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Cardiovirology Clinic for Primary Prevention in HIV Patients: a Quality Improvement Assessment

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a Quality Improvement Assessment

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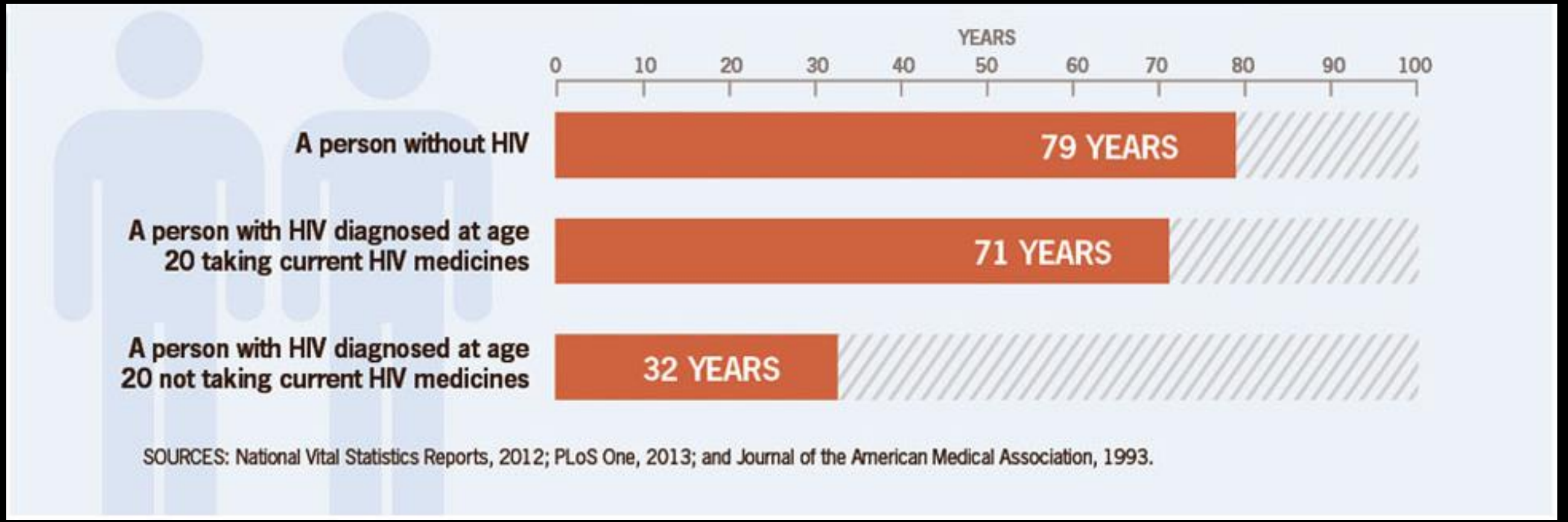
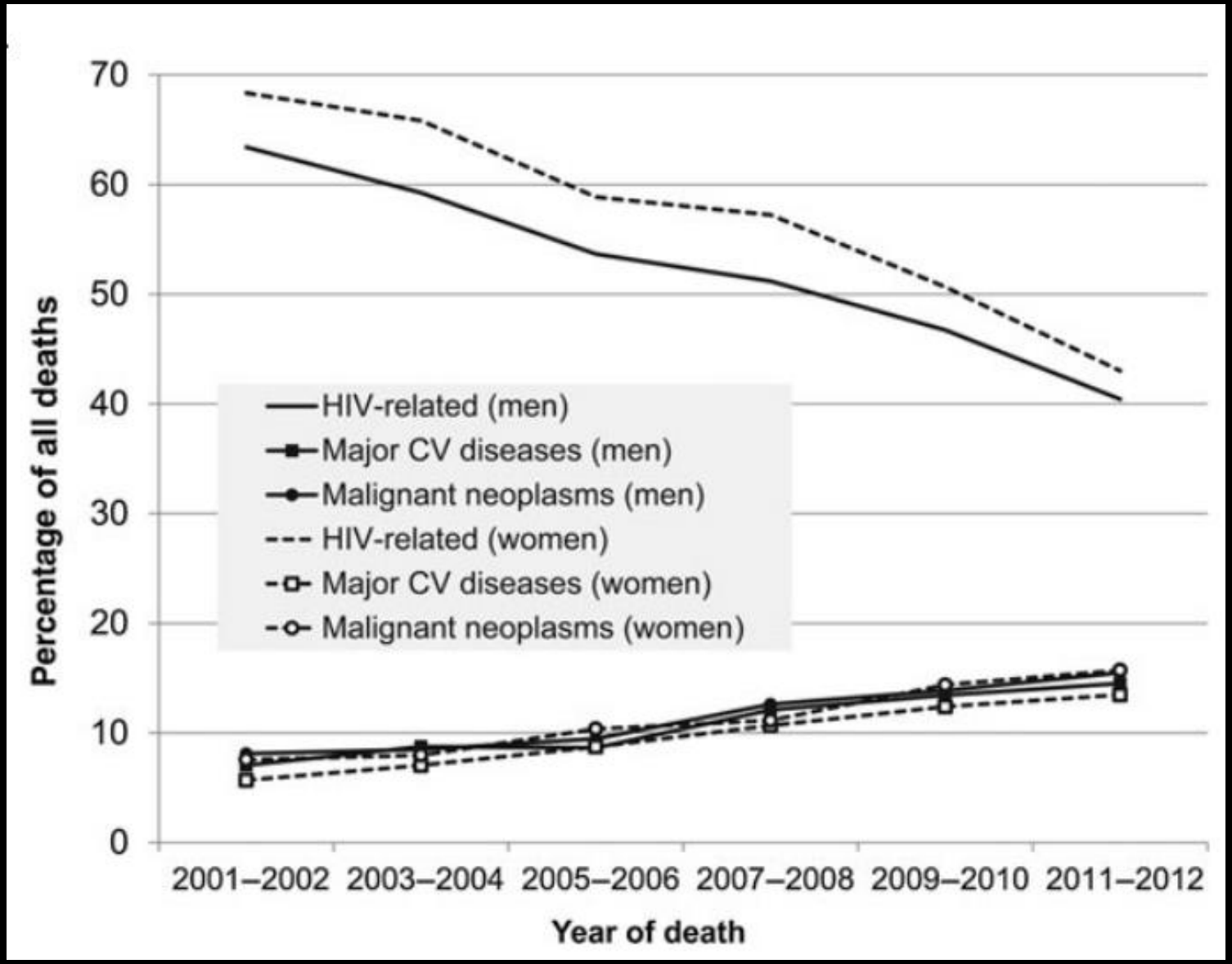
Improving Life Expectancy of HIV Patients

