


**The Heart of Prevention:
Stratifying Risk, Lowering Lipids,
and Leading Patient Conversations**



Preventive Cardiovascular Nurses
Association (PCNA)
4/9/26

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Disclosures

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- No RWI
- Funding
 - NHLBI
 - AHA

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**Imagine a world
free of heart
disease...**



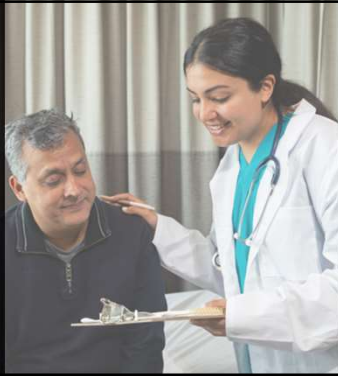
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Case Presentation

39-year old man presents for an initial visit due to elevated cholesterol results recently obtained at a community fair. A friend recently had open heart surgery, and he is concerned about his heart disease risk.

Vitals: BP 138/83, BMI 35 kg/m²

Exam: JVP 8 cm H₂O; RRR, nl s₁, s₂, no murmurs, no crackles, no lower extremity edema



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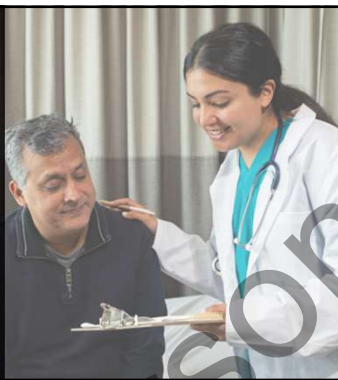
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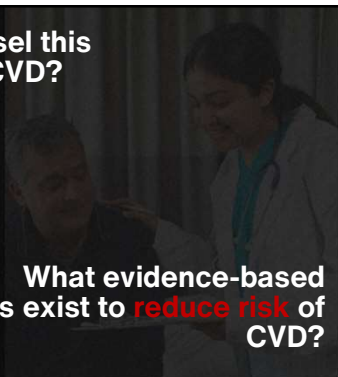
TC 220 mg/dL
HDL-C 40 mg/dL
eGFR 80 ml/min/1.73m²



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What should we counsel this patient on his risk of CVD?

What evidence-based strategies exist to reduce risk of CVD?



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AUDIENCE ENGAGEMENT QUESTION

Based on his age and risk factor levels, this patient is at low risk for ASCVD:

- A. True
- B. False

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AUDIENCE ENGAGEMENT QUESTION

In addition to lifestyle interventions, the patient should be advised to initiate a statin to prevent ASCVD:

- A. True
- B. False

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AUDIENCE ENGAGEMENT QUESTION

Before deciding on a treatment plan, what additional information is needed:

- A. Lp(a)
- B. ApoB
- C. CAC
- D. All of the above

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Today's Outline

- 1 Review the changing epidemiology of cardiovascular disease and growing burden of cardiovascular kidney metabolic syndrome
- 2 Describe the rationale and development of the PREVENT equations for prediction of cardiovascular disease
- 3 Discuss how to apply the PREVENT equations to guide evidence-based strategies to reduce risk of ASCVD

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Just a Few Decades Ago...

April 13, 1945



'CAME OUT OF CLEAR SKY,' SAYS PRESIDENT'S PHYSICIAN

Adm. Ross T. McIntire Asserts There Was No Indication of Imminent Danger.

By CHARLES G. BOSS

DEATH DUE TO CEREBRAL HEMORRHAGE --- BLOOD VESSEL IN BRAIN BROKE

WASHINGTON, April 13 (AP)—PRESIDENT ROOSEVELT died from what doctors said is cerebral hemorrhage, which occurs in sudden, violent


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Messerli FH. *N Engl J Med*. 1995

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Antecedent Signs of HF and CKD

April 13, 1945

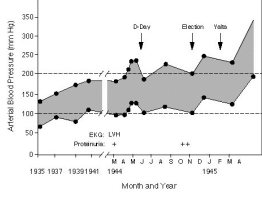


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1935-1945

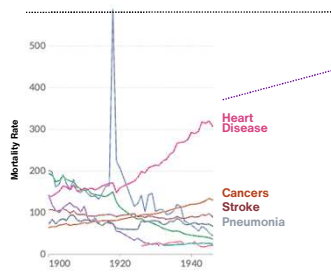


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Messeri FH. *N Engl J Med.* 1995

