An adaptation of the VOICE risk score predicted HIV-1 acquisition over 1 year among women participating in ASPIRE. Our findings demonstrate the robustness of our risk scoring tool and the consistency of external validation results. The VOICE risk score should further be considered as a tool to inform scale-up of HIV-1 prevention strategies for women living in Eastern and Southern Africa to identify those with an anticipated HIV-1 incidence of >3%, which represents a priority group for access to PrEP and other HIV-1 prevention interventions.

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Cognitive Impairment in a Clinical Setting

To the Editors:

In research settings, high rates of HIV-associated cognitive impairment (CI) are reported in people living with HIV (PLWH). Despite a substantial decline in the prevalence of HIV-associated dementia after the introduction of combination antiretroviral therapy,[1] milder forms of HIV-associated CI remain frequent, as reported by research groups across North America,[2] Europe,[3,4] and in resource-limited setting.[5–7] Such reports are based on CI being defined using research criteria with several criteria being proposed and in current use. The most widely used definitions are the HAND Criteria,[8] the global deficit score,[9] and the multivariate normative comparison.[10] These criteria use neuropsychological testing results to define CI.

Clinical criteria for diagnosis of HIV CI differ significantly from these research criteria. First, only patients with symptoms of CI would meet the clinical criteria. This is unlike research criteria where otherwise asymptomatic individuals may meet the criteria for definitions of CI. Second, clinical findings are subject to interpretation for a multidisciplinary care-providing team which will often include physicians and psychologists. Third, detailed depression and anxiety questionnaire results are often interpreted alongside neuropsychometric tests to exclude confounding factors such as anxiety and depression, which may not be excluded from research definitions of CI.

To our knowledge, the prevalence of HIV-associated CI has not been determined outside research studies thus far. We aimed to assess the prevalence of CI diagnosed clinically in

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TABLE 1. Characteristics of 217 Individuals

Parameter	Value	
	Median or N	IQR or % of Total Cohort
Demographics		
Age, yr	48	42–54
Sex, male	163	75%
Risk factor HIV acquisition		
IDU	9	4%
MSM	113	52%
Heterosexual	91	42%
Ethnicity		
White	117	54%
Black-African	77	35%
Other ethnic groups	22	10%
HIV disease parameters		
Duration of known infection, yr	13	6–18
$CD4^+$ nadir, cells/μL	120	50–230
Pretreatment pl HIV RNA, log10 copies/mL	4.85	4.46–5.49
Previous AIDS defining illnesses	109	50%
Current $CD4^+$, cells/μL	550	374–737
Current $CD8^+$, cells/μL	930	705–1160
Detectable plasma HIV RNA	53	24%
Plasma HIV-RNA, where detectable, log10 copies/mL	3.10	2.2–3.91
CSF findings (38 examinations)		
Detectable CSF HIV-RNA	22	58%
CSF HIV-RNA, where detected, log10 copies/mL	3.24	2.48–3.81
CSF escape	11/38	29%
Antiretroviral therapy		
Previous ART discontinuation	61	28%
Currently on ART	198	91%
Days of virological suppression	73	28–123
Days of current ART	941	322–1826
PI-based ART	95	48%
NNRTI-based ART	70	35%
INSTI-based ART	3	1%
PI/r monotherapy	1	<1%
Dual therapy (PI/r+3 TC)	16	8%
Other NRTI sparing regimens	8	4%
Efavirenz containing ART	18	9%
Comorbidities		
Dyslipidemia	78	36%
Diabetes	12	6%
Hepatitis C infection	20	9%
Psychiatric comorbidity	139	64%
Anxiety	48	22%
Depression	125	58%
Substance abuse	59	27%
Drug abuse	39	18%
Alcohol abuse	20	9%
Neurological comorbidity		
Previous CNS opportunistic disease	16	8%
Other neurological diseases	33	15%
Headache/migraine	18	8%
Seizures/epilepsy	7	3%
Cerebrovascular diseases	18	8%

3 TC, lamivudinediseases; P; ART, antiretroviral therapy; CNS, central nervous system; CSF, cerebrospinal fluid; EFV, efavirenz; HBcAb, HBc antibodies; IDU, intravenous drug user; IFG, impaired fasting glucose; INSTI, integrase strand transfer inhibitor; IQR, interquartile range; MSM, male who have sex with males; n, absolute number; NNRTI, nonnucleoside reverse transcriptase inhibitors; NRTI, nucleoside reverse transcriptase inhibitors; OD, opportunistic I/r, ritonavir-boosted protease inhibitors; pl, plasma.

a real-life setting within a large specialized center (St. Mary's Hospital, London, United Kingdom).

HIV-positive subjects with a clinical diagnosis of CI were identified by electronic patient records. We included all patients with CI judged to be partly or completely resulting from HIV disease and excluded patients with vertically transmitted HIV infection, patients without CI who underwent formal neurocognitive assessment for research purposes, and subjects with neurological conditions not deemed to be related to HIV infection. The final diagnosis of HIV associated CI was based on clinician assessment.

Descriptive statistics were used to report and synthetize data. Results are reported as median and interquartile range or absolute number and percentage, as appropriate. Cerebrospinal fluid viral escape was defined as the detection of HIV RNA in CSF, when undetectable in plasma, or, otherwise, of a CSF HIV RNA 1 $\log_{10}$ copies/mL higher than concomitant plasma level.

