?

Challenge #2: Guideline Discord

Recommendations for Primary Prevention with Statin



Mortensen MB, Falk E. Primary Prevention With Statins in the Elderly. J Am Coll Cardiol. 2018 Jan 2;71(1):85-94.

Grundy et al. Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Jun 18;139(25):e1082-e1143.

Time to Benefit

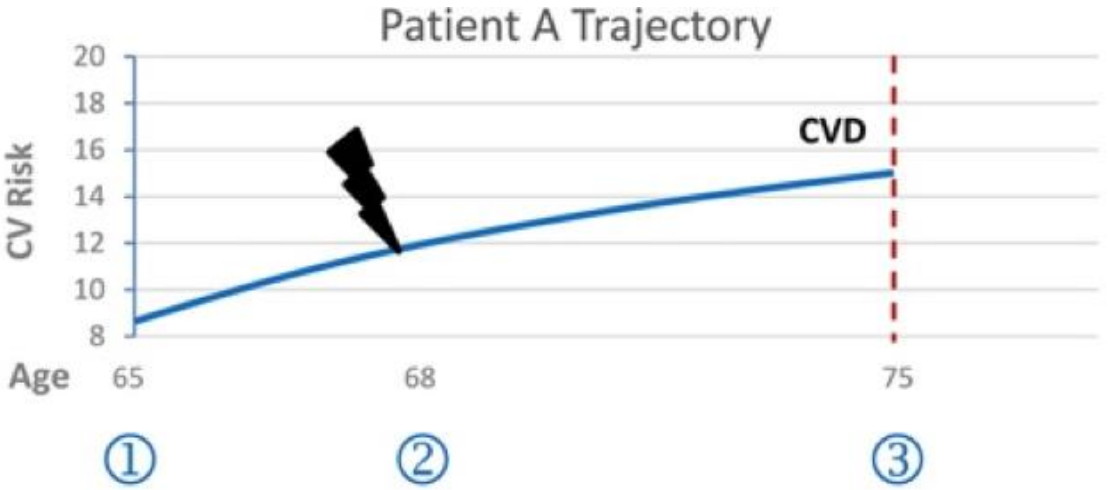
Both patients A and B:

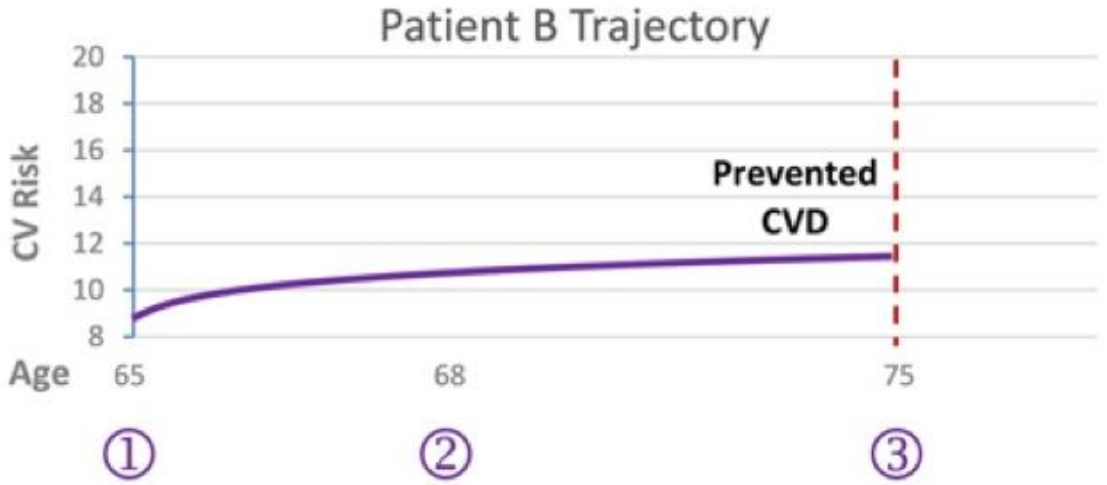
- ⊕ Male
- ⊕ 65 years old
- ⊕ White
- ⊕ TC: 130mg/dl
- ⊕ HDL: 50mg/dl
- ⊕ SBP: 110mmHg on HTN treatment
- ⊗ History of DM
- ⊗ History of smoking

→ **10-year ASCVD risk of 8.5%[a]**

Patient A[b]

Patient B[b]





Patient A:

① No statin given for 1° prevention[c]

② Cardiac event occurs start statin for 2° prevention

③ Continue statin for 2° prevention

Patient B:

① Statin given for 1° prevention[d]

② Theoretical successful prevention of cardiac event

③ Consider stopping statin for 1° prevention[e]

