

# Hypertension in People With HIV

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# Disclosures

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# Disclaimer

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# New AHA/ACC Guidelines Coming Out Next Month!

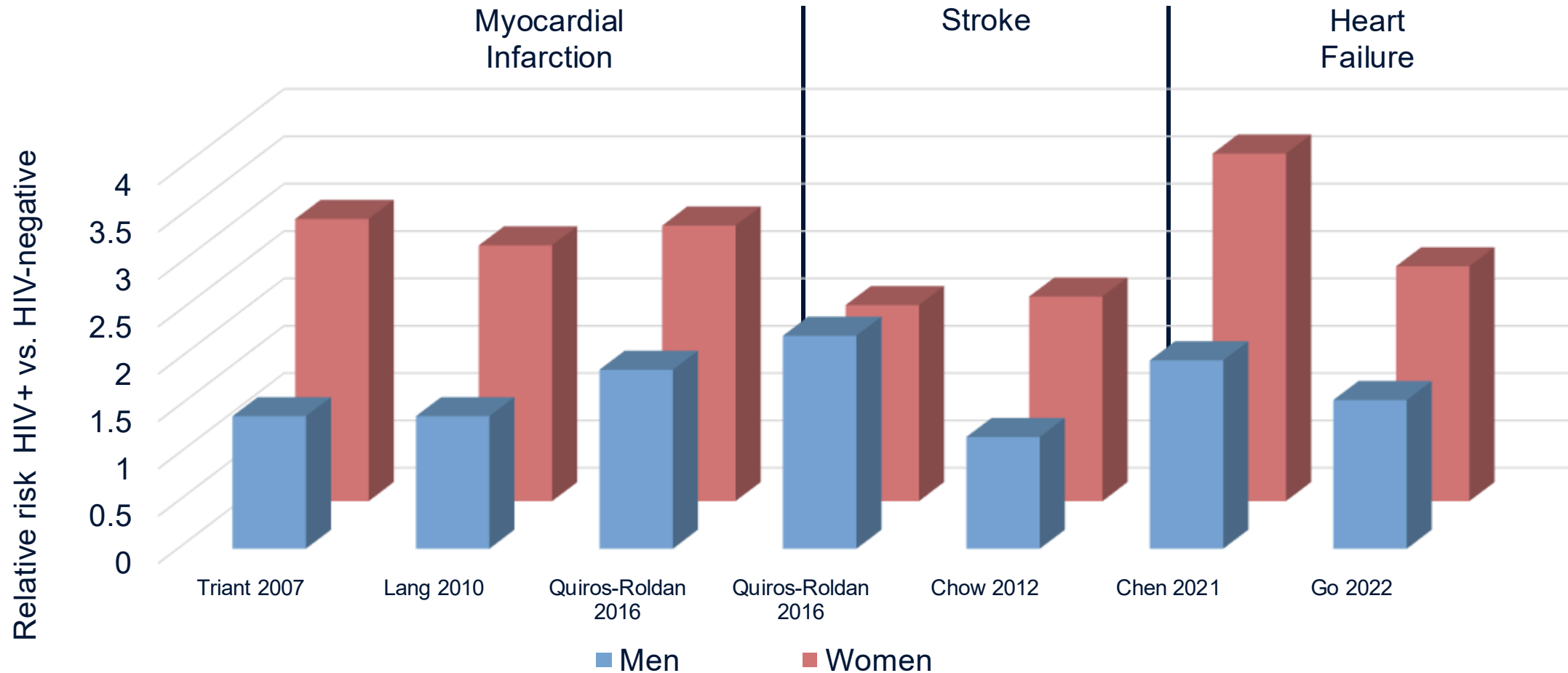
AHA Target BP: Webinar on 8/28/25 10am PDT

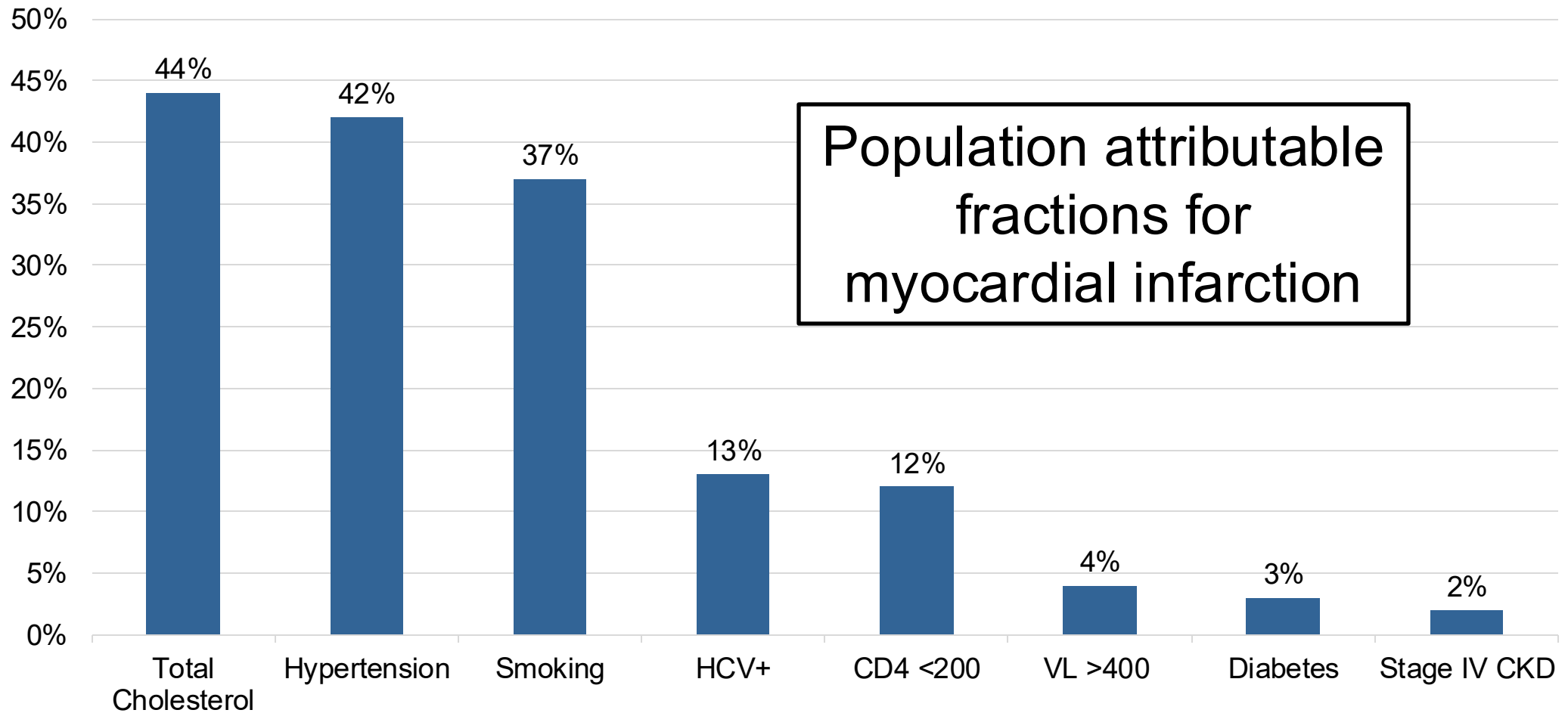
<https://targetbp.org/event/target-bp-guideline-webinar/>

