976. Development and Validation of a Risk Score for Predicting Cardiovascular Events in HIV-Infected Patients

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Session: 126. Suppressed but Still at Risk: Comorbidities
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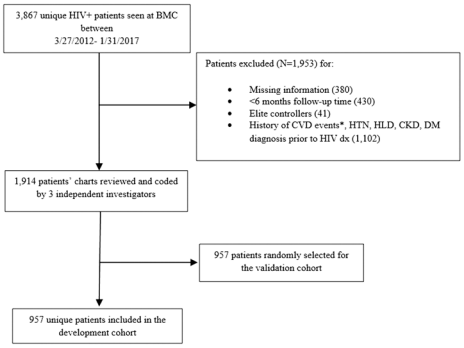
Background. HIV-infected individuals are at higher risk for developing cardiovascular disease (CVD). We aimed to develop a model to predict 10-year cardiovascular (CV) risk given that commonly used CVD risk assessment tools might not be accurate for HIV-infected patients.

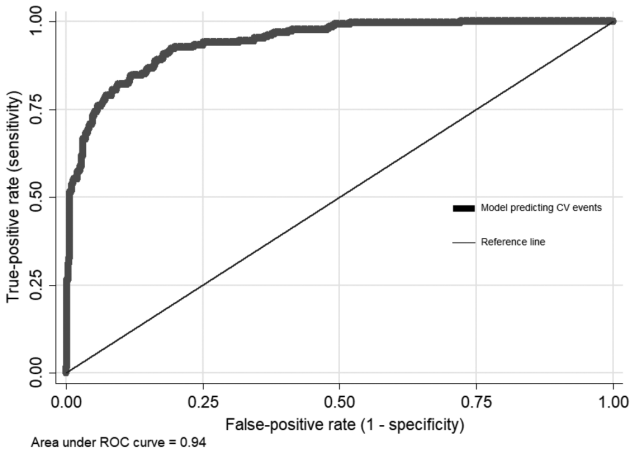
Methods. We conducted a retrospective cohort study of HIV-infected patients seen at Boston Medical Center between March 2012 and January 2017. Exclusion criteria are shown in Figure 1. Patients were divided into model development and validation cohorts. Logistic regression was used to create a risk model for CV events using data from the development cohort. The relationship between risk factors and CVD risk was summarized using a point-based risk-scoring system. Areas under the receiver-operating-characteristics curve (AUC) were used to evaluate model discrimination. The model was subsequently tested using the validation cohort.

Results. Of 3,867 eligible HIV-infected patients, 1,914 individuals met inclusion criteria (Figure 1). There were 256 CV events in the development cohort. Ten independent prognostic factors were incorporated into the prediction function ($P_{model} < 0.001$). The model had excellent discrimination for CVD risk [AUC 0.94; (95% CI:0.93–0.96)] (Figure 2) and included the following variables: male sex ($P < 0.001$), African-American ethnicity ($P = 0.023$), current age ($P = 0.020$), age at HIV diagnosis ($P = 0.006$), peak HIV viral load ($P = 0.012$), nadir CD4 lymphocyte count ($P < 0.001$), hypertension ($P < 0.001$), hyperlipidemia ($P = 0.001$), diabetes ($P < 0.001$), and chronic kidney disease ($P < 0.001$). Scoring system and score sheets of risk estimates were developed to predict CV events in a 10-year follow-up period (Figures 3 and 4). The 10-parameter multiple logistic regression model also had excellent discrimination [AUC 0.96; (95% CI: 0.89–0.99)] when applied to the validation cohort.

Conclusion. We developed and validated a risk-scoring system based on 10 clinical factors that accurately predict the 10-year risk for CV events in an HIV-infected population. This assessment tool may provide clinicians with a rapid assessment of cardiovascular disease risk among HIV-infected patients and inform prevention measures during the era of effective antiretroviral therapy.



*CVD events included sudden cardiac deaths, hospitalizations for unstable angina, myocardial infarctions, strokes, transient ischemic attacks, carotid endarterectomies, coronary artery bypass graft surgeries.



Risk Factor	Categories	Points
Sex	Female	0
	Male	9
Race	White	0
	African-American	3
Hypertension	No	0
	Yes	7
Diabetes	No	0
	Yes	6
Hyperlipidemia	No	0
	Yes	5
Chronic Kidney Disease	No	0
	Yes	7
Current Age (years)	<30	0
	30-39	1
	40-49	2
	50-59	3
	60-69	4
	≥70	5
Age at HIV diagnosis (years)	<15	7
	15-24	6
	25-34	5
	35-44	4
	45-54	3
	55-64	2
	≥65	0
Peak HIV Viral Load (copies/mL)	<20,000	0
	20,000-79,999	1
	80,000-199,999	2
	≥200,000	5
Nadir CD4 Count (cells/ mm^3)	<50	6
	50-119	4
	120-157	2
	≥158	0

Total Points	Risk Estimate (%)	Total Points	Risk Estimate (%)	Total Points	Risk Estimate (%)
0	0.42	21	35.22	41	68.37
1	2.08	22	36.88	42	70.03
2	3.73	23	38.54	43	71.69
3	5.39	24	40.20	44	73.35
4	7.05	25	41.85	45	75.00
5	8.70	26	43.51	46	76.66
6	10.36	27	45.17	47	78.32
7	12.02	28	46.83	48	79.98
8	13.68	29	48.48	49	81.63
9	15.33	30	50.14	50	83.29
10	16.99	31	51.80	51	84.95
11	18.65	32	53.46	52	86.61
12	20.31	33	55.11	53	88.26
13	21.96	34	56.77	54	89.92
14	23.62	35	58.43	55	91.58
15	25.28	36	60.09	56	93.24
16	26.94	37	61.74	57	94.89
17	28.59	38	63.40	58	96.55
18	30.25	39	65.06	59	98.21
19	31.91	40	66.72	60	99.87
20	33.57				

Disclosures. **All Authors:** No reported Disclosures.

