

# In 60-Year-Plus HIV Group With Viral Suppression, 70% Have Low CD4:CD8 Ratio

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from Jules: As I have said **immune distortion by HIV** itself is the underpinning for inflammation & accelerated or premature aging & comorbidities. On the market anti-inflammatories may need yield the best research outcomes and so far have not, so we need to refocus on immunity in HIV to address the senescence & aging problem, looking for the quick fix may not be the best way.

- ❖ The impaired immune restoration, continued immune dysfunction and co-morbidity burden portend a higher risk of non-AIDS morbidity and mortality in these patients.

Age related increase in Co-morbidities (ICD10)			
Variable	Age 60-64 (N=497)	Age 65+ (N=312)	P-value
CKD	46 (9.3)	60 (19.2)	<0.0001
Hypertension	275 (55.3)	227 (72.7)	<0.0001
Diabetes	95 (19.1)	81 (25.9)	0.022
NO comorbidities	109 (21.9)	42 (13.4)	0.003

### Compared to pts with CD4:CD8 > 1, Pts with CD4:CD8 < 1:

- ❖ lower CD4 counts (451 vs 739 cells/mm<sup>3</sup>; (p<0.001).
- ❖ more likely to be male (82% vs 60%; p<0.001)
- ❖ HCVab+ (39% vs 32%; p 0.05).
- ❖ Trended to have more CAD 7% vs 4% (p=0.1)
- ❖ Trended to have more CKD 15% vs 11% (p=0.2).

Mark Mascolini

Analysis of 675 virally suppressed people 60 or older showed that 70% had a low CD4/CD8 ratio (below 1) and one third had a very low ratio (below 0.5) [1]. Coronary artery disease and chronic kidney disease were more prevalent in people with a low CD4/CD8 ratio.

Research links older age to slow CD4-cell gains with antiretroviral therapy (ART), indicating a

persistently impaired immune system. Chicago researchers who conducted the new study noted that a low CD4/CD8 ratio indicates systemic immune activation during successful ART and independently predicts non-AIDS illnesses. They conducted this study to chart comorbidities in older people with HIV and to pinpoint factors tied to a low CD4/CD8 ratio in this group.

The analysis involved people in care at Chicago's CORE Center, part of the Cook County safety-net health system. Eligible participants were at least 60 years old and had at least 1 primary care visit from January 2016 through May 2017. Researchers charted comorbidities in everyone and assessed CD4/CD8 ratio in antiretroviral-treated people with a viral load below 40 copies.

The overall cohort included 809 people with a median age of 63. Women made up 25% of the group, blacks 74%, Hispanics 15%, and whites 8%. CD4 count averaged 504, 13% had a count below 200, and 84% had a viral load below 40 copies. The most common comorbidities were hypertension (62%), chronic obstructive pulmonary disease (23%), diabetes (22%), depression (17%), and osteoarthritis (15%). More than one third of the study group (38%) tested positive for HCV antibody. Half of participants had 1 or 2 comorbidities, 16% had 3, 15% had 4 or more, and 19% had none.

Three comorbidities were significantly more frequent people 65 or older than in those 60 to 64: hypertension (72.7% versus 55.3%,  $P < 0.0001$ ), diabetes (25.9% versus 19.1%,  $P = 0.022$ ), and chronic kidney disease (19.2% versus 9.3%,  $P < 0.0001$ ). The younger group was significantly more likely to have no comorbidities (21.9% versus 13.4%,  $P = 0.003$ ).

Among the 675 people with viral suppression, only 30% had a normal CD4/CD8 ratio (above 1), 33% had a ratio between 0.6 and 1, and 37% had a lower CD4/CD8 ratio. Compared with people who had a normal CD4/CD8 ratio, those with a lower ratio had a lower average CD4 count (451 versus 739,  $P < 0.001$ ) and were more likely to be men (82% versus 60%,  $P < 0.001$ ) and to have HCV antibody (39% versus 32%,  $P = 0.05$ ). The group with a low CD4/CD8 ratio tended to have higher rates of coronary artery disease (7% versus 4%,  $P = 0.1$ ) and chronic kidney disease (15% versus 11%,  $P = 0.2$ ).

The CORE Center investigators cautioned that impaired immune restoration and comorbidity in an aging HIV population "portend a higher risk of non-AIDS morbidity and mortality."

#### Reference

1. Adeyemi O, Diep L. Multi-morbidity and impaired CD4/CD8 ratios in older adults with well controlled HIV. IDWeek 2018, October 3-7, 2018, San Francisco. Abstract 603. Poster at <https://idsa.confex.com/idsa/2018/webprogram/Paper69946.html>

## Conclusions

- ❖ There was a high rate of multi-morbidity among older, predominantly ethnic minorities HIV infected adults with 56% having  $\geq 2$  comorbidities.
- ❖ Discrepancies between ICD-10 documentation and lab based values (GFR) and measurements (BMI) suggest underestimation of co-morbidities documented in the EMR.
- ❖ Despite viral suppression, 70% still had a CD4:CD8 ratio  $< 1$  which likely reflects the effects of older age, and lower CD4 nadir.
- ❖ The impaired immune restoration, continued immune dysfunction and co-morbidity burden portend a higher risk of non-AIDS morbidity and mortality in these patients.
- ❖ This further highlights the need for comprehensive care that addresses the modifiable risk factors and co-morbidities in HIV clinic settings.