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20th Century: Rise of CVD Mortality



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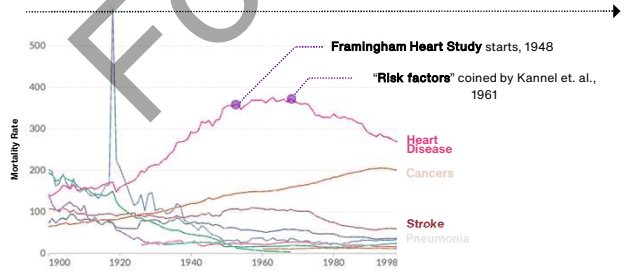
Our World in Data Accessed April 1, 2022

"we know . . . the hypertension may be an important compensatory mechanism which should not be tampered with, even were it certain that we could control it."

- Dr. Paul Dudley White

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Evolving Understanding of CVD Risk

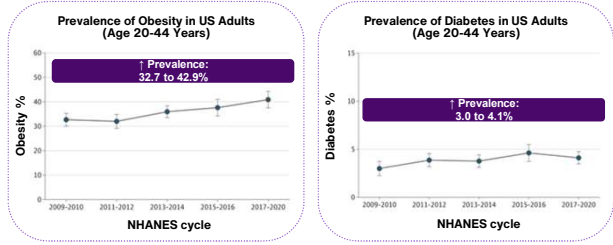


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Our World in Data Accessed April 1, 2022

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Growing Metabolic Burden in Young



Northwestern Medicine, Aggarwal R et al. JAMA 2023

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61%
of US adults will have obesity by 2050

80.8mi
of US adults will have diabetes by 2050

\$1.8 tr
projected healthcare spending by 2050

Joynt-Maddox K et al. Circulation 2024
Kazi D et al. Circulation 2024

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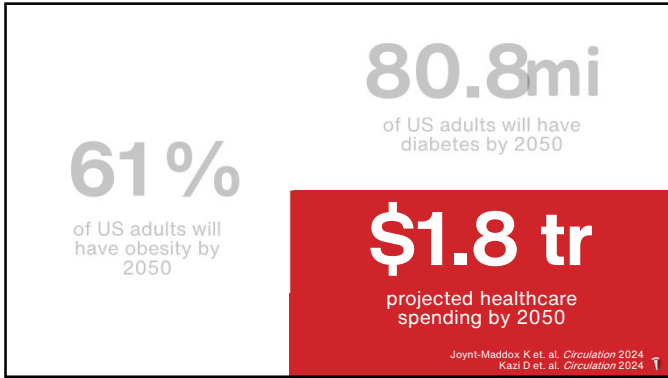
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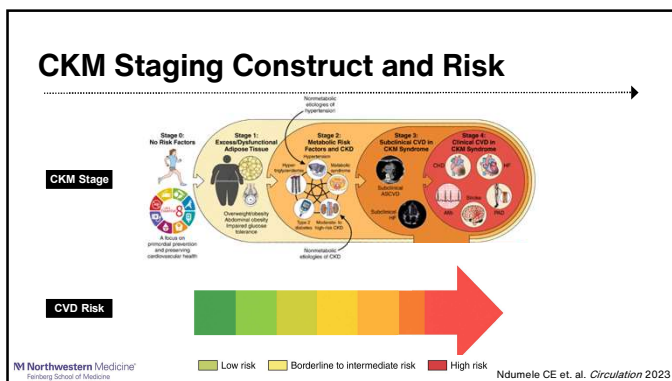
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Predict Risk to Prevent CVD

Target preventive interventions or therapies in those at **increased risk** of CVD with absolute risk to guide prioritization of type and intensity

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Risk-Based Prevention: 3+ Decades Ago

More drug exposure even among those not likely to benefit

Population approach (treatment of all)

High-risk approach (treatment of high-risk)

Limit drug exposure to those most likely to benefit

REFLECTION
Sick individuals and sick populations
Geoffrey Rose

GEOFFREY ROSE MD

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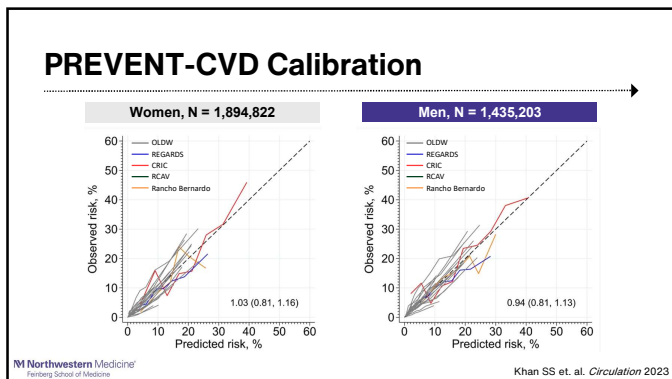
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Widespread Adoption of Risk-Based Prevention in CVD Guidelines