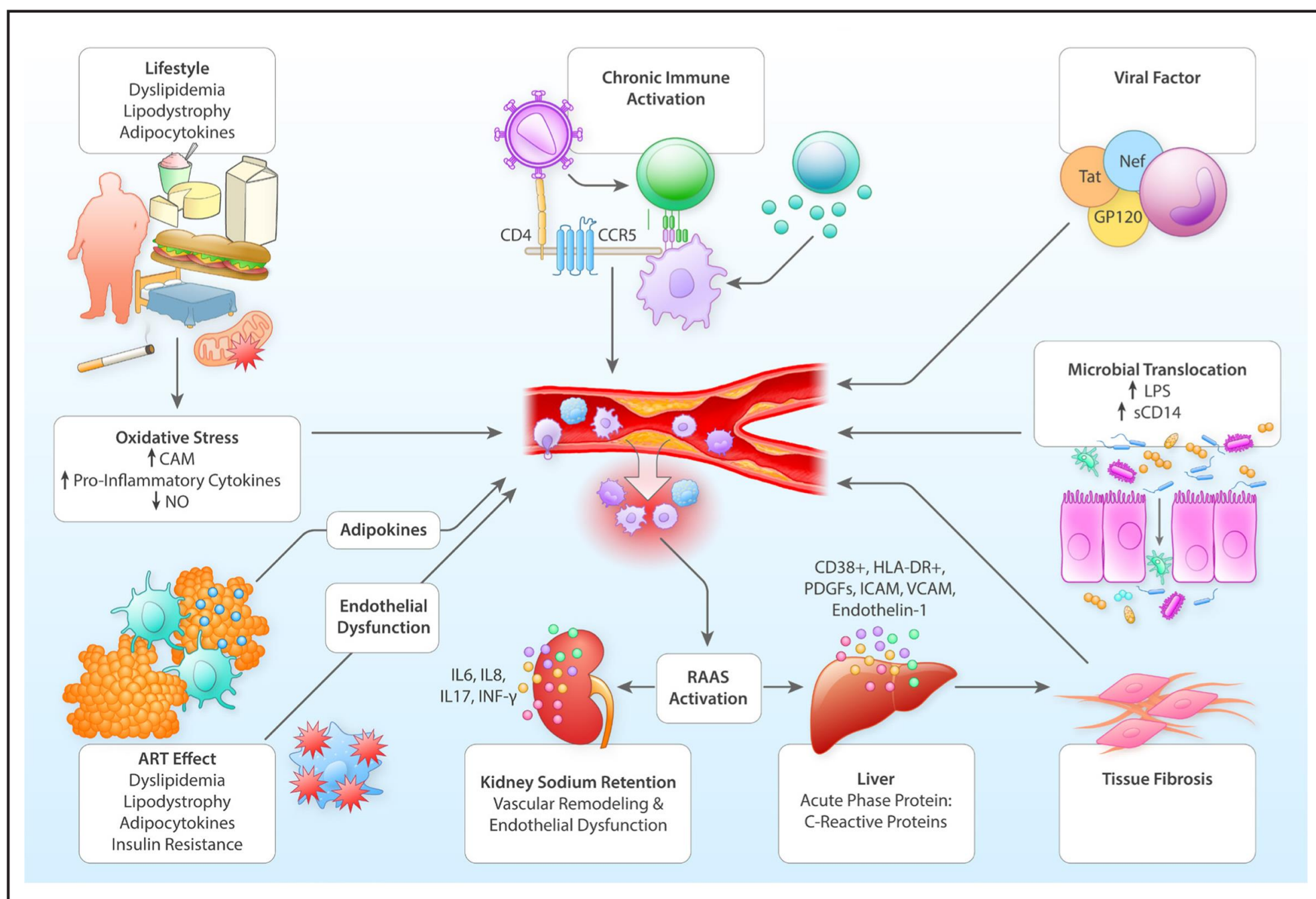
# Highlights of new guidelines will include

- Blood pressure thresholds for diagnosis and treatment of high blood pressure
- Cardiovascular and cognitive risks of uncontrolled high blood pressure
- Calculation of cardiovascular disease risk as part of diagnostic and treatment approach
- Utilization of recommended medication classes in combination pill form to improve control and adherence