## Multi-morbidity and Impaired CD4:CD8 ratios in Older Adults with well controlled HIV.

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## Introduction

- ❖ In the US, over half of adults living with HIV are >50 years old.
- ❖ Older age has been associated with impaired CD4 recovery.
- ❖ A low CD4/CD8 ratio is a reliable marker of systemic immune activation during successful ART and an independent predictor of non-AIDS morbidity.
- ❖ In this study we:
  - (1) describe the overall comorbidity burden
  - (2) assess factors associated with CD4:CD8  $\leq 1$  among HIV+ older adults 60years

## Methods and Materials

- ❖ Study conducted at the CORE Center, Cook County Health and Hospital System; a safety-net health system.
- ❖ We evaluated demographic, clinical, and lab variables in all HIV+ > 60years who had at least 1 primary care visit from 1/2016-5/31/2017
- ❖ Co-morbidities were identified using ICD10 diagnoses in the EMR.
- ❖ CD4/CD8, CD4/CD8 ratios, routinely reported by our immunology lab
- ❖ Analysis on CD4:CD8 ratio was restricted to the 675 patients with viral suppression (defined as HIVRNA < 40 copies/ml)

## Results

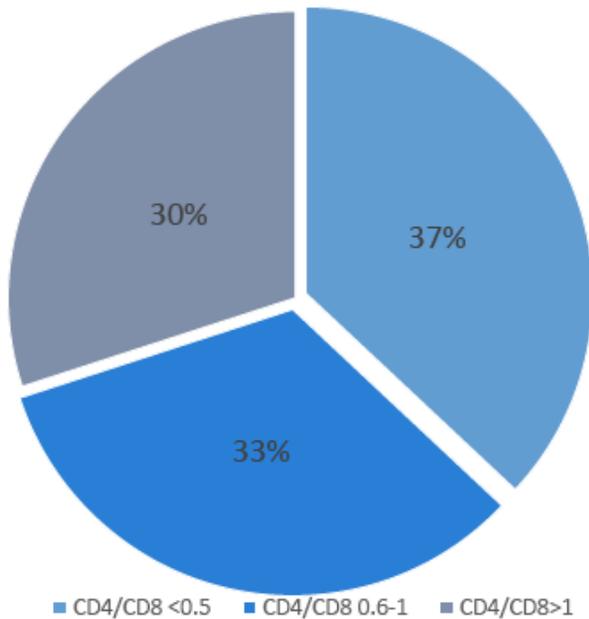
Variable		HIV+ >60years (N=809)
		N(%/SD)
Median Age		63 (60-89)
Female		202 (25)
Race/Ethnicity	Black	598 (74)
	Hispanic	137 (15)
	White	64 (8)
Mean CD4		504 (+/- 298)
CD4 <200		107 (13)
HIVRNA<40		675 (84)
HCV Positive		312 (38)
Comorbidities (%) (ICD-10)	Hypertension	502 (62)
	COPD	183 (23)
	Diabetes	176 (22)
	Depression	140 (17)
	Osteoarthritis	124 (15)
	Chronic Kidney Disease (CKD)*	106 (14)
	Ischemic Heart Dx	106 (14)
	Cancer	103 (13)
	Neuropathy	105 (13)
	Obesity*	59 (7)
	Cerebrovascular Dx	52 (6)
	Heart Failure	45 (5)
Comorbidities	0	151 (19)
	1--2	405 (50)
	3	130 (16)
	4+	123 (15)
Food Insecurity	Insecure	82 (10)
Insurance type	Medicare	321 (40)
	Medicaid	278 (34)
	Uninsured	137(17)
	Private	73 (9)

❖ ICD-10 for CKD documented in 14%

-46% with GFR 60-89 (CKD stage 2); 21% with GFR<60 (CKD stage ≥3)

❖ ICD-10 for obesity documented in 7%; -23% had BMI≥30

**CD4:CD8 ratios in virally suppressed pts ( N=675)**



**Compared to pts with CD4:CD8 > 1, Pts with CD4:CD8 ≤1;**

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**References**

❖ Guihot A , Dentone C, Assoumou Let al. . Residual immune activation in combined antiretroviral therapy-treated patients with maximally suppressed viremia. AIDS 2016;

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❖The CD4:CD8 ratio is associated with IMT progression in HIV-infected patients on antiretroviral treatment. *J IntAIDS Soc*2014; 17(4 suppl3):19723.

❖Serrano-VillarS , SainzT, Lee SAetal. . HIV-infected individuals with low CD4/CD8 ratio despite effective antiretroviral therapy exhibit altered T cell subsets,heightened CD8+ T cell activation, and increased risk of non-AIDS morbidity and mortality. *PLoSPathog*2014; 10:e1004078

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