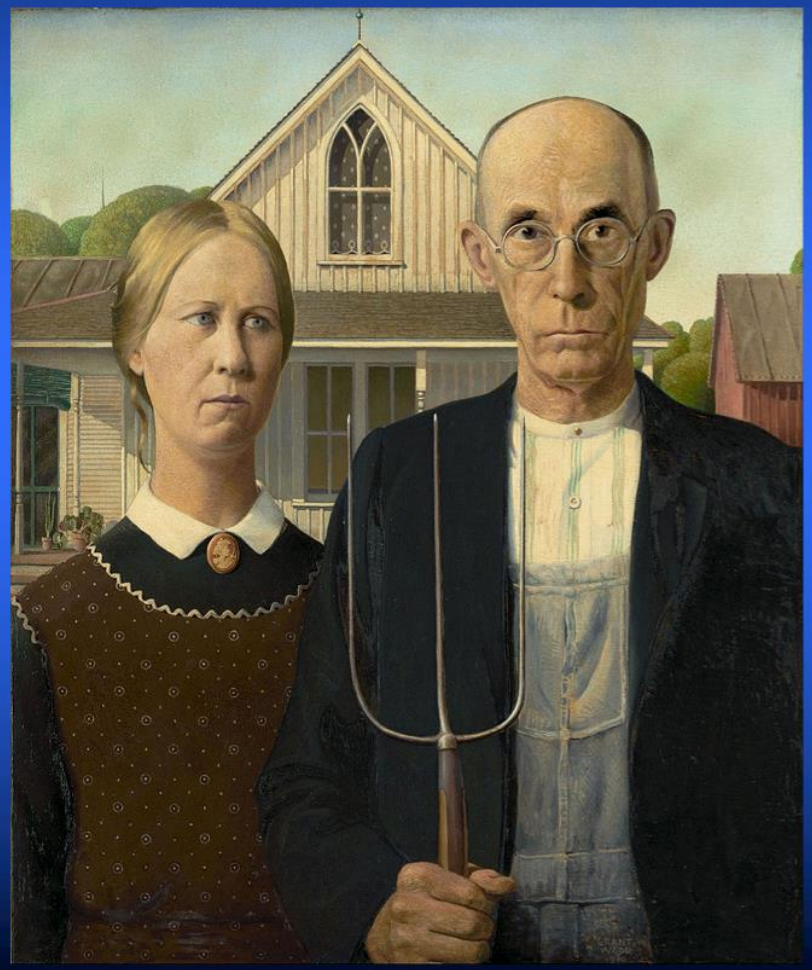
Hawley CE et al. Drugs Aging. 2019 Aug;36(8):687-699.

All Guidelines Agree

Healthy Active Lifestyle!

Fast Forward 10 years

- 75 yo Ex-Farmer
  - HTN (133/74 mmHg)
- Fasting Lipid Panel
  - TC: 125 mg/dL
  - HDL-C: 40 mg/dL
  - LDL-C: 85 mg/dL
- Loves:
  - Statins
  - Not farming
  - Begonias
- Hates:
  - Smiling



Primary Prevention in Adults >75?

- No RCT data of statin intensity
- What about high-risk older adults?
  - DM
  - ASCVD risk >20% by PCE
  - Severe hypercholesterolemia

Intensity	LDL-C Decrease (%)
High	50
Moderate	30-49
Low	<30

Primary Prevention

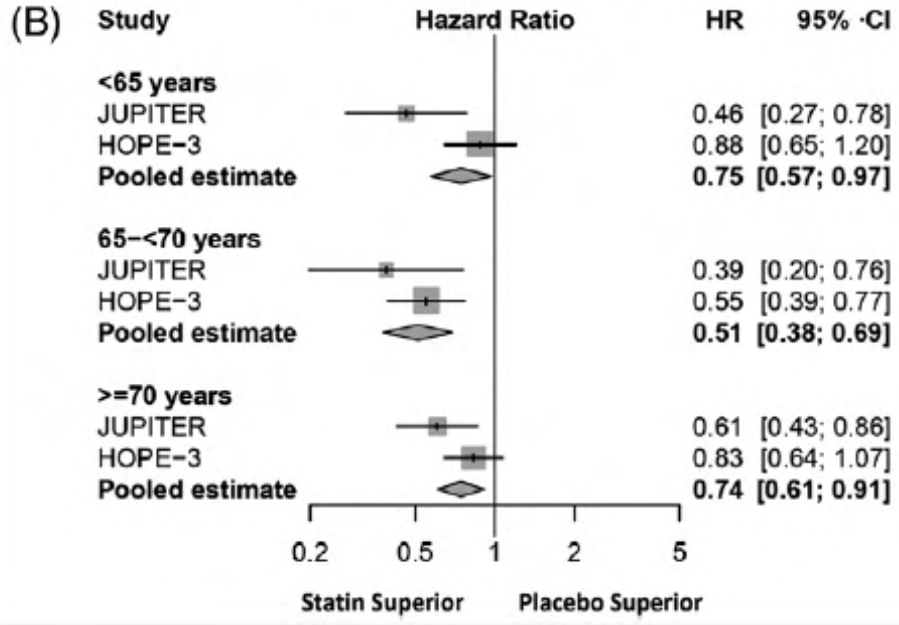
- Age >75 unclear
- Benefits and harms?
  - Comorbidities?
  - Frailty?
  - Cognitive impairment?

(A) **Effects of rosuvastatin on the composite endpoint of nonfatal myocardial infarction, nonfatal stroke, or cardiovascular death in the JUPITER and HOPE-3 primary prevention trials, stratified by age.**