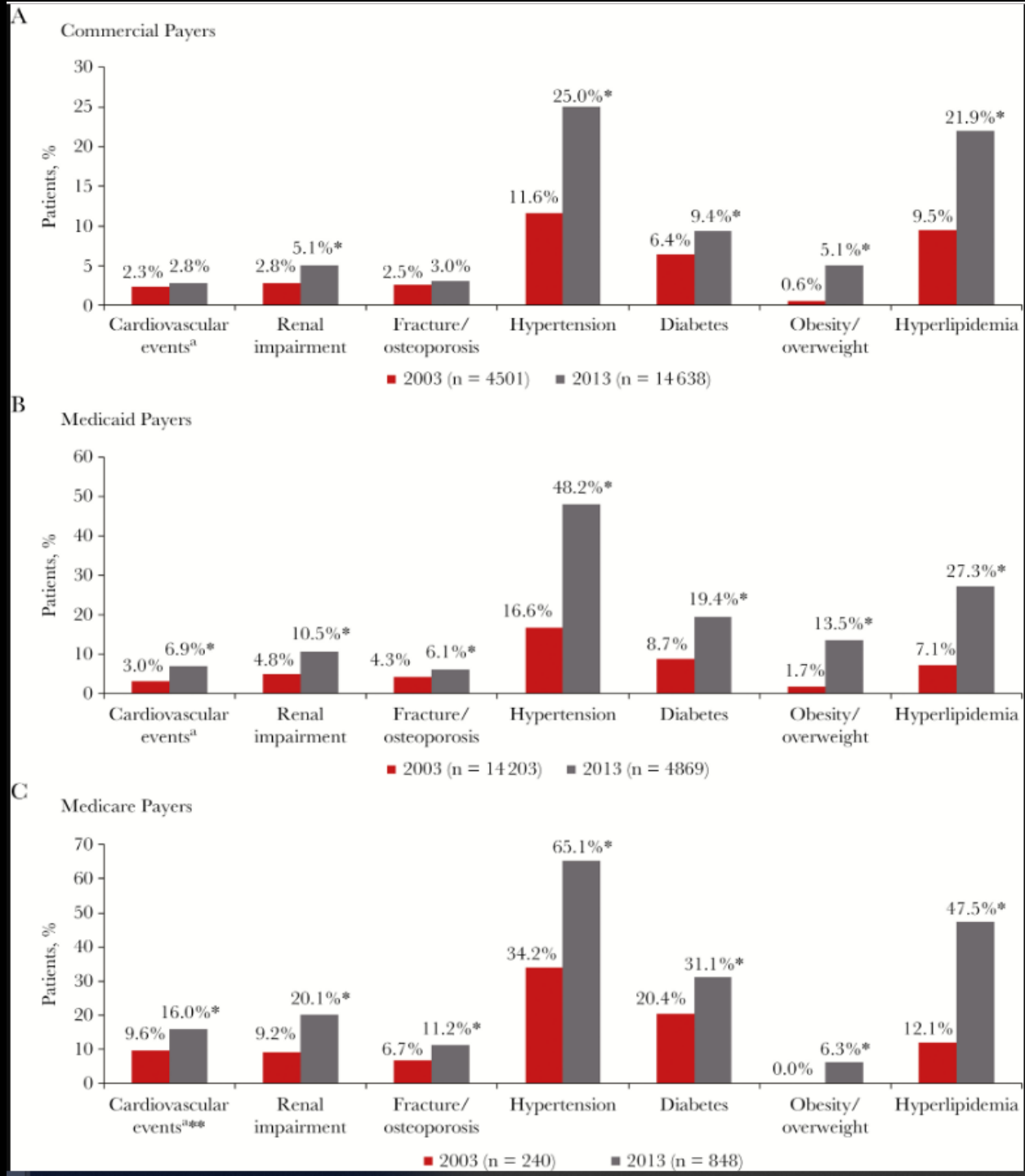


Increase in CV related mortality



Hanna et al., Clinical Infectious Diseases. 2016; *63*(8), 1122-1129.

Comorbidities in the U.S. HIV population



Gallant et al., The Journal of Infectious Diseases. 2017; *216*(12), 1525-1533

HIV and Relative Risk of ASCVD

- 50-100% higher risk of major adverse cardiovascular events (MACE)
  - Cardiovascular death
  - Non-fatal myocardial infarction
  - Non-fatal stroke
  - Need for major revascularization

Islam et al., HIV Medicine. 2012; *13*(8): 453-68

Traditional Risk Factors for ASCVD

- Smoking
- Age
- Hypertension
- Dyslipidemia
- Family history of premature ASCVD
- Diabetes

Effect of smoking prevalence in developing ASCVD in HIV patients

	General Population	HIV Population
% of US adults who are current smokers	21%	46-76%
Increased risk in developing ASCVD	3 fold	4-5 fold

Smoking (frequency and impact) accounts for ~25% of higher attributable risk of MACE in patients living with HIV

Lifson et al., American Journal of Public Health. 2010; *100*(10), 1896-1903.

Vascular Inflammation and ASCVD

- Vascular inflammation increases ASCVD and event risk
- HIV causes chronic inflammation
- Inflammatory biomarkers: C-reactive protein, IL-6, TNF receptor II, endothelial activation marker