977. The Prevalence and Burden of Non-AIDS Co-Morbidities in Women with or At-risk for HIV Infection in the United States

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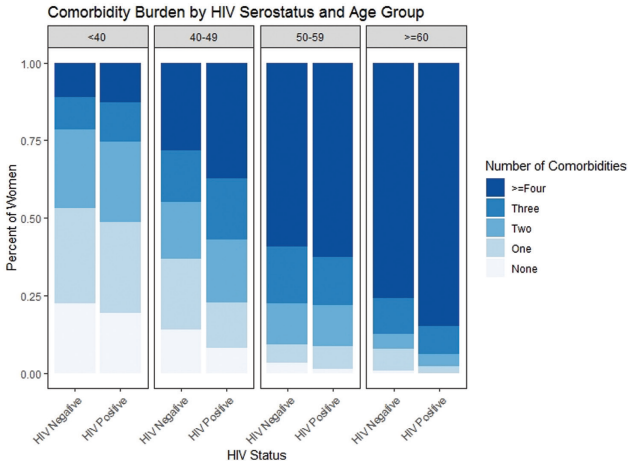
Background. Age-related non-AIDS comorbidities (NACM) increasingly account for morbidity and mortality in persons living with HIV. The burden of NACM and its association with HIV is poorly described in women.

Methods. We analyzed data from HIV+ and at-risk HIV– participants who were followed in the Women's Interagency HIV Study (WIHS) after 2009 (when >80% of participants used antiretroviral therapy). The prevalence of each NACM (defined by a combination of self-report, clinical measurements, and laboratory data) and the number of NACM were summarized at a most recent follow-up visit and were compared by age and HIV serostatus using unadjusted linear regression models.

Results. There were 3232 women (2309 HIV+, 923 HIV–) with a median follow-up of 15.3 years. The median age was 50 years, 65% were black, 38% currently smoked, 71% had ever used illicit drugs, 50% had annual income < $12,000, and median body mass index was 30 kg/m^2. HIV+ women had a median CD4 count of 618 cells/mm^3 and 66% had HIV viral suppression. Among 10 NACM evaluated, the following were more prevalent in HIV+ vs. HIV– women (all $P < 0.01$): psychiatric illness (57%/48%), liver disease (45%/26%), hyperlipidemia (40%/35%), bone disease (40%/33%), chronic kidney disease (15%/7%), and non-AIDS cancer (11%/7%). There was little difference in the prevalence of hypertension (66%/64%), lung disease (41%/43%), diabetes (22%/24%), and cardiovascular disease (19%/19%). Mean number of NACM was higher in HIV+ vs. HIV– women (3.6 vs. 3.0, $P < 0.0001$). Regardless of HIV serostatus, NACM burden significantly increased with age ($P < 0.0001$). Compared with women aged <40 of the same HIV serostatus, the estimated mean difference in NACM (HIV+/HIV–) for those 40–49, 50–59, ≥60 years was 1.1/0.7, 2.3/2.3, and 3.6/3.2, respectively ($P < 0.0001$ for all). Within-age-group comparisons revealed significantly greater NACM burden in HIV+ vs. HIV– women aged 40–49 years ($P < 0.0001$) and ≥60 years ($P = 0.003$), but not in those aged <40 or 50–59 years (HIV*age interaction $P = 0.02$) (figure).

Conclusion. NACM burden was high in both HIV+ and at-risk HIV– women, but higher in HIV+ women overall and in certain age groups. Accumulation of NACM has complex implications for clinical care, medication management, and healthcare screening that must be further examined in this population.



Disclosures. Anandi N. Sheth, MD, MS, Gilead Sciences, Inc.: Research Grant.

978. Changes in BMI Associated with Antiretroviral Regimens in Treatment-Experienced, Virologically Suppressed Individuals Living with HIV

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Background. A potential association between integrase inhibitor (INSTI) use and weight gain has been reported in people living with HIV (PLWH). We examined body mass index (BMI) increases after a switch to dolutegravir (DTG), elvitegravir/cobicistat (EVG/c), raltegravir (RAL), rilpivirine (RPV), or boosted darunavir (bDRV) among virologically suppressed ART-experienced PLWH.

Methods. ART-experienced, suppressed (ART-ES; baseline viral load < 200 copies/mL) PLWH ≥ 18 years of age initiating DTG, EVG/c, RAL, RPV, or bDRV for the first time were identified in the OPERA® cohort. The association between core agents and mean increases in BMI at 6, 12, and 24 months was estimated with multivariable linear regression. Inverse probability-of-censoring weights (IPCW) were used to account for censoring (regimen discontinuation, loss to follow-up, death, pregnancy, or no BMI measured). Analyses were stratified by baseline BMI categories (underweight: <18.5, normal weight: ≥18.5 to <25, overweight: ≥25 to <30, obese: ≥30).

Results. At baseline, endocrine disorders were reported in >40% of PLWH receiving DTG and RAL; >60% were overweight/obese in all groups (Figure 1). Mean BMI (unadjusted) increased for all ARVs over time, with changes at 24 months ranging from 0.30 (DRV) to 0.83 (RPV, Figure 2). At 6 months, the adjusted mean BMI increase was statistically smaller with EVG/c, RAL, and bDRV (range –0.15 to –0.30) than with DTG (Figure 3); these differences only remained significantly different for bDRV at 12 (–0.29) and 24 months (–0.29, Figure 3).