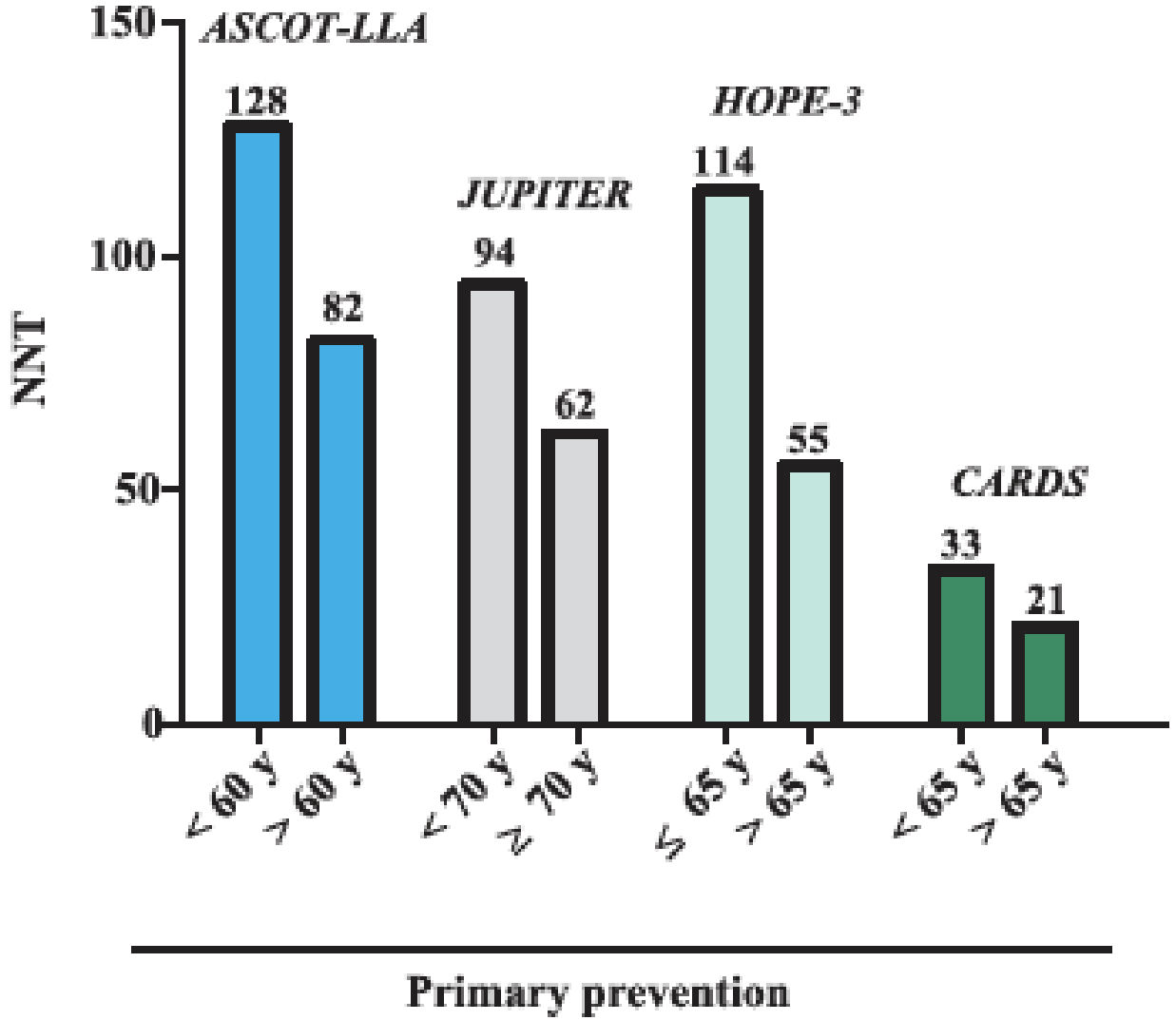
Age Group	Trial	N	Rosuvastatin N (IR*)	Placebo N (IR*)
< 65 years	JUPITER	7,458	20 (0.27)	45 (0.59)
	HOPE-3	6,059	78 (0.46)	88 (0.53)
65-< 70 years	JUPITER	4,649	12 (0.24)	30 (0.61)
	HOPE-3	3,559	50 (0.50)	91 (0.91)
≥ 70 years	JUPITER	5,695	51 (0.82)	82 (1.36)
	HOPE-3	3,086	107 (1.25)	125 (1.50)

*rates are per 100 person-years. The test for heterogeneity by age for the effects of statin therapy on clinical outcomes was non-significant (P=0.10).

(B)



Singh S, Zieman S, Go AS, et al. Statins for Primary Prevention in Older Adults-Moving Toward Evidence-Based Decision-Making. *J Am Geriatr Soc*. 2018;66(11):2188-2196. doi:10.1111/jgs.15449