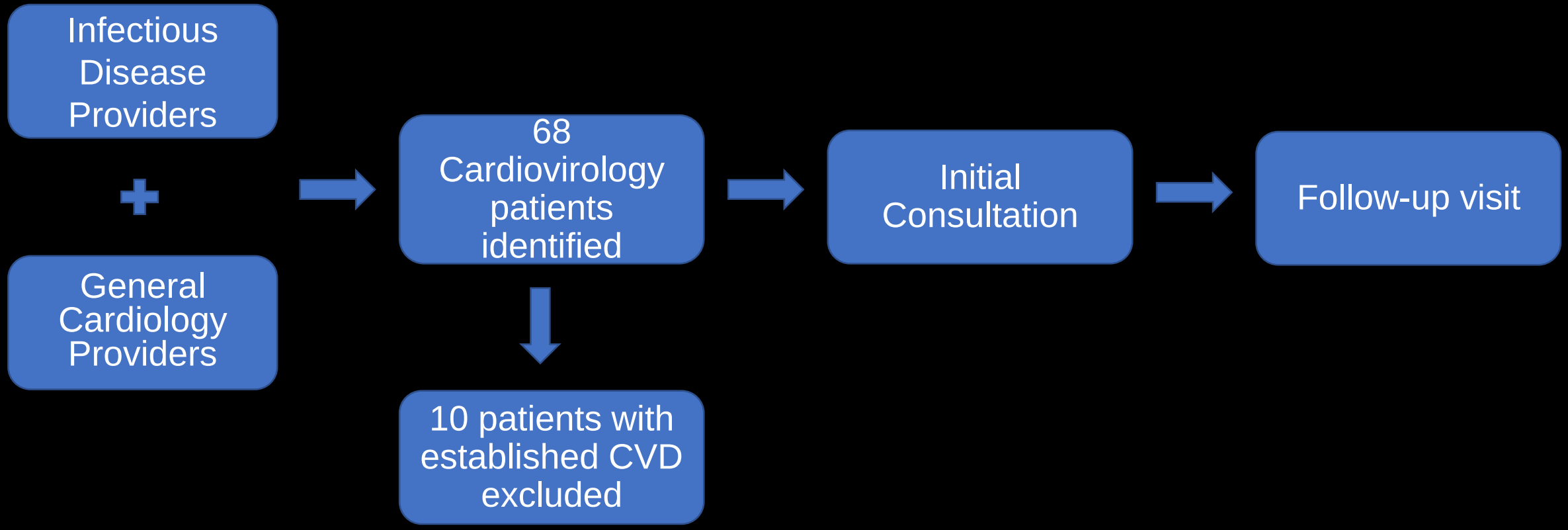
	Participants with CVD event	Participants without CVD event
C-Reactive Protein (hsCRP) (µg/mL)	3.34	1.67
Interleuken-6 (IL-6) (pg/mL)	3.07	1.72
D-Dimer (µg/mL)	0.31	0.20

Duprez et al., PLoS ONE. 2012; 7(9)

Cardiovirology Clinic

- A senior ETSU Heart faculty cardiologist established a Cardiovirology clinic at the ETSU Center of Excellence for HIV/AIDS care in September 2017 to provide:
  - Primary prevention of major CV events in HIV population
  - Secondary prevention and disease management in HIV patients with established CVD
  - Aggressive intervention consistent with AHA/ACC guidelines and recent research
  - Coordination with PCP and HIV practitioners, pharmacists and other members of interdisciplinary team

Patient Identification



Methods -1

D:A:D 5-year risk score (reduced model) calculated at initial consult and most recent visits. Data elements include:

- Age
- Sex
- Present or past smoking history
- History of premature ASCVD in first degree relatives
  - (<55 yo male, <65 yo female)
- Diabetes
- CD4 cell count
- Systolic BP
- Total Cholesterol
- HDL Cholesterol

Retrieved from: https://chip.dk/Tools-Standards/Clinical-risk-scores

Welcome to the Risk Assesment Tool System (RATS). Please select the desired values from the list below.

General

- EuroSida AIDS/Death risk score
- FENCE score

Cardiovascular

- D:A:D (R) CVD 5 and 10 year risk score
- D:A:D (F) CVD 5 and 10 year risk score
- Framingham CVD 5 and 10 year risk score
- MI Number needed to harm

Kidney

- Estimated glomerular filtration rate
- Short chronic kidney disease risk score
- Full chronic kidney disease risk score

Build form

Please fill out the following form consisting of 10 items.