# HIV is a risk factor for cardiovascular disease

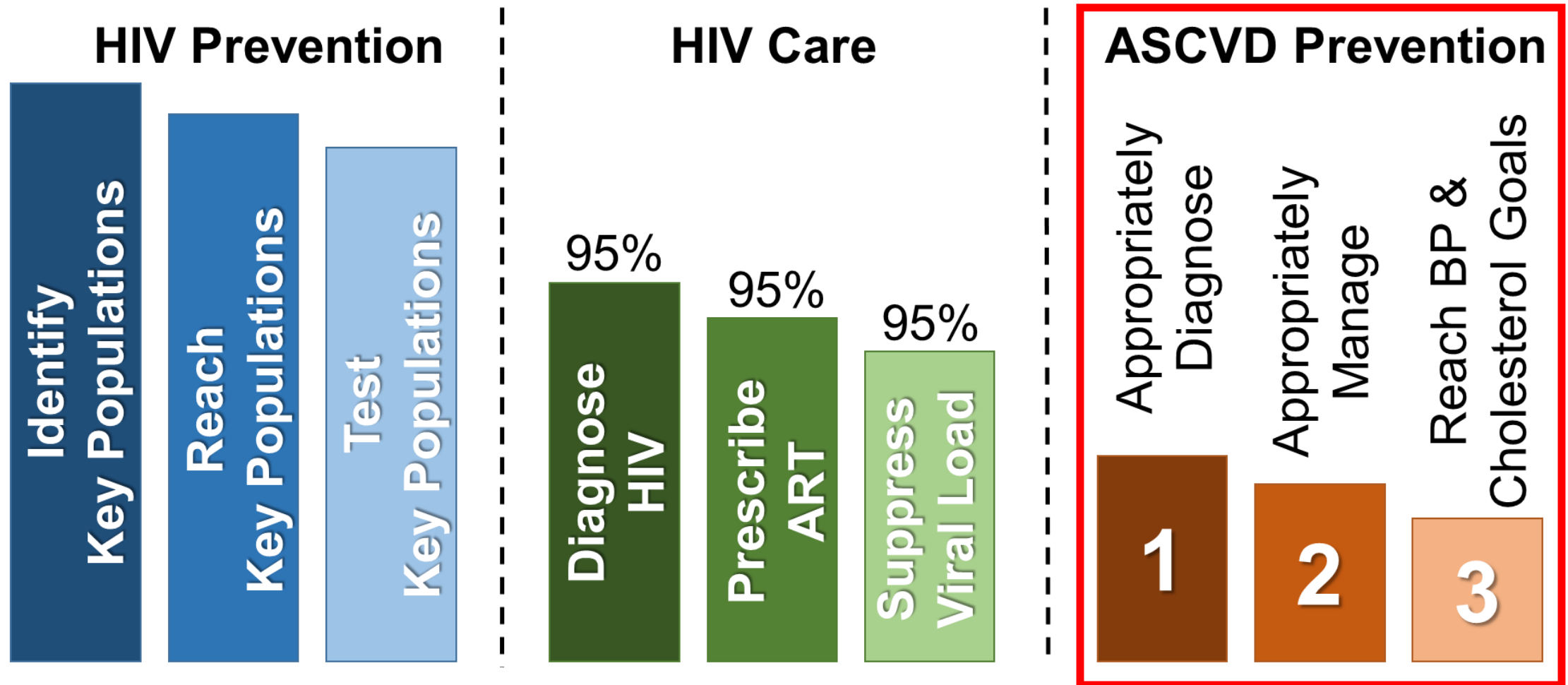






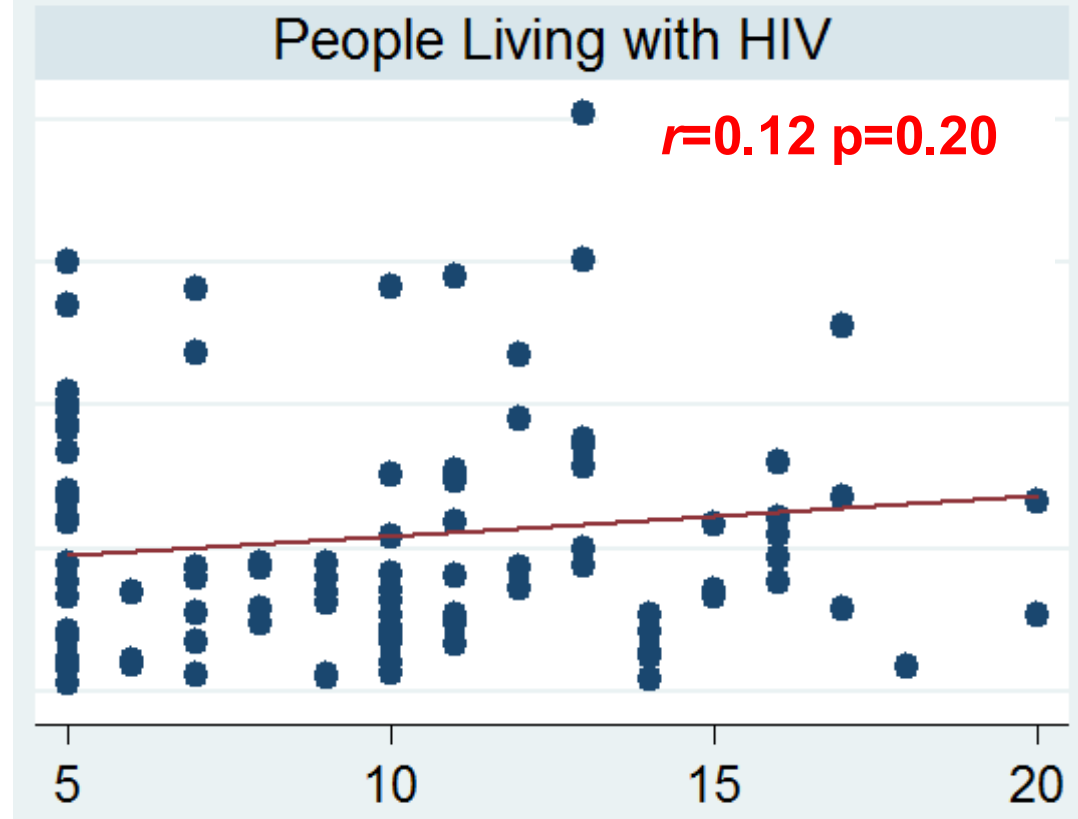


# It's Time to Extend the HIV Treatment Cascade



“I always thought I’d die  
of AIDS”

ASCVD Risk Score

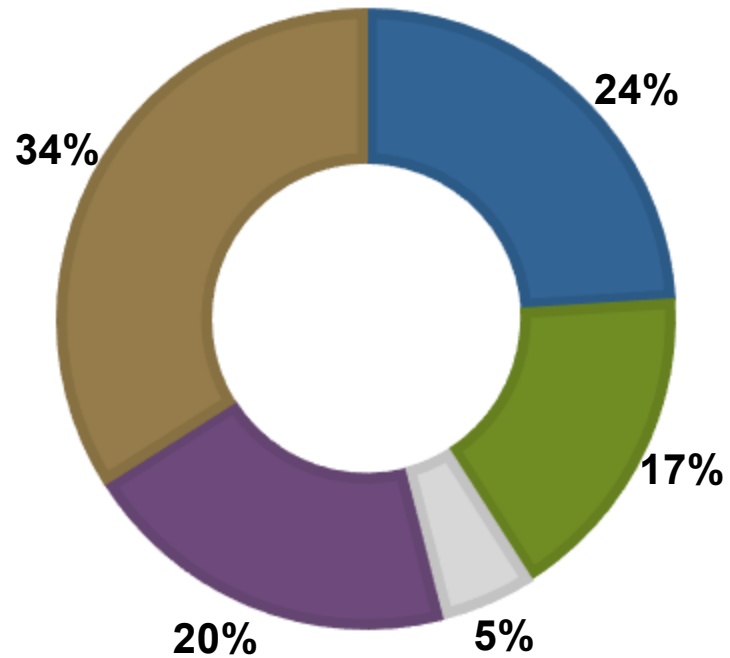


Perceived Susceptibility to CVD

# Who does primary prevention for PWH?

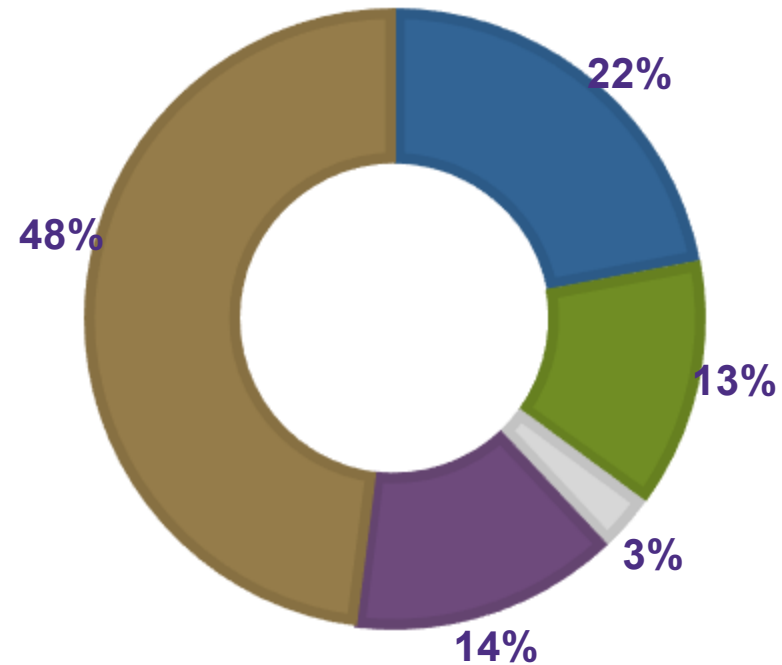
## HYPERTENSION

■ ID ■ Primary Care ■ Both ■ Other ■ No meds

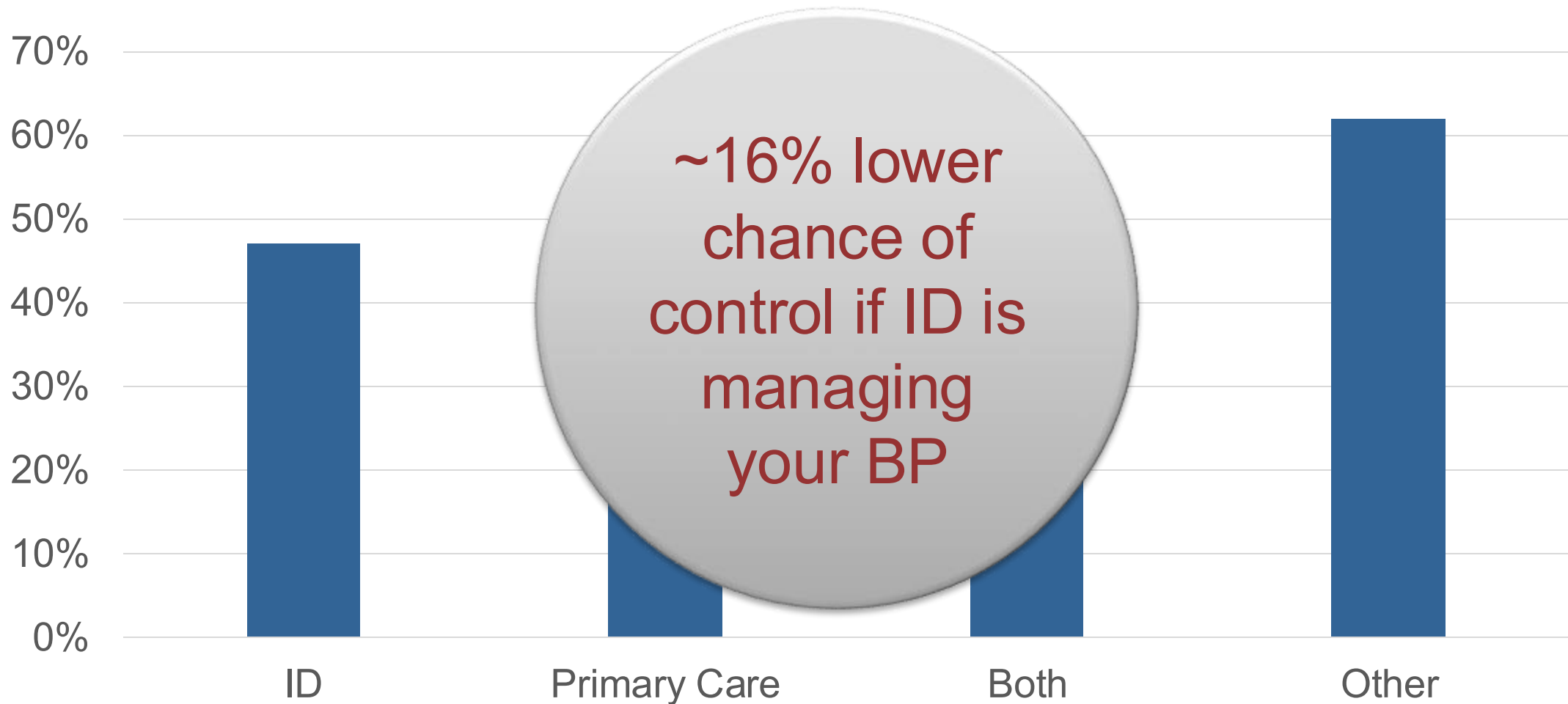


## HYPERLIPIDEMIA

■ ID ■ Primary Care ■ Both ■ Other ■ No meds



# Blood pressure control may depend on who is managing it



# Should Human Immunodeficiency Virus Specialty Clinics Treat Patients With Hypertension or Refer to Primary Care? An Analysis of Treatment Outcomes