- 2025 ACC/AHA/Multi-Society Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
- 2026 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/Apha/ASPC/NLA/PCNA Guideline on the Management of Dyslipidemia
- 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular disease
- 2022 ACC/AHA/HFSA Guideline for the Management of Heart Failure

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Overall Performance of PREVENT

	Total CVD		ASCVD		HF	
	Females	Males	Females	Males	Females	Males
Events	50,324	46,804	31,277	31,328	27,931	23,707
C-Statistic	0.794 (0.763, 0.809)	0.757 (0.727, 0.778)	0.774 (0.743, 0.788)	0.736 (0.710, 0.75)	0.830 (0.816, 0.850)	0.809 (0.777, 0.827)
Calibration Slope (IQI)	1.03 (0.81, 1.16)	0.94 (0.81, 1.13)	1.09 (0.93, 1.33)	1.04 (0.95, 1.19)	1.00 (0.55, 1.15)	0.89 (0.49, 1.07)

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Khan SS et al. *Circulation* 2024

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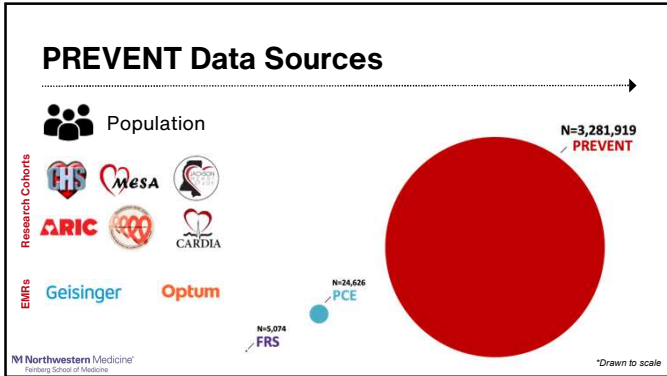
PREVENT-ASCVD vs. PCEs

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			PCEs			
			Females	Males		
C-Statistic			0.772 (0.729, 0.782)	0.733 (0.701, 0.751)		
Calibration Slope (IQI)			0.54 (0.47, 0.61)	0.50 (0.39, 0.52)		

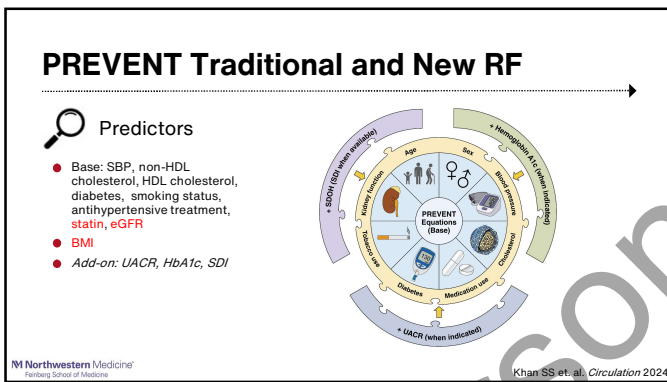
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Khan SS et al. *Circulation* 2024

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Calibration by Demographic Groups

	PREVENT-CVD	PREVENT-ASCVD	PCE
Asian adults	0.87 (0.73, 0.97)	0.97 (0.81, 1.35)	0.41 (0.32, 0.59)
Black adults	1.11 (0.79, 1.24)	1.26 (0.93, 1.38)	0.56 (0.41, 0.62)
Hispanic adults	0.94 (0.80, 1.05)	1.11 (0.94, 1.35)	0.57 (0.47, 0.67)
White adults	1.01 (0.82, 1.14)	1.06 (0.96, 1.24)	0.52 (0.41, 0.54)

PREVENT Derivation Sample


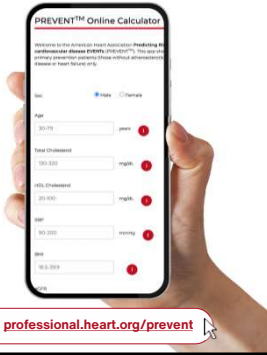
- 2,575,281 White adults
- 293,827 Black adults
- 186,894 Hispanic adults
- 83,602 Asian adults