1. Age: yr
2. Gender: Male Female
3. Previous smoker? Yes No
4. Smoker? Yes No
5. Family CVD history? Yes No
6. Diabetes? Yes No
7. CD4 cell count: Cells/µL
8. Systolic blood pressure: mmHg
9. Total cholesterol: mg/dL
10. HDL: mg/dL

Calculate results Reset form

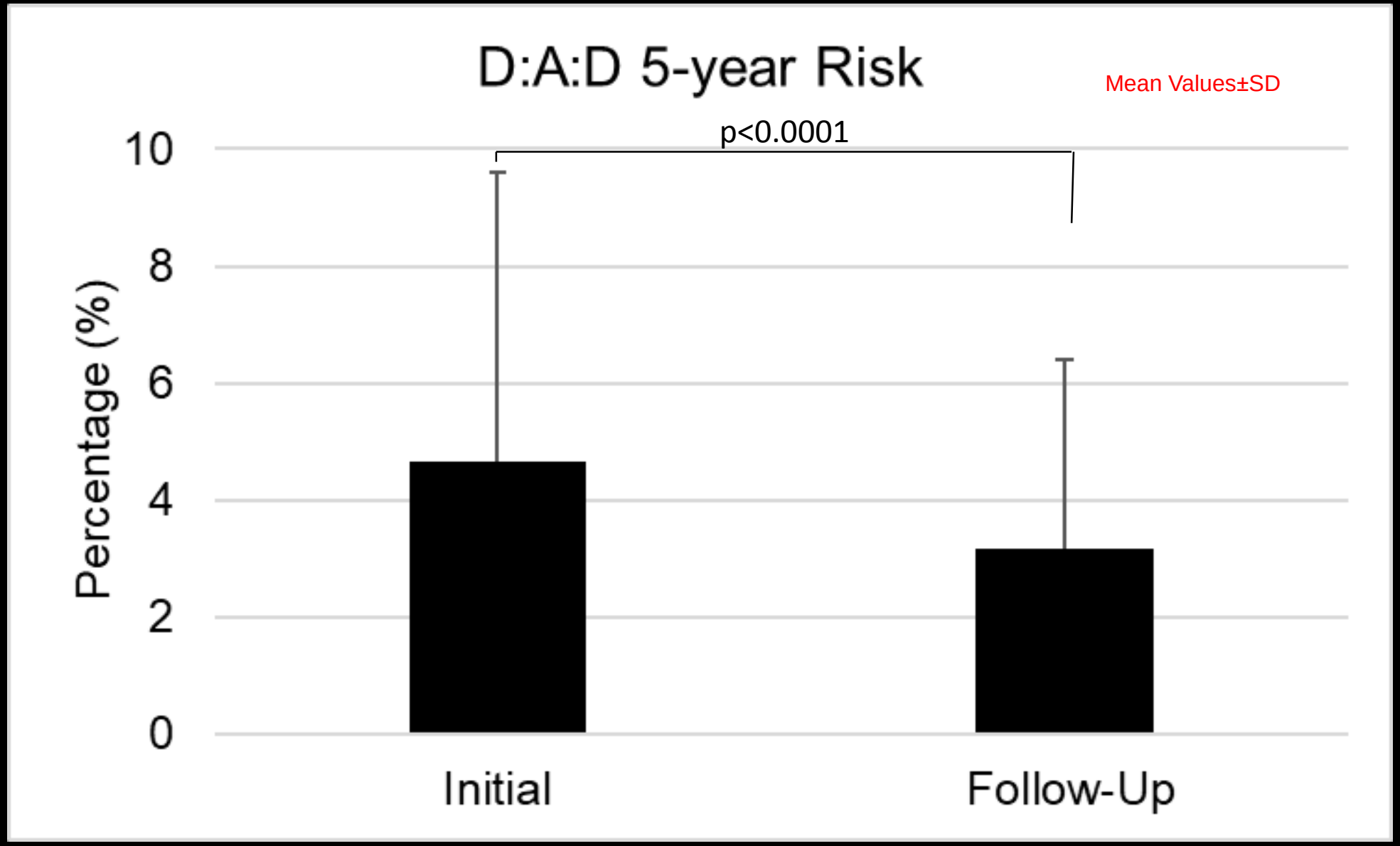
Methods -2

- Additional Data collected:
  - Personal History of ASCVD
  - Body-mass index and systolic (SBP) and diastolic (DBP) blood pressures
  - Laboratory Values
    - CD_4 count
    - HIV-1 viral load
    - Proteinuria
    - Estimated glomerular filtration rate
    - Triglycerides (TG)
    - Low Density Lipoprotein cholesterol (LDL)