A. Ben Appenheimer,<sup>1,2</sup> Barbara Bokhour,<sup>3,4</sup> D. Keith McInnes,<sup>3,4</sup> Kelly K. Richardson,<sup>1</sup> Andrew L. Thurman,<sup>1</sup> Brice F. Beck,<sup>1</sup> Mary Vaughan-Sarrazin,<sup>1,2</sup> Steven M. Asch,<sup>5,6</sup> Amanda M. Midboe,<sup>6</sup> Thom Taylor,<sup>6</sup> Kelly Dvorin,<sup>4</sup> Allen L. Gifford,<sup>3,4</sup> and Michael E. Ohl<sup>1,2</sup>

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**Table 2. Clinic Characteristics by Hypertension Delivery Model, N = 73 Clinics<sup>a</sup>**

Facility Characteristic	Overall (n = 73)	Hypertension Delivery	
		Consolidated Care (n = 42)	Shared Care (n = 31)
Patient volume, mean (STD)	256 (230)	330 (262)	157 (124)
Multidisciplinary team, n (%)	39 (53.4)	30 (71.4)	9 (29.0)
Case Manager, n (%)	16 (21.9)	12 (28.6)	4 (12.9)
Educator, n (%)	17 (23.3)	14 (33.3)	3 (9.7)
Pharmacist, n (%)	49 (67.1)	30 (71.4)	19 (61.3)

**Table 4. Hypertension Control by Clinic Characteristics, N = 5794 Patients**

Clinic Characteristic	Number of Patients (%)	Percent With Controlled Blood Pressure (%)	P Value
Hypertension Delivery			<.01
Consolidated care	4566 (78.8)	65.6	
Shared care	1228 (21.2)	59.4	
Multidisciplinary Team			.31
Yes	4205 (72.6)	64.9	
No	1179 (20.3)	62.2	
Indeterminate	276 (4.8)	60.1	
Missing	134 (2.3)	73.9	
Case Manager			.76
Yes	1218 (21.0)	66.0	
No	3942 (68.0)	64.3	
Indeterminate	322 (5.6)	62.4	
Missing	312 (5.4)	59.6	
Educator			.70
Yes	1660 (28.6)	66.2	
No	3193 (55.1)	63.5	
Indeterminate	629 (10.9)	65.5	
Missing	312 (5.4)	59.6	
Pharmacist			.95
Yes	4533 (78.2)	64.1	
No	757 (13.1)	64.9	
Indeterminate	504 (8.7)	65.1	
Missing	0 (0.0)	0.0	



March 5, 2024

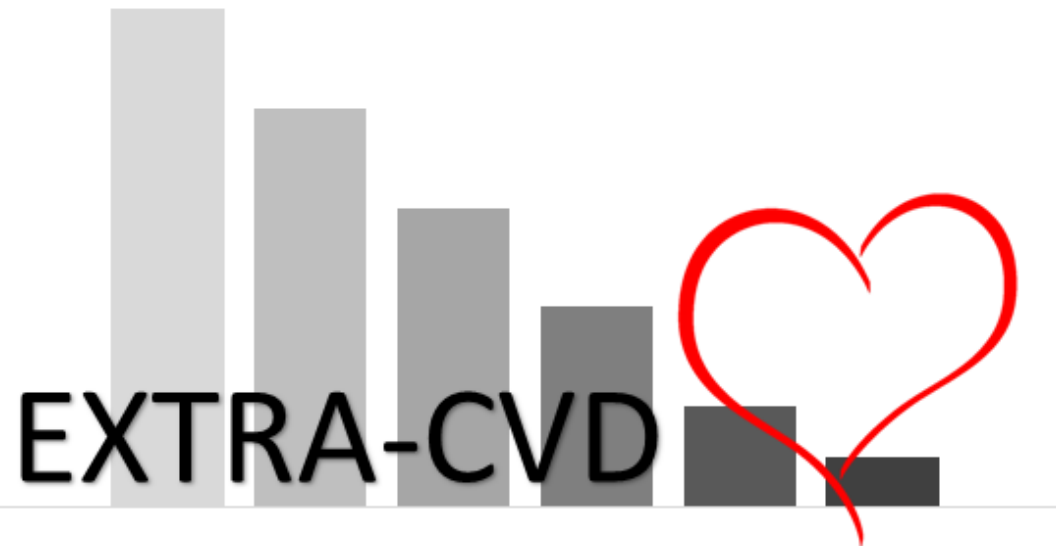
# Nurse-Led Strategy to Improve Blood Pressure and Cholesterol Level Among People With HIV

## A Randomized Clinical Trial

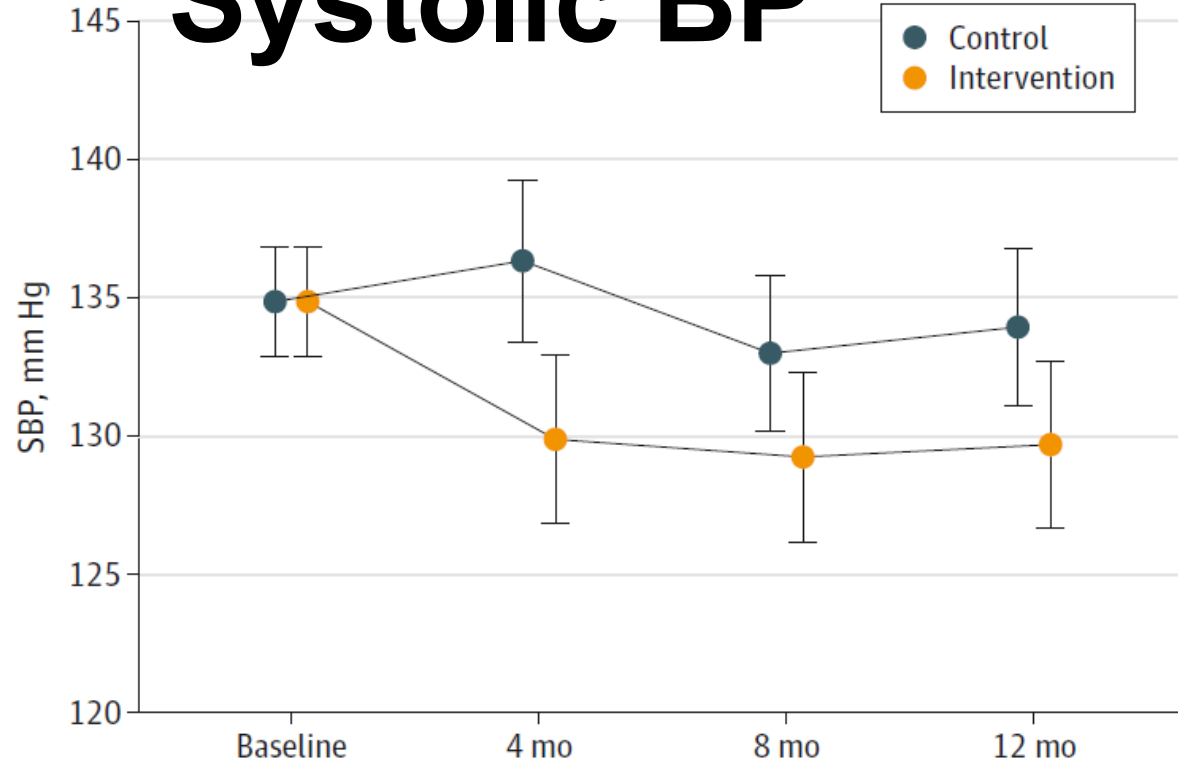
Christopher T. Longenecker, MD<sup>1</sup>; Kelley A. Jones, PhD<sup>2</sup>; Corri Lynn O. Hileman, MD<sup>3,4</sup>; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