Between 2008 and 2014, 217 PLWH were attending our center with a diagnosis of HIV-associated CI giving a total prevalence of 7.5% (given mean number of PLWH attending our services yearly was 2905 individuals).

Clinical characteristics of these 217 PLWH are reported in the Table 1. At the time when CI was first identified in the clinical setting, symptoms had been present for more than 6 months in most cases (125/217, 58%). The main subjective complains were of memory loss (149/217, 70%) and concentration difficulties (91/217, 42%).

Formal neuropsychological testing was undertaken in 78/217 (35%) individuals and revealed severe deficits in 8/78 (10%), whereas the remaining patients (70/78, 90%) had mild-to-moderate deficits. Formal assessment also detected the presence of associated symptoms of anxiety and depression in a significant proportion of patients (18/78, 23%).

Cerebral magnetic resonance imaging was available for 93/217 (43%) patients and was normal in 33/94 (35%), showed nonspecific white matter abnormalities in 51 subjects (55%) and cerebral atrophy in 12 (13%) subjects. Cerebrospinal fluid examination was undertaken in 38/217 (17%) subjects with 11 (29%) meeting the criteria for CSF viral escape.

We have observed lower rates of HIV-associated CI in a clinical setting compared with the contemporary literature where rates of up to 50% are reported from a research setting.[2–7]

Our results may be expected because of the inherence differences in the methods used to define CI within a research setting compared with the clinical criteria we have used. An important outstanding question is whether identifying the higher rates of CI in research studies is of clinical benefit long term.

Some studies do suggest that identifying CI using the research definitions, where high rates of CI are generally observed, may have clinical benefits. For instance, one large study reported a higher risk of cognitive decline in patients with asymptomatic HIV-associated CI compared with those with normal baseline testing when defining CI using the HAND criteria.[11]

However, there are several limitations to the application of research criteria in clinical practice.[12] First, formal neuropsychological assessment is only accessible in few, large centers and, even there, resources are usually insufficient to investigate all the patients and in a timely manner; second, normative scores are not available for all ethnicity, age, and cultural groups, third, there are several confounding factors that can lead to an incorrect diagnosis of HIV-associated CI,[13] and fourth, there have been concerns about oversensitivity[14] and poor specificity, as suggested by the inconsistency among different methods, especially with regards to milder cases of CI.[10]

Our report has several limitations. Our data were collected retrospectively and were subject to the diligence of clinicians in recording the diagnosis of CI in the electronic notes, which is likely to lead to underreporting. We also did not use a formal definition of CI, but we relied on clinical judgment to obtain a real-life setting. As a consequence, the diagnosis of HIV-associated CI was influenced by the clinician's awareness and sensitivity.

In conclusion, lower rates of CI are observed in clinical practice compared to clinical research studies. These findings are important and reassuring to PLWH that rates of clinically relevant CI may be lower than is reported from the research literature. The inherent differences between the methodology of capturing CI in our clinical study, compared to formal research studies is likely to explain these differences in prevalence.

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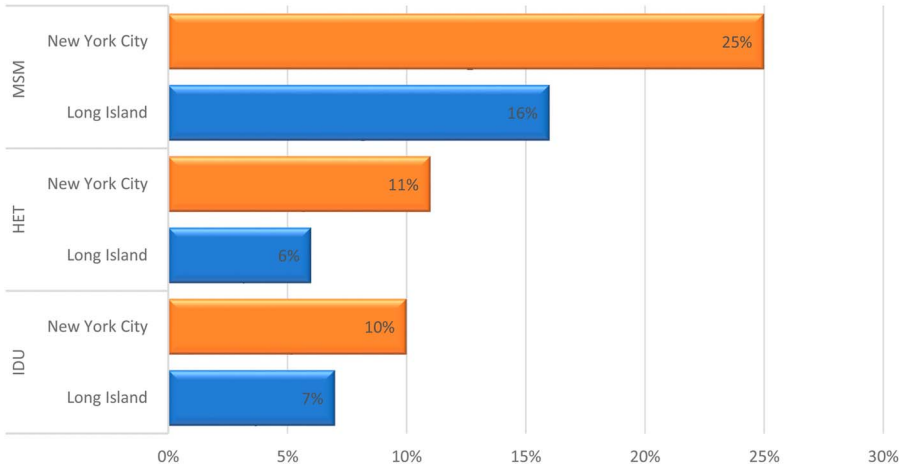
ERRATUM

Differences in Awareness of Pre-exposure Prophylaxis and Post-exposure Prophylaxis Among Groups At-Risk for HIV in New York State: New York City and Long Island, NY, 2011–2013: Erratum

In the article by Walters et al, appearing in *JAIDS: Journal of Acquired Immune Deficiency Syndromes*, Vol. 75 (suppl 3), pp. S383-S391 entitled, Differences in Awareness of Pre-exposure Prophylaxis and Post-exposure Prophylaxis Among Groups At-Risk for HIV in New York State: New York City and Long Island, NY, 2011–2013, the wrong version of Figure 1 was published. The correct version of Figure 1 appears below.



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