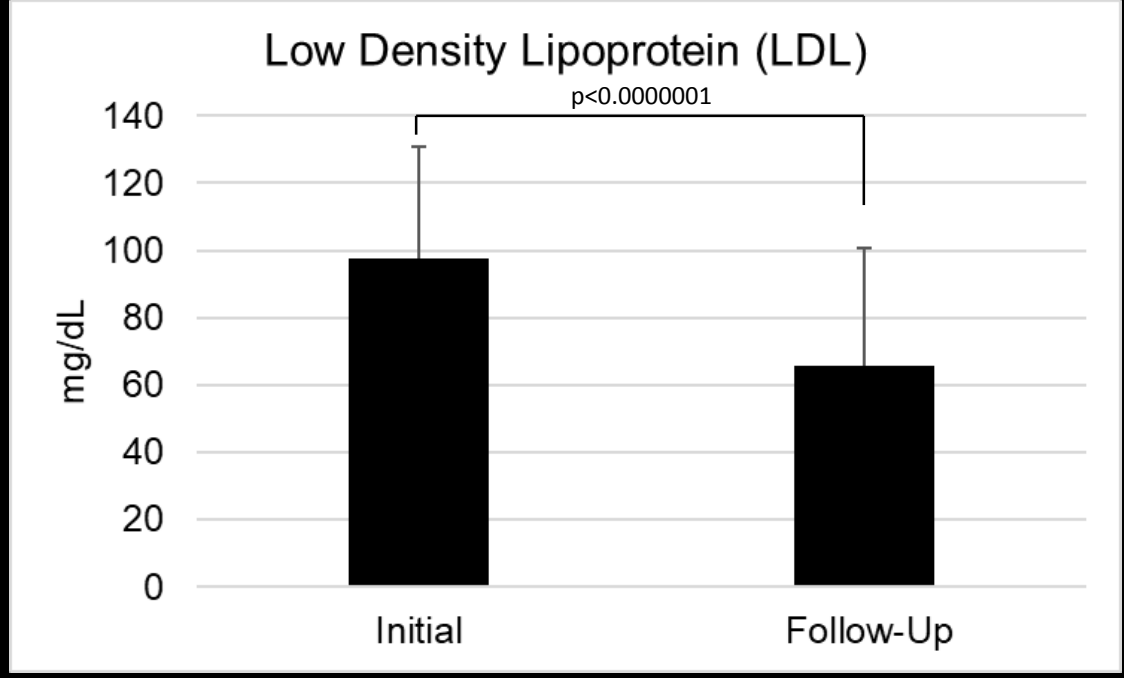
Analysis

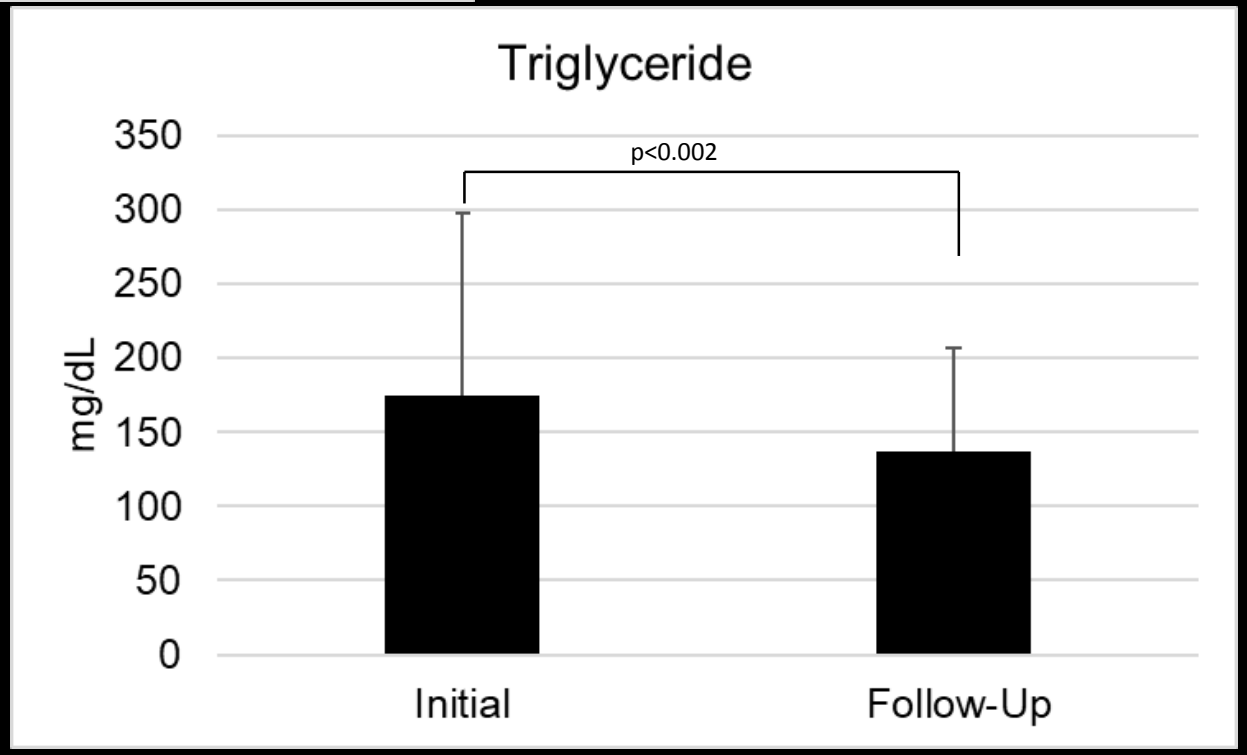
- Univariate analysis
- Two-tailed, paired T-testing to identify significant differences in mean parameter values (initial vs. most recent visits)
- Significance: $p < 0.05$