*JAMA Netw Open.* 2024;7(3):e2356445. doi:10.1001/jamanetworkopen.2023.56445

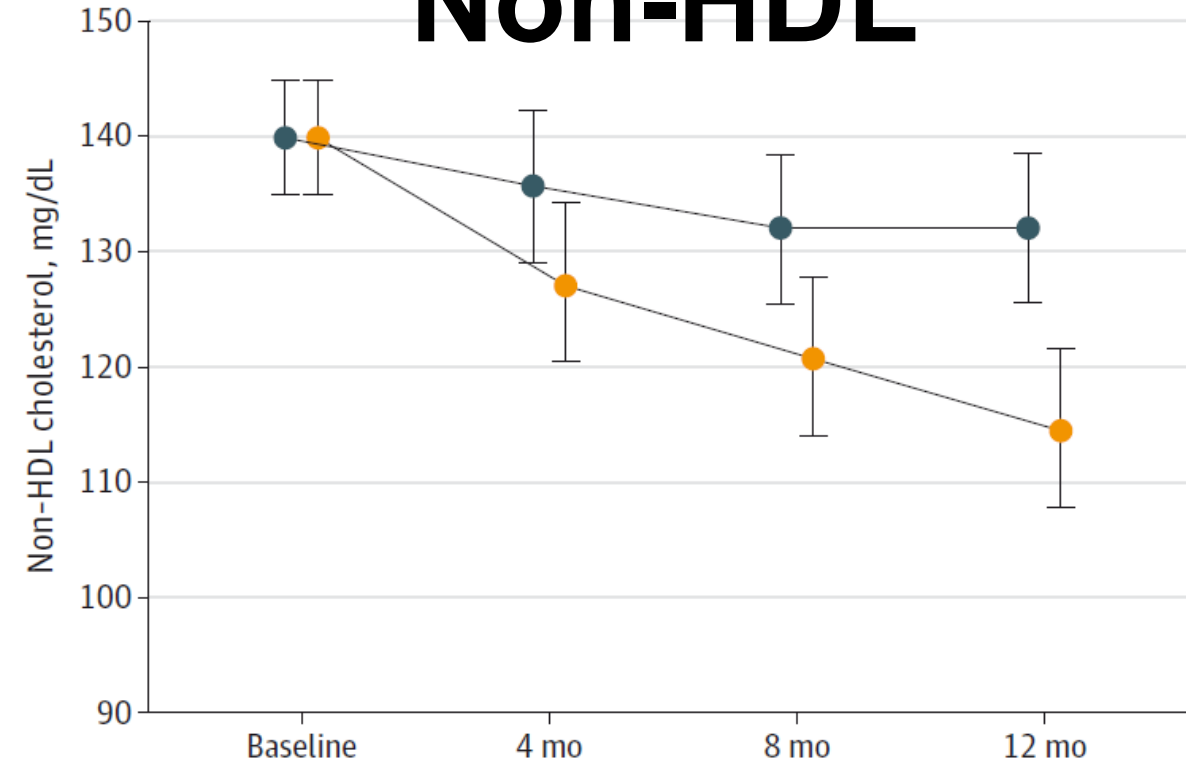


# Systolic BP



**4.2**  
mmHg  
 $p=0.04$

# Non-HDL



**16.9**  
mg/dL  
 $p<0.001$

# **Diagnosis of Hypertension in PWH**



# Blood Pressure Categories



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
<b>NORMAL</b>	<b>LESS THAN 120</b>	<b>and</b>	<b>LESS THAN 80</b>
<b>ELEVATED</b>	<b>120 – 129</b>	<b>and</b>	<b>LESS THAN 80</b>
<b>HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1</b>	<b>130 – 139</b>	<b>or</b>	<b>80 – 89</b>
<b>HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2</b>	<b>140 OR HIGHER</b>	<b>or</b>	<b>90 OR HIGHER</b>
<b>HYPERTENSIVE CRISIS (consult your doctor immediately)</b>	<b>HIGHER THAN 180</b>	<b>and/or</b>	<b>HIGHER THAN 120</b>

# Hypertension Diagnosis Pearls

- Develop a workflow for the clinic that encourages accurate BP measurement
- Automatic oscillometric BP machines more accurate than manual
- AHA materials are helpful to remind staff of accurate BP measurement principles
- Learn how to enter home BP data in the EMR

**BLOOD PRESSURE MEASUREMENT INSTRUCTIONS**

**IN THE 30 MINUTES BEFORE YOUR BLOOD PRESSURE IS TAKEN:**

- NO SMOKING
- NO EXERCISE
- NO CAFFEINATED BEVERAGES
- NO ALCOHOL

**RIGHT BEFORE:**

- PLACE THE BOTTOM OF THE CUFF ABOVE THE BEND OF THE ELBOW.
- WRAP IT AGAINST YOUR BARE SKIN, NOT OVER CLOTHING.

**USE A PROPERLY CALIBRATED AND VALIDATED DEVICE. CHECK THE CUFF SIZE AND FIT.**

**REST FOR AT LEAST 5 MINUTES. SIT CALMLY AND DON'T TALK.**

**WHILE YOU PREPARE TO TAKE YOUR BLOOD PRESSURE:**

- RELAX.
- DON'T TALK.
- REST YOUR ARM COMFORTABLY ON A FLAT SURFACE AT HEART LEVEL.
- SIT UPRIGHT, BACK STRAIGHT AND SUPPORTED.
- KEEP LEGS UNCROSSED AND FEET FLAT ON THE FLOOR.

**TAKE AT LEAST TWO READINGS 1 MINUTE APART IN THE MORNING BEFORE TAKING MEDICATIONS, AND IN THE EVENING BEFORE GOING TO BED. RECORD ALL RESULTS.**

**(IF YOU NOTICE THAT ONE ARM SHOWS A HIGHER READING THAN THE OTHER, USE THE ARM WITH THE HIGHER READING.)**

**American Heart Association recommended blood pressure levels**

Blood Pressure Category	Systolic mm Hg (upper number)		Diastolic mm Hg (lower number)
Normal	Less than 120	and	Less than 80
Elevated	120-129	and	Less than 80
High Blood Pressure (Hypertension) Stage 1	130-139	or	80-89
High Blood Pressure (Hypertension) Stage 2	140 or higher	or	90 or higher
Hypertensive Crisis (Consult your doctor immediately)	Higher than 180	and/or	Higher than 120

**BLOOD PRESSURE HIGHER THAN 180/120 mm Hg IS A CRISIS.\***

**\*WAIT A FEW MINUTES AND TAKE BLOOD PRESSURE AGAIN.**

**\*IF YOUR BLOOD PRESSURE IS STILL HIGH AND THERE ARE NO OTHER SIGNS OR SYMPTOMS, CONTACT YOUR HEALTH CARE PROFESSIONAL IMMEDIATELY.**

**\*IF YOU ARE EXPERIENCING SIGNS OF POSSIBLE ORGAN DAMAGE, SUCH AS CHEST PAIN, SHORTNESS OF BREATH, BACK PAIN, NUMBNESS/WEAKNESS, CHANGE IN VISION OR DIFFICULTY SPEAKING, CALL 911.**