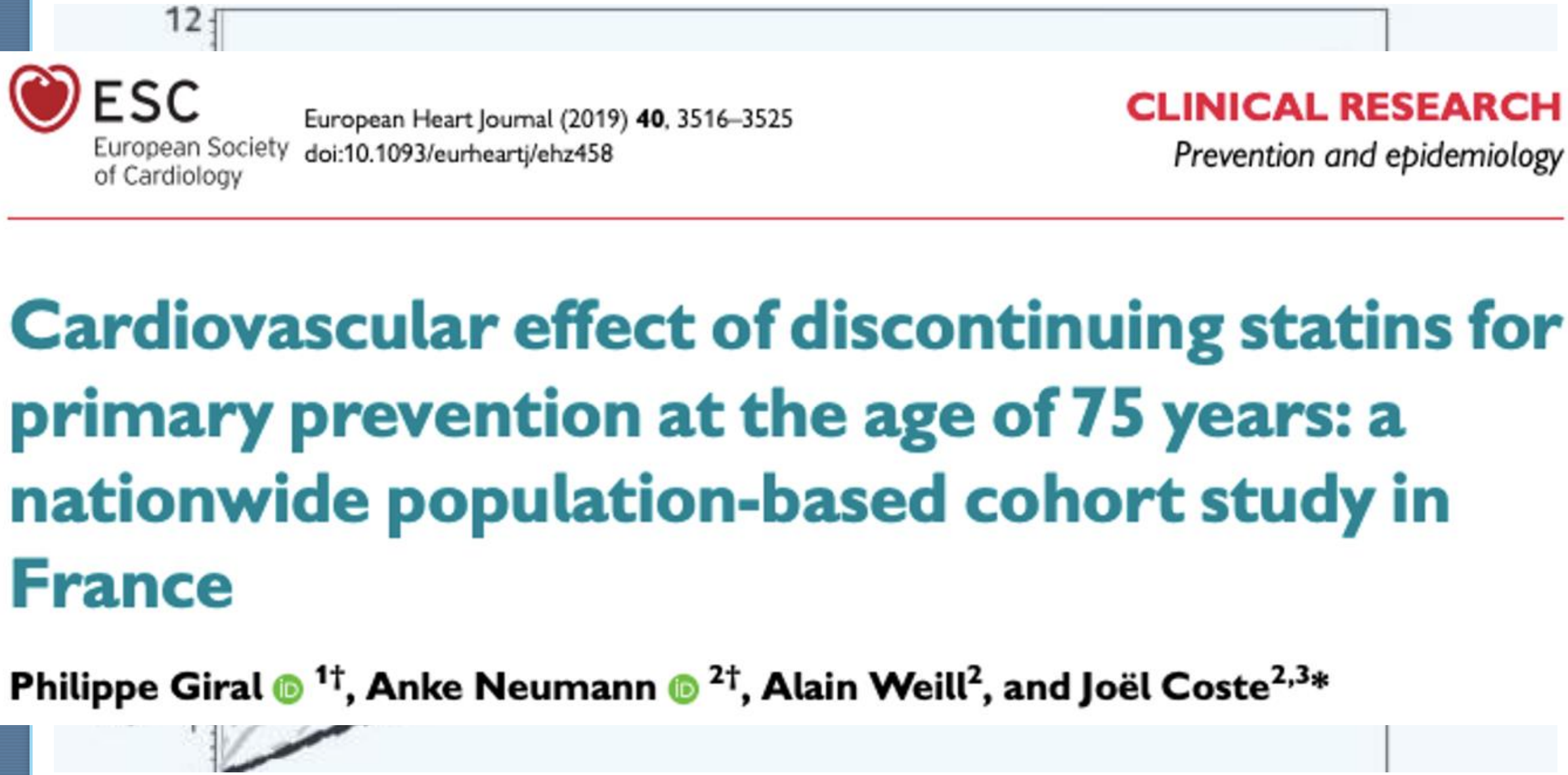


Ruscica M, Macchi C, Pavanello C, Corsini A, Sahebkar A, Sirtori CR. Appropriateness of statin prescription in the elderly. *Eur J Intern Med*. 2018;50:33-40.

Aging with Statins

- Statins benefits vary by trial for older individuals
- 2018 AHA/ACC Guidelines
  - Class II recommendation for statin therapy in adults >75
- United Kingdom National Institute for Health Care Excellence
  - Moderate-intensity Stain up to 85 yo- Strong recommendation
  - No RCT data comparing statin intensity

Grundy SM, Stone NJ, Bailey AL, et al. *Circulation.* 2019;139(25):e1082-e1143.
Ridker PM, Lonn E, Paynter NP, Glynn R, Yusuf S. *Circulation.* 2017;135(20):1979-1981.
Savarese G, Gotto AM, Jr., Paolillo S, et al. *Journal of the American College of Cardiology.* 2013;62(22):2090-209



ESC European Society of Cardiology

European Heart Journal (2019) **40**, 3516–3525
doi:10.1093/eurheartj/ehz458

CLINICAL RESEARCH
Prevention and epidemiology

Cardiovascular effect of discontinuing statins for primary prevention at the age of 75 years: a nationwide population-based cohort study in France

Philippe Giral [1†], Anke Neumann [2†], Alain Weill[2], and Joël Coste[2,3*]

Giral P, Neumann A, Weill A, Coste J.. *Eur Heart J*. 2019;40(43):3516-3525.