Primary Findings

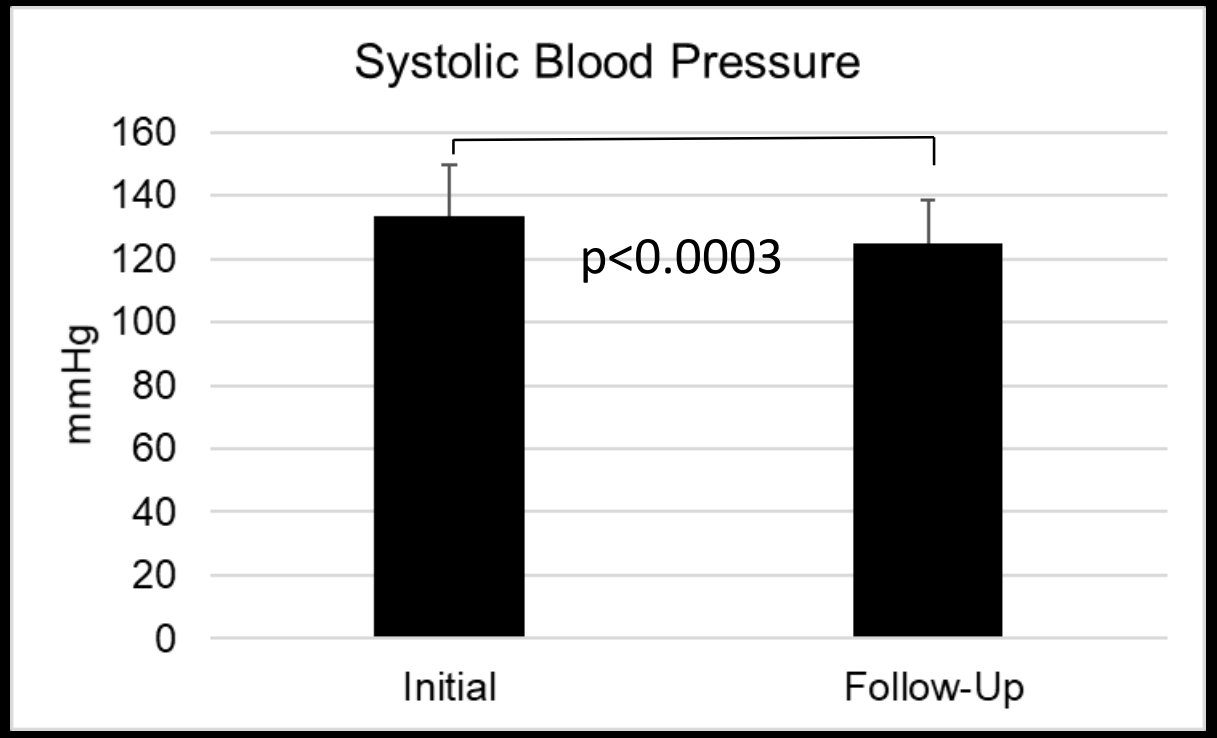


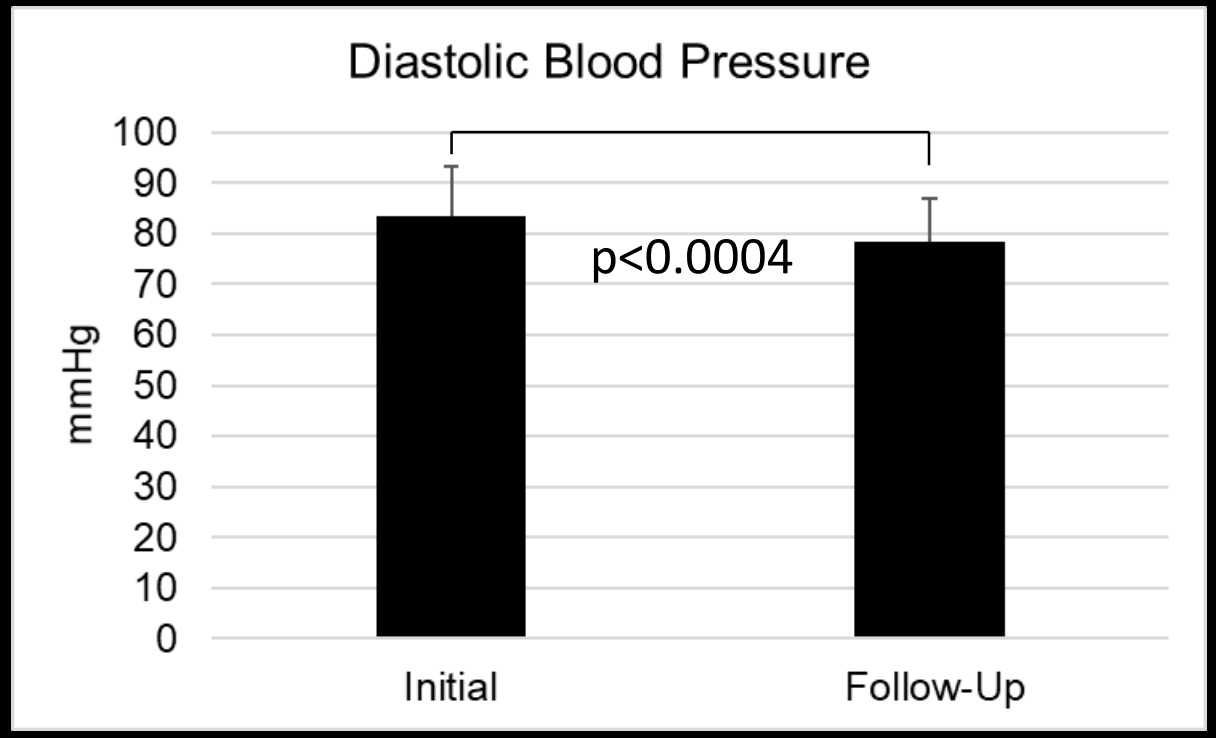
Secondary Findings: Lipids





Secondary Findings: Blood Pressure





Conclusion

- Patients living with HIV who received primary preventive cardiovascular care in the ETSU Cardiovirology Clinic enjoyed meaningful reductions in their D:A:D 5-yr MACE risk score
- Significant reductions seen in: TG, TC, LDL, SBP, DBP
  - Blood pressure and lipid interventions likely influenced risk reduction
  - Aggressive control may be most important in these well-controlled HIV patients
- Findings suggest the potential efficacy of the Cardiovirology Clinic model

Limitations

- Too few data points due to:
  - Short duration of follow up (<1 year)
  - Small patient population (n=58)
- D:A:D risk score surrogate for clinical outcomes
  - All CV risk estimation equations have inherent inaccuracies
- Other risk factor modifications may have been identified as effective with larger patient population and longer follow-up.