**LEARN MORE AT [HEART.ORG/HBP](https://heart.org/hbp)**

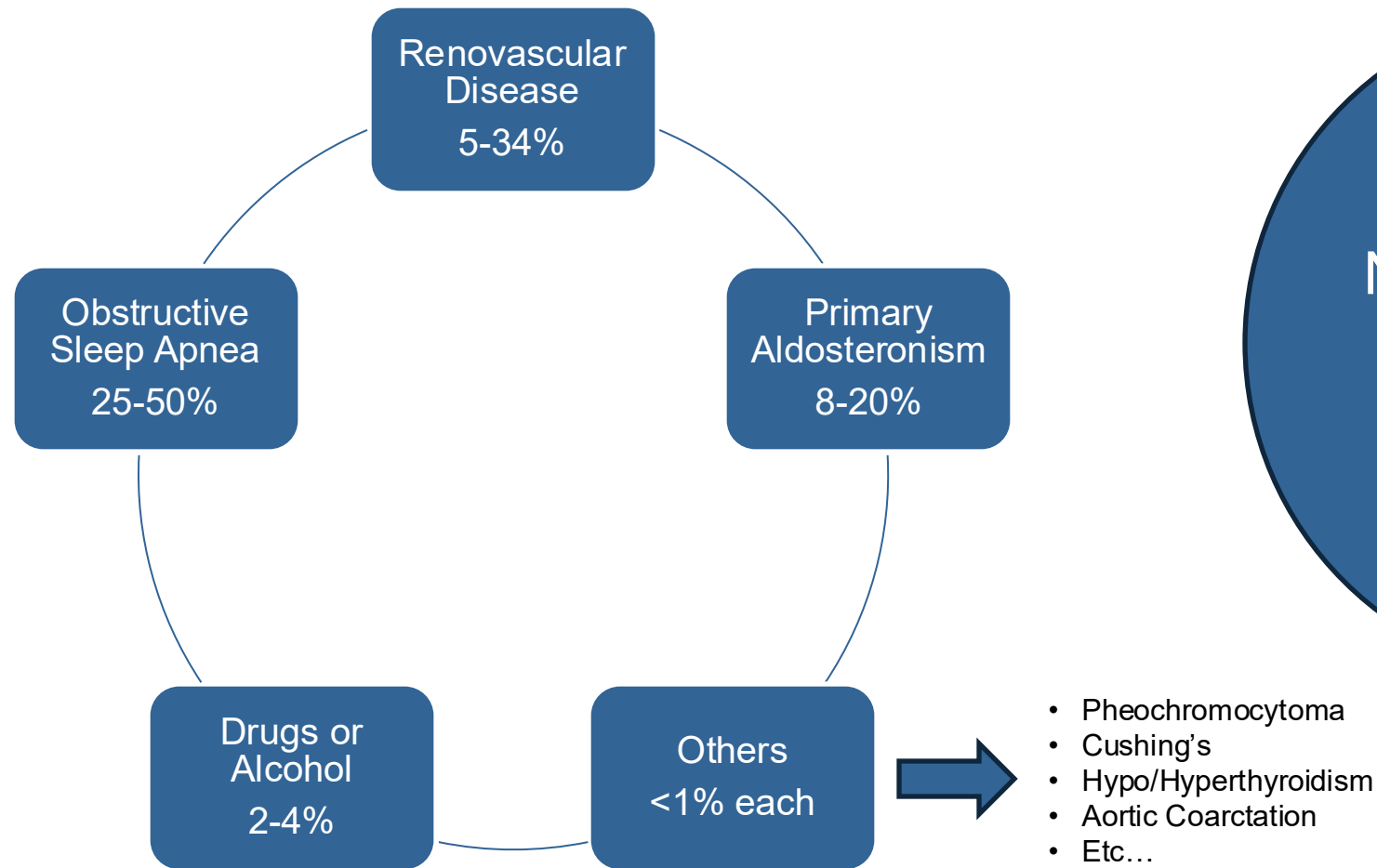
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# Hypertension Diagnosis Pearls

- **Home blood pressures**
  - HBPM vs. ABPM
  - [www.validatebp.org/](http://www.validatebp.org/)
  - Home BP is on average ~5mmHg less than office measured BP
- **Check for LVH on echo or ECG**
  - If none, it is unlikely that the hypertension is severe and/or longstanding