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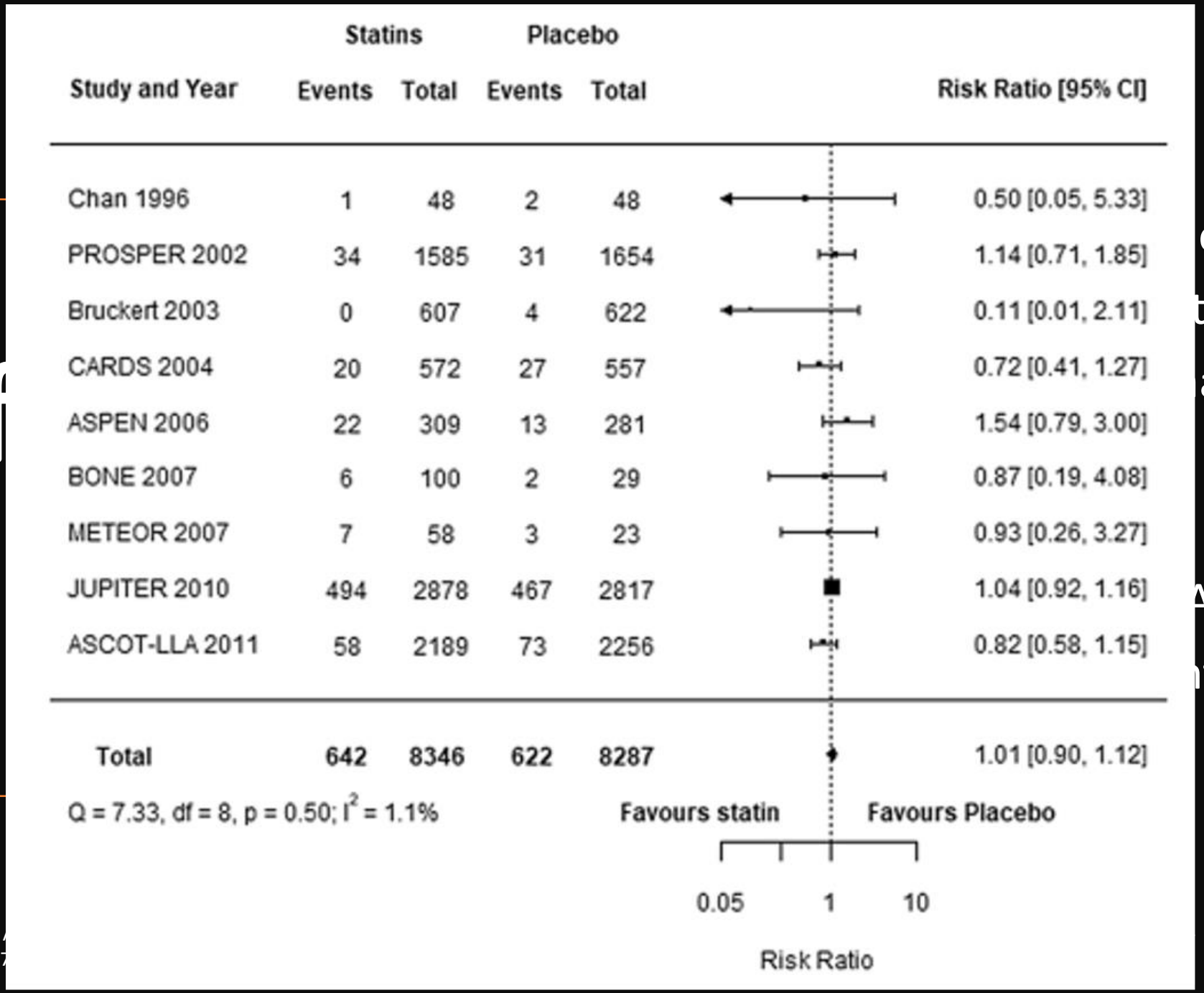
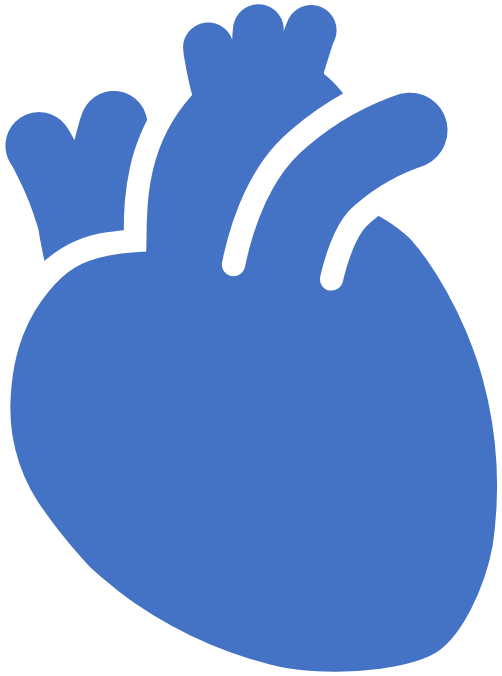


Click tZhou Z, Albarqouni L, Curtis A
analysis. Drugs Aging. 2020 Mar;37

Cholesterol Summary

- Cholesterol levels change over time
- LIFESTYLE
- Statins work – but not right away!
- Time matters
- Statins are safe!
- Less data with the oldest old patients



Challenge #3: Discontinuing Therapy?

5M framework

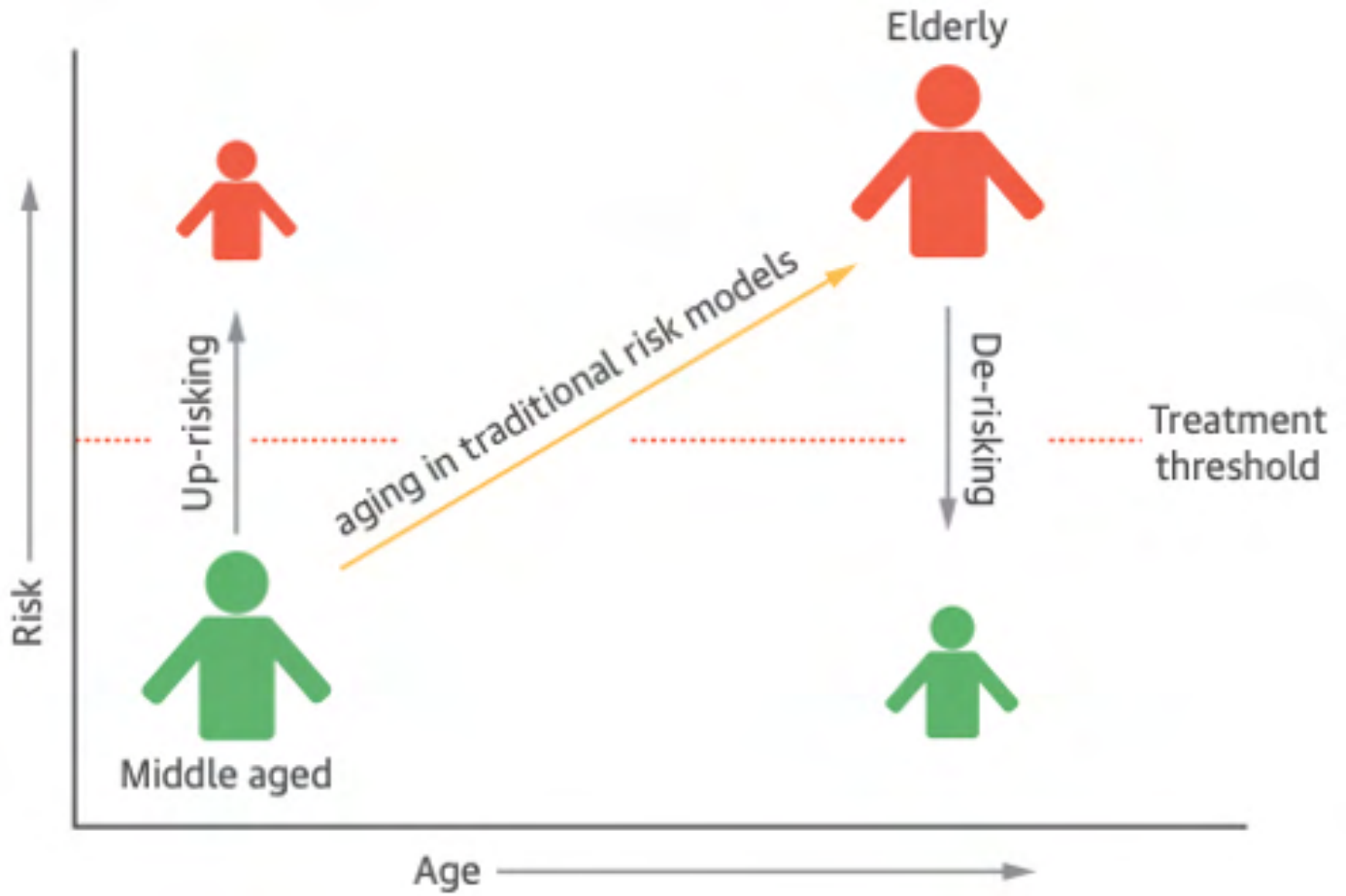
1. Mind
2. Mobility
3. Medications
4. Multi-complexity
5. Matters most

