Covariate	Prevalence Ratio	p-value	95% LL	95% UL
Age				
17-19 years	1.000	ref	ref	ref
20-29 years	1.319	0.475	0.617	2.821
30-39 years	2.596	0.014	1.209	5.576
40-49 years	6.370	< 0.001	2.956	13.726
50+ years	22.746	< 0.001	10.499	49.280
Female	1.000	ref	ref	ref
Male	1.447	< 0.001	1.25	1.68
BMI				
Underweight	1.000	ref	ref	ref
Normal Weight	2.326	< 0.001	1.929	2.804
Overweight	6.105	< 0.001	4.754	7.839
Obese	9.441	< 0.001	6.747	13.210
Education				
No education	1.000	ref	ref	ref
Highest grade (1-12)	0.892	0.398	0.686	1.162
College/University	1.282	0.192	0.883	1.863
Income Level (monthly)				
< K500	1.000	ref	ref	ref
K500 - K999	1.192	0.327	0.839	1.692
K1000 - K1499	1.303	0.045	1.006	1.687
K1500 - K1999	1.484	0.002	1.153	1.910
> K1999	1.172	0.274	0.881	1.560
Time in Care (90 days)	1.024	0.030	1.011	1.036
Baseline CD4	1.000	0.456	0.999	1.000

[Table 1: Mixed Effects Regression Model Results]

TUPEC278

Opportunities, challenges and implications of m-Health oral cancer screening for HIV-positive individuals in India

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Background: Oral cancer accounts for 30% of all cancers in India. HIV-induced immunosuppression is a risk factor for cancer. Tobacco, alcohol use and oral HPV: risk factors for oral cancer are common among PLWH. Screening for oral cancer in India is sparse and patient to provider ratio high. We evaluated a novel m-Health oral cancer screening approach for PLWH led by non-medical healthcare workers.

Description: Employing a validated oral cancer screening mobile application, PLWH (≥21 years) with no prior history of oral cancer were enrolled June to November 2017 at the ART clinic, Sassoon General Hospitals, Pune, India. Two trained non-medical healthcare workers obtained demographic, HIV, cancer risk factor data and took 8 or more photographs of the oral cavity using a smartphone. Photographs were uploaded to a cloud-based server and reviewed independently by two oral cancer specialists for oral potentially malignant disorders (OPMDs). If disagreement occurred, a third independent senior specialist adjudicated. Image review results were communicated to the healthcare workers. Individuals deemed to have OPMDs were contacted for an in-person clinical evaluation by a specialist and provided additional care as necessary.

Lessons learned: Of 331 enrollees, 50% were male, median age was 40 years (IQR: 34 -45), median CD4 was 529 cells/mm^3 (IQR: 366 - 727), 15% ever smoked, 2% currently smoked; 39% ever chewed tobacco, 26% currently chewed tobacco; 35% ever used alcohol and 1% drank currently. Oral sex was reported by 15% and multiple sexual partners by 29%. Of 2648 images reviewed, 99% were deemed adequate for making a clinical diagnosis; 42 participants (13%) were judged to have OPMDs by two clinicians. They were older (p=0.01), more likely to be male (p=0.05). Of the 42, 36% did not return after being contacted. Of 27 who returned, 52% were diagnosed with OPMDs on clinical examination and provided standardized care.

Conclusions/Next steps: In a cohort with high CD4 count, prevalence of oral cancer risk factors was high. While OPMDs were overdiagnosed on image review, m-Health provided an effective and rapid method of oral cancer screening, without overburdening providers.Scaling up of this strategy will however require better risk communication to improve participant follow-up.

TUPEC280

Heart rate variability, HIV and cardiovascular disease risk in rural South Africa