PCE Derivation Sample

- 20,338 White adults
- 4,288 Black adults

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PREVENT Calculator is Online

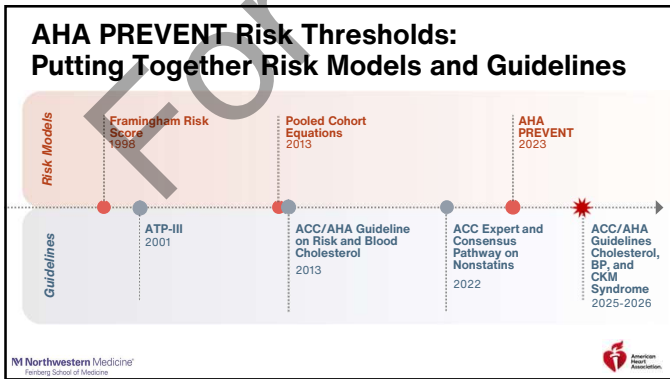



professional.heart.org/prevent

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Risk Scores vs Risk Thresholds

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Reducing CVD Risk with Novel CKM Therapies

SGLT2i

Long-acting high-potency GLP-1 RA or GLP/GIP

Non-steroidal MRAs

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Reducing CVD Risk with Novel CKM Therapies

SGLT2i

Long-acting high-potency GLP-1 RA or GLP/GIP

Non-steroidal MRAs

Wijout SD et al. *N Engl J Med.* 2018
Lincoff AM et al. *N Engl J Med.* 2023
Pitt B et al. *N Engl J Med.* 2021

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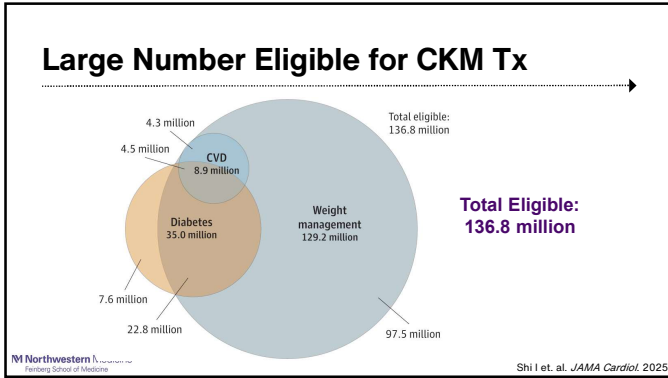
Combination Therapy: Addit

Outcome	HR (95% CI)
MACE	
SGLT2i	0.83 (0.75, 0.93)
GLP-1 RA	0.89 (0.80, 0.99)
ns-MRA	0.90 (0.81, 1.00)
GLP-1 RA + ns-MRA	0.77 (0.65, 0.90)
SGLT2i + GLP-1 RA	0.72 (0.63, 0.82)
SGLT2i + ns-MRA	0.75 (0.65, 0.87)
SGLT2i + GLP-1 RA + ns-MRA	0.69 (0.55, 0.79)
Hospitalization for heart failure	
GLP-1 RA	0.64 (0.53, 0.77)
ns-MRA	0.89 (0.80, 0.99)
GLP-1 RA + ns-MRA	0.76 (0.64, 0.92)
SGLT2i + GLP-1 RA	0.67 (0.47, 0.79)
SGLT2i + ns-MRA	0.69 (0.56, 0.84)
SGLT2i + GLP-1 RA + ns-MRA	0.49 (0.34, 0.68)
Cardiovascular death	
SGLT2i	0.84 (0.72, 0.97)
ns-MRA	0.87 (0.80, 0.94)
GLP-1 RA + ns-MRA	0.89 (0.76, 1.03)
SGLT2i + GLP-1 RA	0.72 (0.59, 0.89)
SGLT2i + ns-MRA	0.74 (0.61, 0.91)
SGLT2i + GLP-1 RA + ns-MRA	0.64 (0.51, 0.80)
CKD progression	
SGLT2i	0.81 (0.71, 0.92)
GLP-1 RA	0.89 (0.79, 0.99)
ns-MRA	0.91 (0.81, 1.01)
GLP-1 RA + ns-MRA	0.81 (0.71, 0.91)
SGLT2i + GLP-1 RA	0.70 (0.59, 0.82)
SGLT2i + ns-MRA	0.73 (0.62, 0.84)
SGLT2i + GLP-1 RA + ns-MRA	0.61 (0.50, 0.73)
All-cause mortality	
SGLT2i	0.81 (0.71, 0.92)
GLP-1 RA	0.89 (0.79, 0.99)
ns-MRA	0.91 (0.81, 1.01)
GLP-1 RA + ns-MRA	0.81 (0.71, 0.91)
SGLT2i + GLP-1 RA	0.70 (0.59, 0.82)
SGLT2i + ns-MRA	0.73 (0.62, 0.84)
SGLT2i + GLP-1 RA + ns-MRA	0.61 (0.50, 0.73)