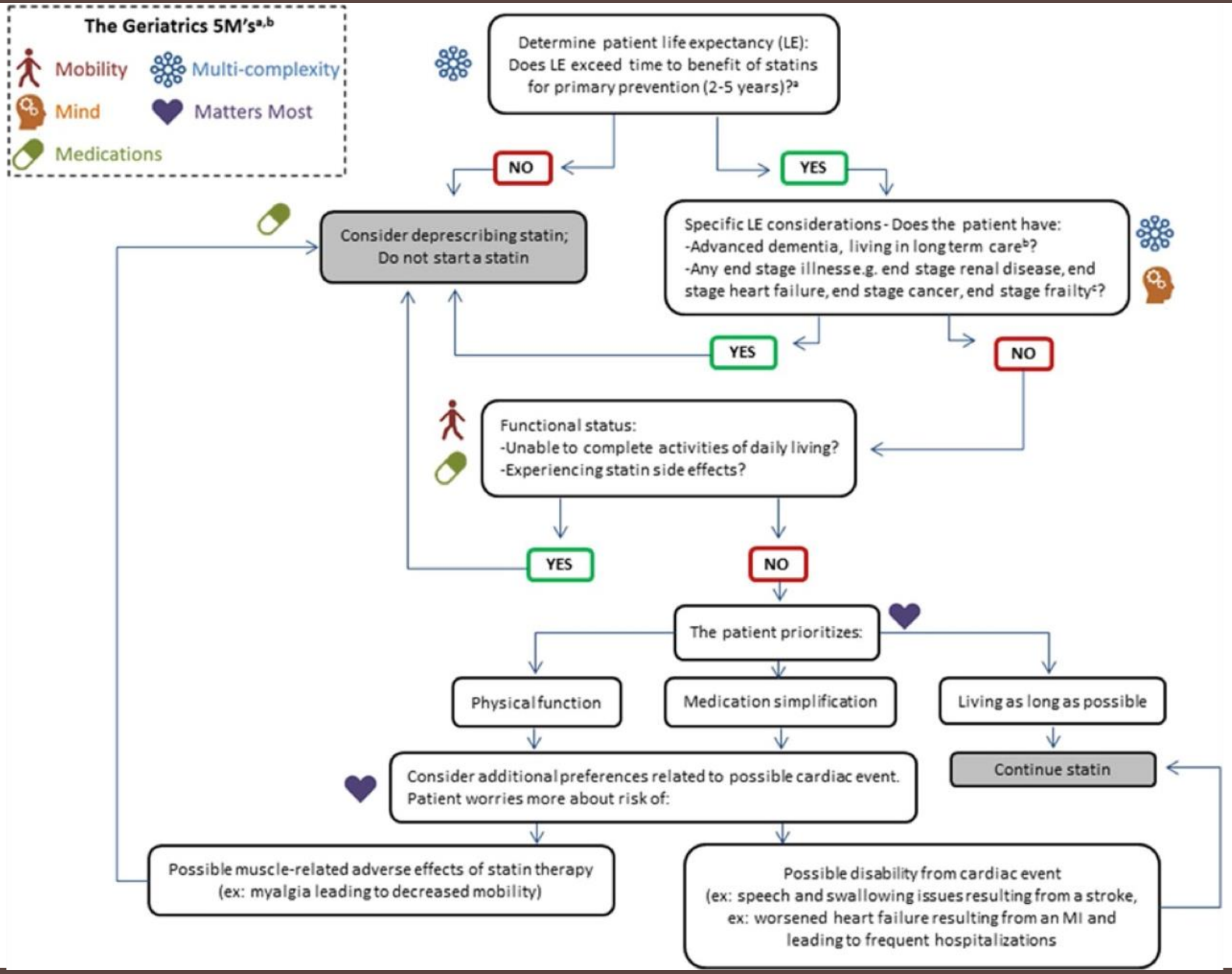
Hawley CE et al. Drugs Aging. 2019 Aug;36(8):687-699.