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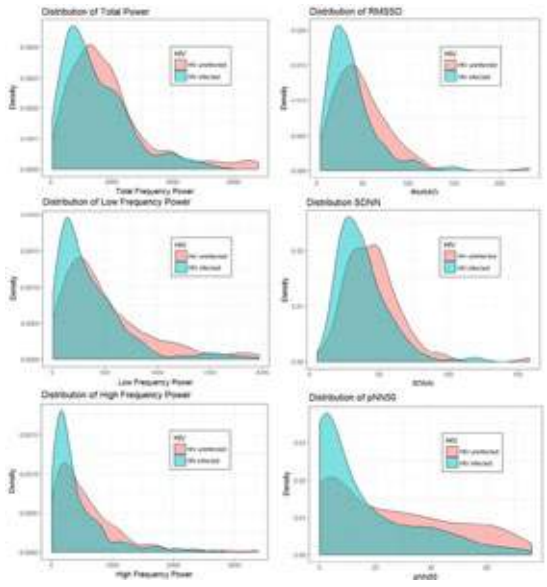
Background: The increased use of anti-retroviral therapy (ART) transformed human immunodeficiency virus (HIV) infection into a chronic disease. Possible HIV-associated complications have emerged including cardiovascular diseases (CVD). Surrogate markers can estimate CVD risk, however data from high HIV-prevalence areas such as rural South Africa are limited. This study aims to determine
1) the distribution of heart rate variability (HRV), a surrogate marker of CVD risk,
2) the association between HIV and HRV and
3) the association between ART and HRV in the rural South African population.

Methods: Participants of the Ndlovu Cohort Study visiting the research centre in Elandsdoorn, South Africa between August and December 2017 were included in this cross-sectional study. HRV was measured using a standardized 5-min resting ECG. HRV was determined using total-frequency (0.04 to 0.5 Hz), low-frequency (0.04 to 0.15 Hz), high-frequency power (0.15 to 0.5 Hz), standard deviation of the normal RR intervals (SDNN), the root of the mean squares of successive RR differences (RMSSD) and the percentage of RR intervals greater than fifty milliseconds different from its predecessor (pNN50). All parameters had a skewed distribution and were log-transformed for multivariable analysis. Information on gender, body mass index (BMI), age, medication use, blood pressure, physical activity, education and income level were obtained using standardized questionnaires. The Kruskal Wallis test was used to test a difference in medians between HIV-infected and HIV-uninfected participants. Multivariable linear regression analyses were performed to identify predictors of HRV.



[Figure 1. The distribution of heart rate variability in a rural South African population]

Model	Variable	Coef.	Std. Error	p-value
Model log RMSSD	Age	-0.02	0.00	0.00
	HIV-infection	-0.16	0.07	0.03
Model log SDNN	Age	-0.01	0.09	0.00
	HIV-infection	-0.11	0.05	0.02
Model log pNN50	Age	-0.02	0.00	0.00
	HIV-infection	-0.11	0.05	0.02
Model log LF power	Age	-0.04	0.00	0.00
	HIV-infection	-0.21	0.10	0.04

[Table 1. Predictors of log RMSSD, log SDNN, log pnn50 and log LF power in a rural South African population]

Results: In total 325 participants were included, of whom 202 (62.2%) were HIV-infected. All HRV parameters (median values) were lower for the HIV-infected compared to the HIV-uninfected participants. The multivariate models showed a significant inverse association between HIV and SDNN, RMSSD, pNN50 and LF power, and between age and all HRV parameters. There was no indication of a difference in HRV between participants on ART versus not on ART.
Conclusions: These findings show that HIV-infected participants have a lower HRV, indicating an increased risk of CVD and this suggests that embedding of CVD prevention in HIV-care is necessary.

TUPEC281

Neurocognitive complaints in people living with HIV: Characterizing clusters of patients with similar changes in neurocognitive complaints in the Swiss HIV Cohort Study