# Secondary Causes of Hypertension

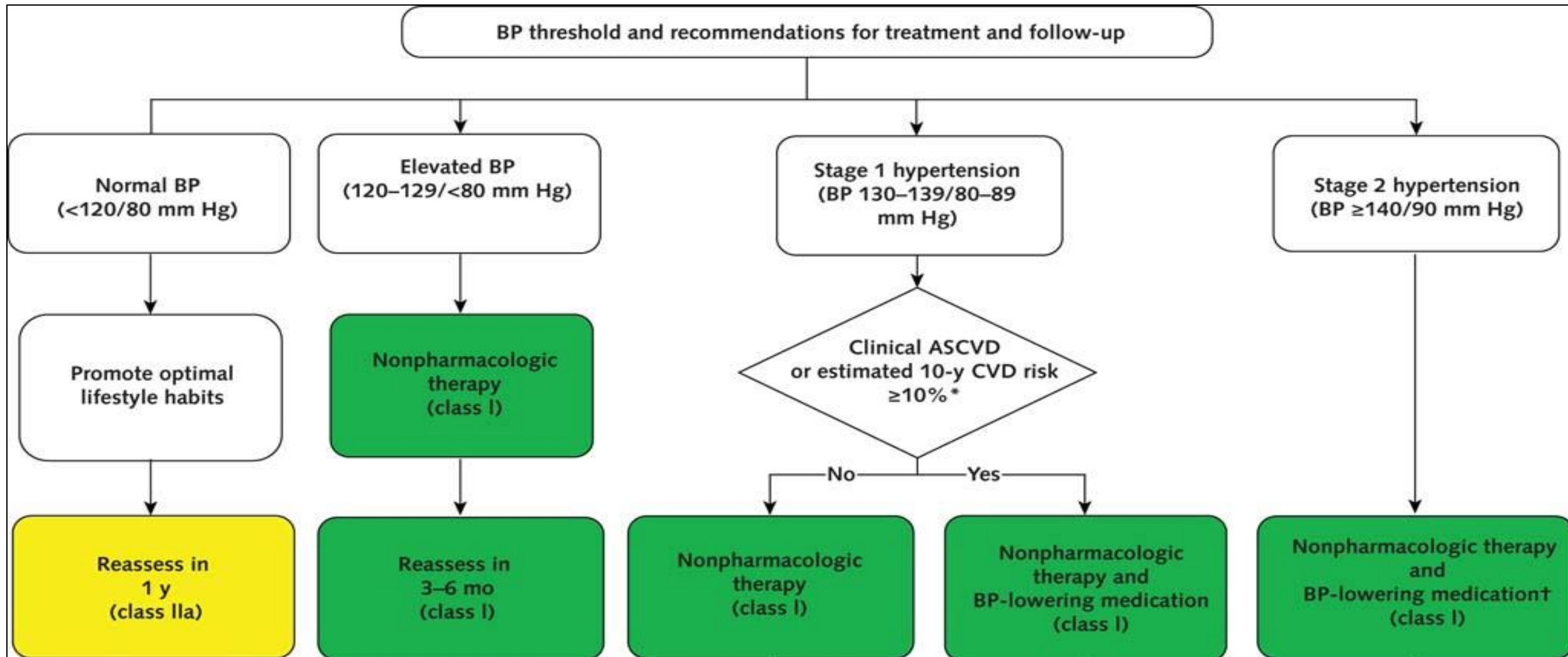


No good data on  
secondary  
causes in PWH

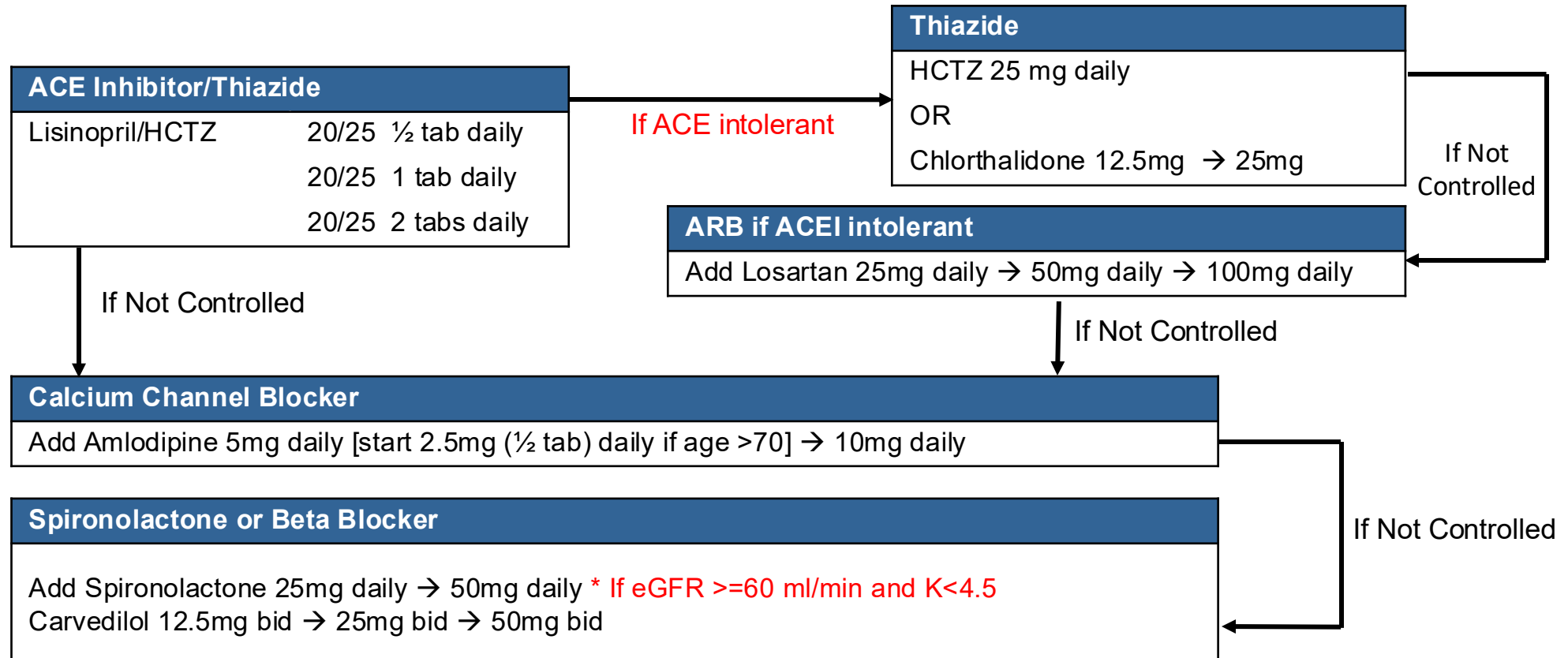
# **Treatment of Hypertension in PWH**



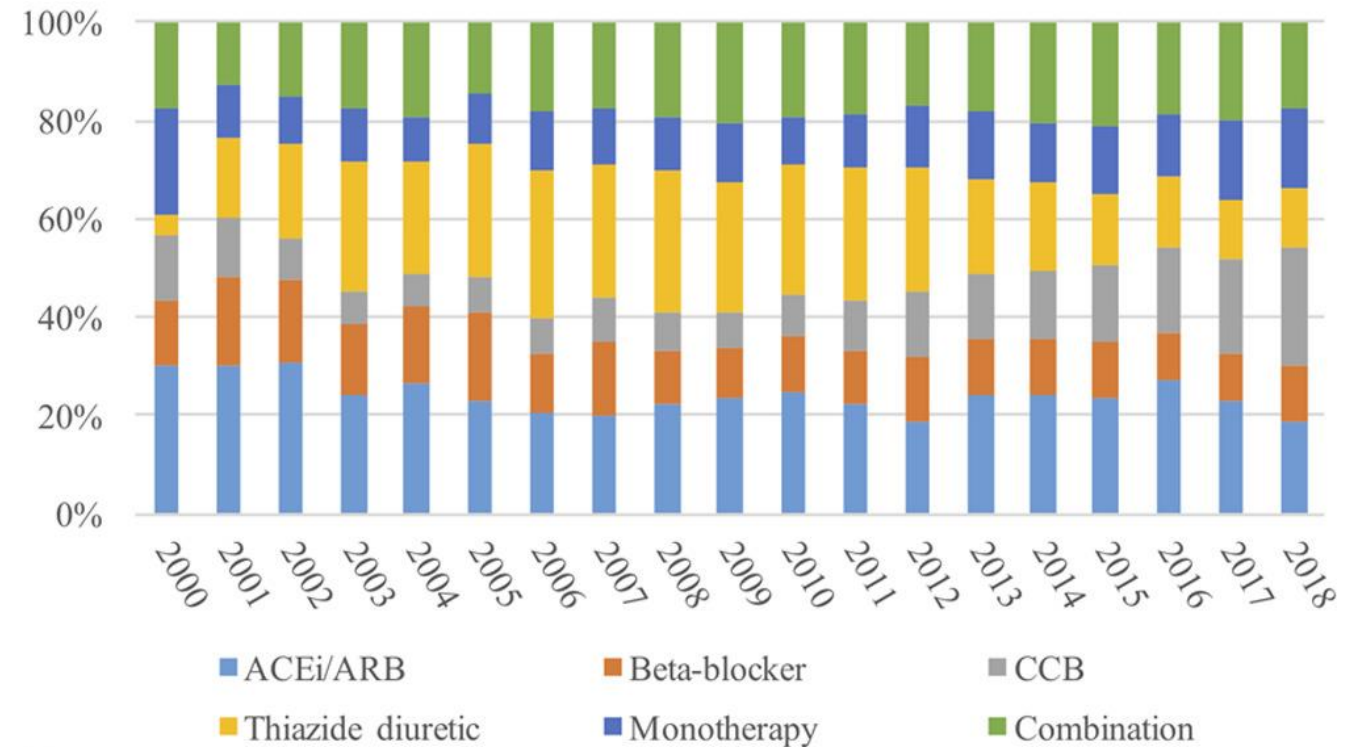
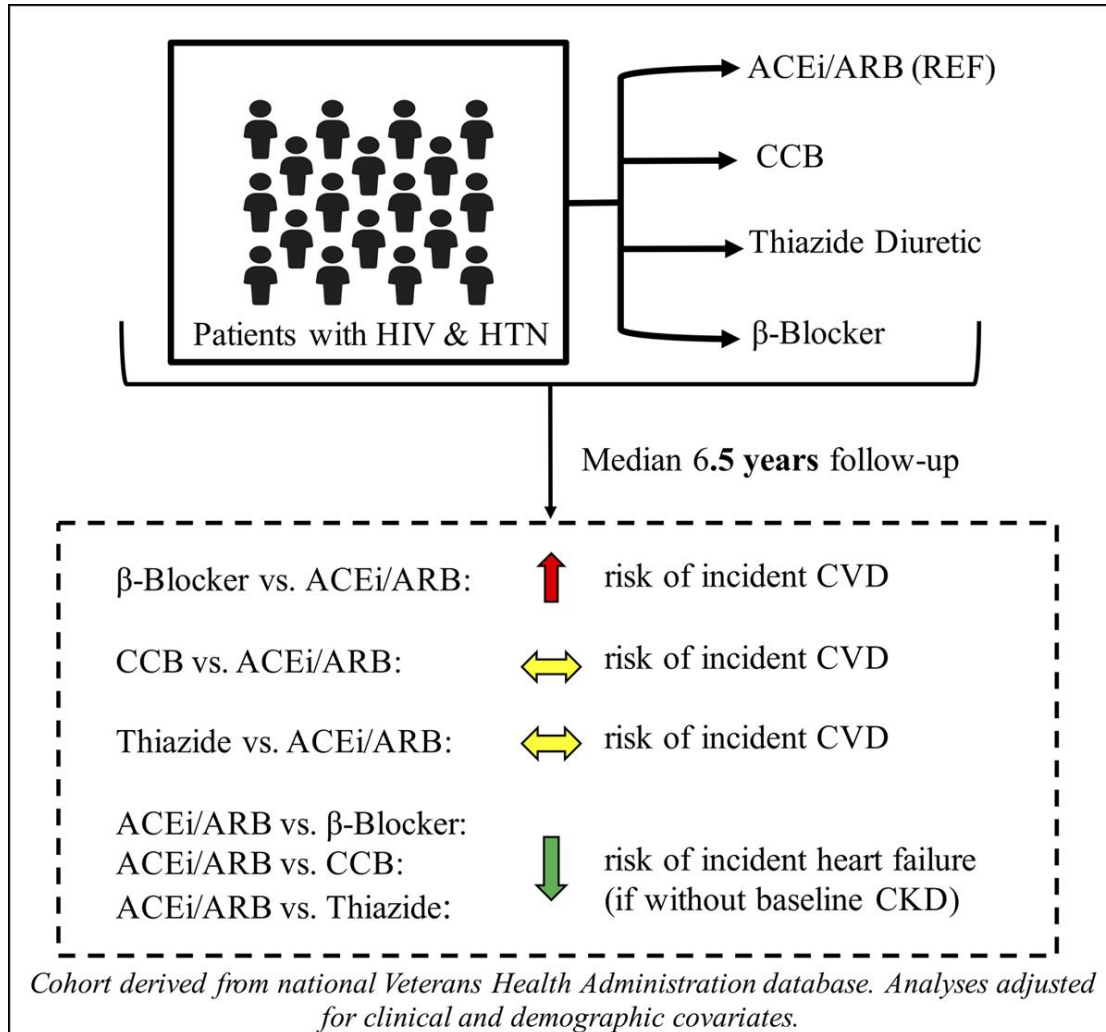
# Who should be treated for high blood pressure?