Risk in Older Patients

- Short term risk vs benefit?
- Long term risk vs benefit?

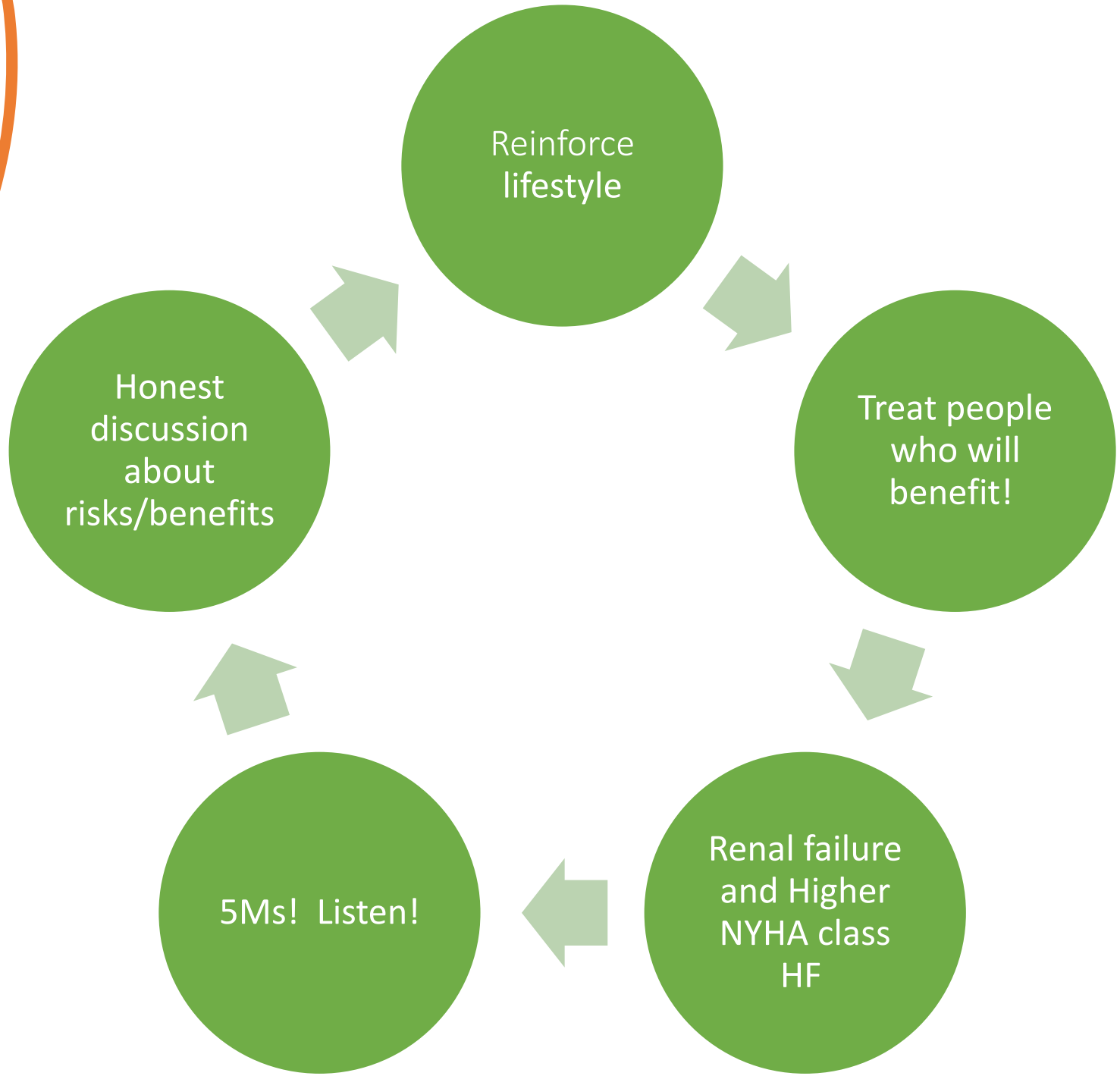
True vs Predicted Risk

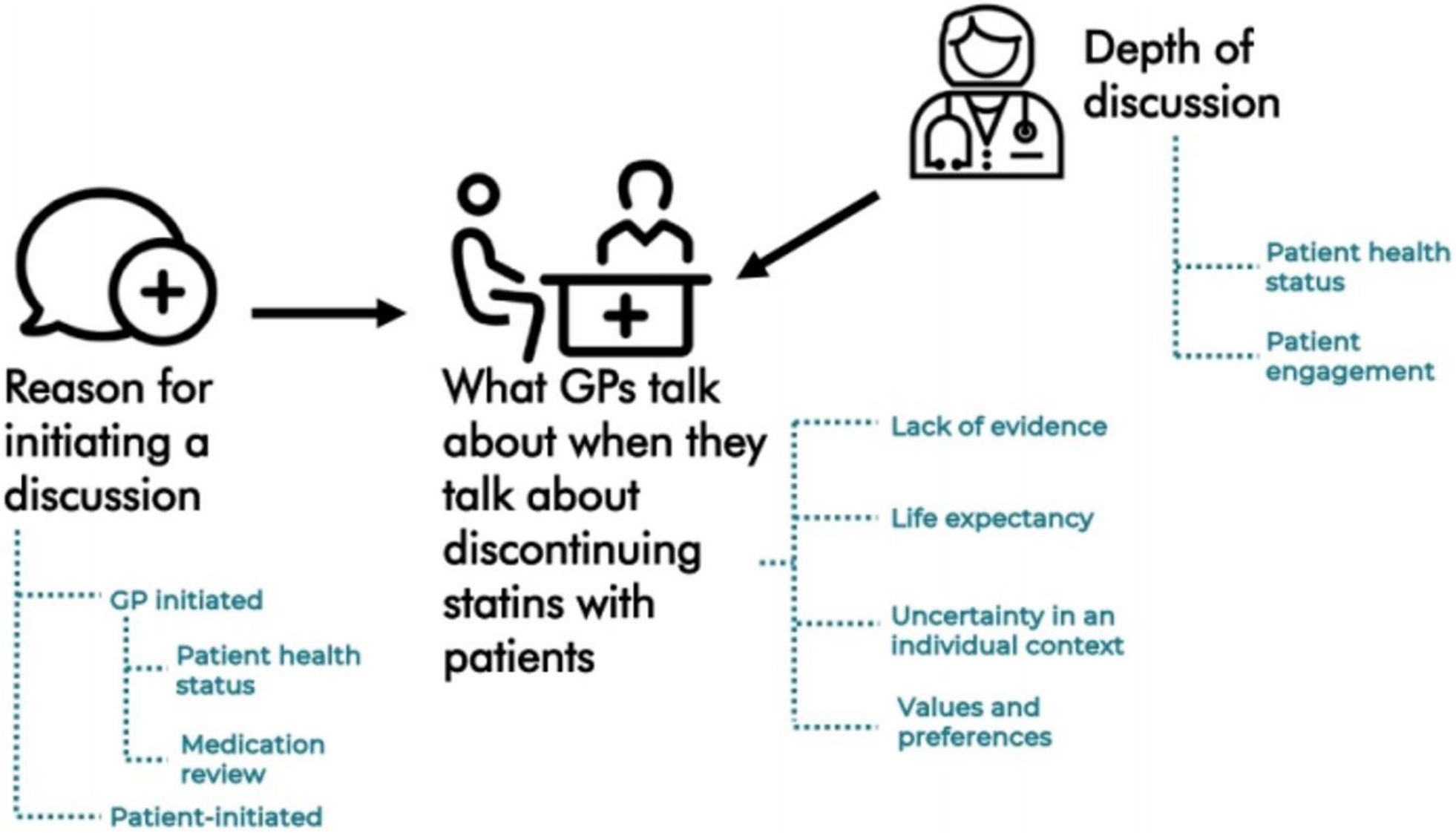




Hawley CE et al. Drugs Aging. 2019 Aug;36(8):687-699.

My Approach:


Reinforce lifestyle
Treat people who will benefit!
Renal failure and Higher NYHA class HF
5Ms! Listen!
Honest discussion about risks/benefits



Thompson W, Le JV, Haastrup P, Nielsen JB, Pedersen LB, Jarbøl DE. Exploring how GPs discuss statin deprescribing with older people: a qualitative study. BJGP Open. 2020 May 1;4(1):

How to talk to your provider about deprescribing

- Ask!
- Go through your medication list
- What does each medication do?
- What is the evidence that it will help?
- Could it cause harm?
- Is there evidence for me?

Last words!

- You matter! Your health matters!
- Stay active!
- Lifestyle changes work
  - BP
  - Cholesterol
- Medications (when needed) are SAFE and EFFECTIVE
- Talk to your provider:
- Deprescribe: Stop taking medicines you don’t need!
- Goals of Care!

Questions?

Let’s talk about:

ASPRIN

Do you take daily aspirin?

Guideline Says…”

ACC/AHA 2019 Recommendations[1]		USPSTF 2016 Recommendations[2]	
<40 yo	Insufficient evidence	<50 yo	Insufficient evidence
40-70 yo	Consider low-dose aspirin for - Higher ASCVD risk - No increased bleeding risk	50-59 yo	Initiate low-dose aspirin in those who: - 10-year ASCVD risk ≥ 10% - No increased bleeding risk - Life expectancy of ≥ 10 years - Willing to take aspirin ≥ 10 years