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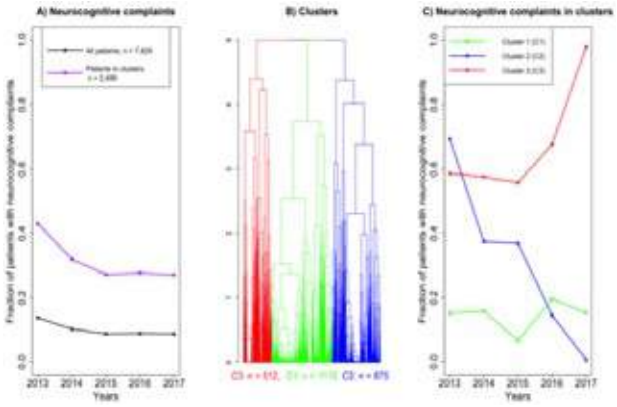
Background: Despite the seminal success of antiretroviral therapy (ART), HIV-associated neurocognitive disorders remain one of the most difficult comorbidities for clinicians to deal with. To date, the pathogenesis and risk factors of neurocognitive disorders are only incompletely understood. We use the extensive, longitudinal data of the Swiss HIV Cohort Study (SHCS) to study self-reported neurocognitive complaints over time.
Methods: Since 2013, SHCS patients are routinely asked twice a year whether they have complaints about memory loss, concentration or slowing down in reasoning. We included patients with at least five follow-up visits at least three years apart in the analysis. A hierarchical clustering algorithm based on the difference of scores calculated from the three questions concerning neurocognitive complaints was applied to detect patients with a similar trajectory of scores. Potential confounders were compared between the clusters using Fisher exact tests.
Results: Of the 7,829 patients included in the analysis, 2,499 reported at least once having frequent neurocognitive complaints, with a decreasing trend over time (Figure A). Via a cluster algorithm, these 2,499 patients were grouped into three main clusters (Figure B), characterized by a constant small fraction (C1), a decrease (C2) and an increase (C3) of neurocognitive complaints over time, respectively (Figure C). There was no significant difference in gender or ethnicity between the clusters. The median birth year in C1 was 1965, in C2 1964 and in C3 1963. Patients in C2 and C3 suffered significantly more often from depression compared to C1 ($p< 0.001$). Moreover, adherence to ART was worst in C3 ($p< 0.001$). No difference in mean CD4 cell counts or viral suppression was found, but patients in C3 had more often a history of central nervous system (CNS) opportunistic infections ($p =0.007$). Differential effects of ART were found with respect to C3.
Conclusions: There is an overall decrease of patients reporting neurocognitive complaints in the years 2013 to 2017 in SHCS patients. However, a cluster of patients with even increasing complaints remains present. Factors associated with being in this cluster (C3) included a slightly higher age, depression, less adherence to ART, history of CNS opportunistic infections and different ART regimens.



[Figure: A) Fraction of patients with neurocognitive complaints. B) The three top clusters. C) Fraction of neurocognitive complaints in the clusters.]

TUPEC282

Frailty-related phenotype, quality of life and non-communicable disease in older Ugandan adults - associations with toxic stress and HIV infection

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Background: Toxic stress may accelerate non-communicable disease (NCD) onset and severity through induction of inflammatory processes and behavioral mal-adaptations. Toxic stress as risk factor for NCD outcomes in older Ugandans with and without HIV-infection is under-investigated.
Therefore, we evaluate the hypothesis that toxic stress is associated with frailty-related phenotype (FRP), low quality of life (QOL) and prevalent NCDs in Ugandan adults at high risk of NCDs.
Methods: We have enrolled, 97 adults ≥50 years with chronic HIV-infection stably linked to HIV-care and 30 age (+/-5 years), sex and village matched HIV-negative community controls from Wakiso District of Uganda. QOL and FRP were defined using the short form Medical Outcomes Study questionnaire and Edmonton frail scale respectively. Number of physician-diagnosed comorbid NCDs (arthritis, depression, ever stroke, diabetes, heart, liver, lung or bone disease) was calculated and dichotomized as none versus any; QOL and FRP outcomes were dichotomized at the mean. Toxic stress was measured using the perceived stress scale and categorized based on tertiles. Odds ratios (OR) and 95% confidence interval (CI) were calculated for HIV- and Stress-related prevalence of low QOL, FRP and presence vs. absence of NCD in SAS v.9.4.
Results: HIV-infected status and stress measures were positively associated with prevalent NCD although neither relationship was statistically significant. The odds of high frailty was 5.2 (95%CI: 1.5, 17.0) times elevated for HIV-infected vs. community controls while low (OR=0.04, 95% CI: 0.1, 1.1) and moderate (OR=0.9, 95%CI:0.3, 2.6) toxic stress level was inversely associated with frailty. High vs. Low QOL was not associated with HIV-infection (OR=0.6, 95%CI:0.2, 2.0) vs. community-control status. However the odds of high QOL was significantly elevated for older adults reporting low (OR = 12.6, 95% CI: 3.8, 41.3) and moderate (OR=11.6, 95% CI:3.7, 36.8) toxic stress.