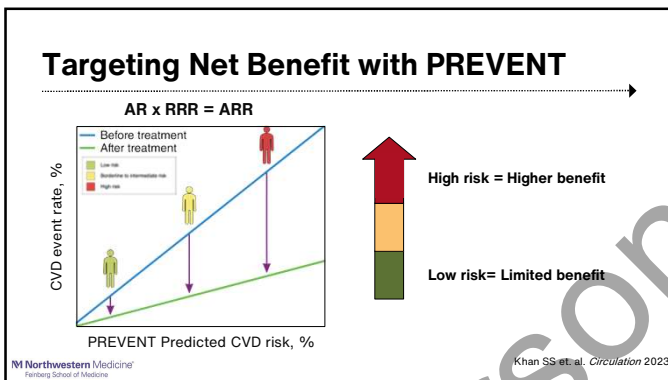
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Neuman RL et al. *Circulation* 2020

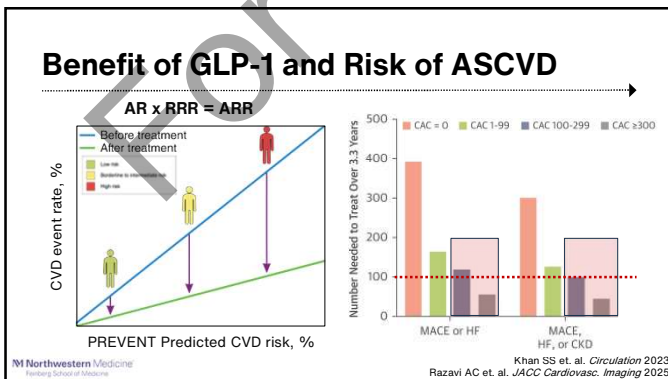
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Back to the Case: Additional Risk Measures

Calculate 10-year Risk With PREVENT-ASCVD

Results for CVD

- Estimated 10-year risk of CVD: **2.3%**
- Estimated 30-year risk of CVD: **16.7%**
- Estimated PREVENT-Age: **51** Years
- Estimated 30 year PREVENT-CVD risk: **82nd** percentile

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Back to the Case: Reducing Risk

Calculate 10-year Risk With PREVENT-ASCVD → **Review Risk Enhancing Factors to Refine Risk Estimate** → **Clinician-Patient Discussion on Benefits and Side Effects of Preventive Therapies** → **Start Medium-Intensity Statin and Re-Measure BP in 3-6 Months**

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Moving Towards a World Free of CVD

- The burden and phenotype of CVD is shifting towards **CKM syndrome**, particularly among younger adults at low short-term risk
- PREVENT equations can **accurately and precisely** predict 10 and 30-year risk of CVD with similar calibration across diverse groups
- Application of PREVENT enables **risk-based prevention** of CVD (LLT: PREVENT-ASCVD \geq 3-5%; BP-lowering: PREVENT-CVD \geq 7.5%); key opportunities for innovation in risk communication exist

*Need to address multi-level barriers for optimal implementation of CKM therapies, including structural, health system, and policy factors

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“We spend far too much on treating disease after it happens and far too little on preventing it in the first place. By the time illness arrives, we are already **too late.**”

Sandro Galea, *Within Reason*

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Thank you

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CE POST-TEST QUESTION

The PREVENT equations predicts risk of

- A. CVD
- B. ASCVD
- C. HF
- D. All of the above

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CE POST-TEST QUESTION

The 2026 Dyslipidemia Guideline recommends initiation of statin only based on short-term 10-year PREVENT-ASCVD risk $\geq 5\%$?

A. True
B. False

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CE POST-TEST QUESTION

The 2025 High BP Guideline recommends initiation of anti-htn therapy for Stage 1 HTN based on short-term 10-year PREVENT-CVD risk $\geq 7.5\%$

A. True
B. False

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