>70 yo	Should not routinely administer low-dose aspirin	60-69 yo	Individualize decision, considering same initiation criteria as for 50-59 yo
All	Should not routinely administer low-dose aspirin for those at increased bleeding risk	>70 yo	Insufficient evidence

Risk Benefit Considerations

Bleeding Risk Factors	Thrombotic Risk Factors
- Previous GI bleeding, peptic ulcer disease or other bleeding **- Age >70 yo** **- Thrombocytopenia** **- Coagulopathy** **- Chronic kidney disease** **- Other Meds - NSAID, steroid, etc**	- Family history of premature MI - Poor blood pressure control - Poor glucose control - Elevated coronary artery calcium score - Smoking

Evidence Summary Across the Years

Population	Number needed to treat (NNT)	Number needed to harm (NNH)	NNH/NNT
All patients[3]	MACE: 241	Major bleeding: 210	0.87
Patient with low ASCVD risk <10%[3]	MACE: 297	Major bleeding: 249	0.84
Patient with high ASCVD risk >10%[3]	MACE: 160	Major bleeding: 152	0.95
Patient with diabetes[3]	MACE: 153	Major bleeding:121	1.26
Elderly patients[4] (≥70yo or ≥65yo in Hispanic or African American)	CV disease: 418	Major hemorrhage: 98	0.23

Deprescribing ASA in Older Adults

- How?
- You need to be your advocate!
- Talk to your provider!

McNeil JJ, Wolfe R, Woods RL, et al. Effect of Aspirin on Cardiovascular Events and Bleeding in the Healthy Elderly. *N Engl J Med*. 2018;379(16):1509-1518. doi:10.1056/NEJMoa1805819