# EXTRA-CVD Treatment Algorithm



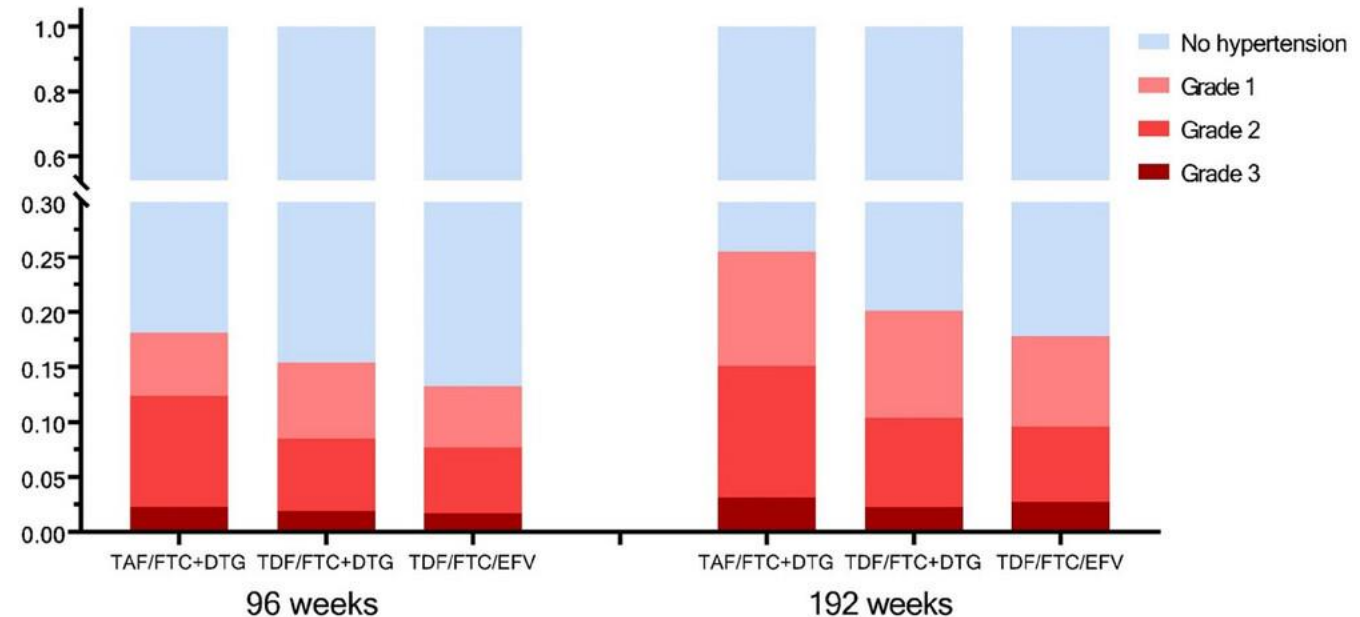
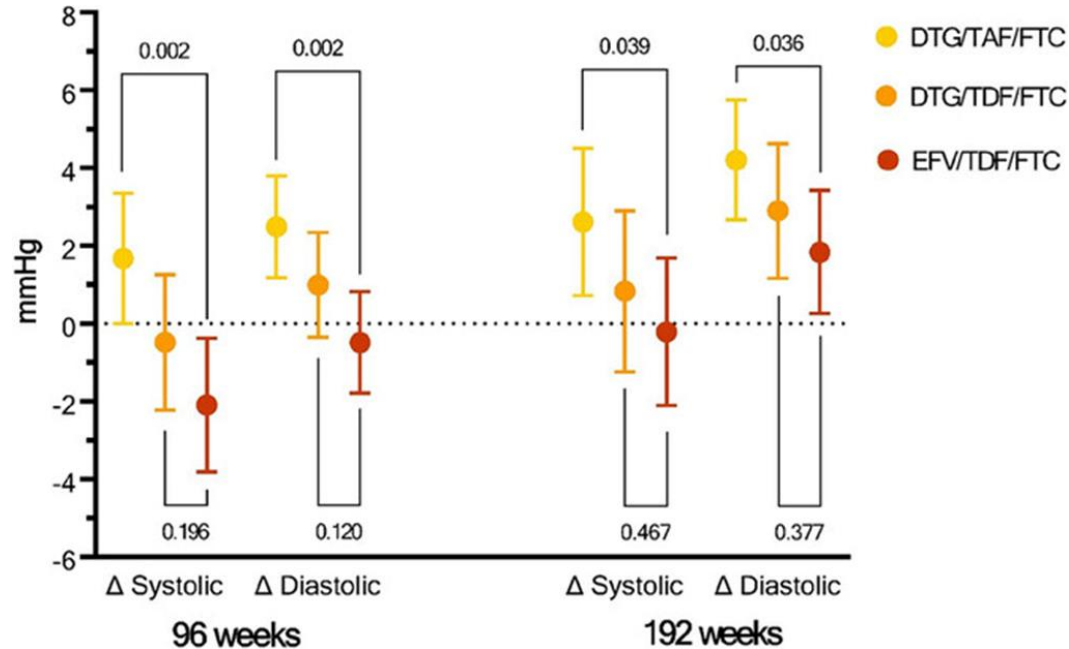
# Initiation of BB associated with worse outcomes in PWH



**Beta-blockers associated with 90% increased risk of incident CVD (vs. ACE/ARB)**



# Blood pressure change and treatment emergent hypertension on modern ART: data from the ADVANCE trial



Differences between regimens were attenuated after adjustment for changes in BMI

# Hypertension management and ART pearls

- ART raises blood pressure
  - Differences between drugs/regimens is extremely modest
- Hypertension rarely merits switch in ART
- Beware clinically relevant drug interactions with boosted ART
  - Amlodipine (modest)
  - Carvedilol (weak)

## Potential Interaction

Darunavir/cobicistat (DRV/c)

Amlodipine

Quality of evidence: Very Low ⓘ

### Summary:

Coadministration has not been studied. Amlodipine is metabolized by CYP3A4. Darunavir/cobicistat could potentially increase amlodipine exposure. Caution is warranted and clinical monitoring of therapeutic and adverse effects is recommended. Amlodipine should be started at low doses with careful titration to response.

### Description:

Based on theoretical considerations darunavir/cobicistat is expected to increase amlodipine plasma concentrations (CYP3A and/or CYP2D6 inhibition). Clinical monitoring of therapeutic and adverse effects is recommended when these medicines are co-administered with darunavir/cobicistat.

*Rezolsta Summary of Product Characteristics, Janssen-Cilag Ltd, July 2023.*

Coadministration is expected to increase concentrations of amlodipine. Clinical monitoring is recommended for co-administration with calcium channel blockers metabolized by CYP3A.

*Prezcobix US Prescribing Information, Janssen Pharmaceuticals Inc, March 2023.*

# Conclusions

- Together with smoking and dyslipidemia, hypertension is a significant driver of cardiovascular risk among PWH
- Unique barriers to hypertension diagnosis and management exist in US HIV clinics
- Blood pressure self-monitoring at home is effective but underutilized.
- The American Heart Association has excellent resources for hypertension management
  - Look out for new guidelines coming out soon!

# Acknowledgment

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