documented. In addition, predictors of this phenomenon among adult HIV-infected patients in pastoralist communities in Kenya are largely unknown.
Method: This was a retrospective cohort study carried out between January 2014 and December 2017 among HIV-infected patients being followed up at the Baringo County Referral Hospital, Kabarnet, Kenya. Patient files were used to extract the required patient information. Kaplan-Meier, as well as Cox proportional hazards regression models, were used to assess for independent predictors that contributed to mortality of these patients over time.
Results: 332 patients were studied over a median follow-up period of 27.6 months (IQR: 18.5–36.2 months), with a female to male predominance of 1.4:1, a median age of 41 years (IQR: 35–48 years), and a median pre-treatment CD4 count of 207 cells/mm^3 (IQR: 81–316 cells/mm^3). Overall, 6.6% (n=22) of the patients were documented to have died during the study period, with estimated mortality at 3.1% (n=11; 95% CI: 1.9–5.9%) in month 3, 5.1% (n=2; 95% CI: 3.2–8.1%) in month 12, 7.1% (n=5; 95% CI: 4.7–10.6%) in month 24, and 7.1% (n=0; 95% CI: 4.7–10.6%). Independent predictors of mortality were male sex (aHR: 4.90; 95% CI: 1.81–13.27), immunosuppression (CD4 $\leq$ 50 cells/mm^3 [aHR: 3.09; 95% CI: 1.32–7.24], CD4 $\leq$100 cells/mm^3 [aHR: 2.93; 95% CI: 1.24–6.91], and WHO stage III & IV [aHR: 2.80; 95% CI: 1.20–6.55]), and TB/HIV co-infection (aHR: 18.39; 95% CI: 4.71–71.81).
Conclusion: Mortality was noted to be high, especially among the first three months of follow-up, mostly due to immunosuppression and TB/HIV co-infection. Hence, early diagnosis, with expeditious commencement of therapy and frequent follow-up is vital to minimize these numbers.

PE20/6

Trends in underlying causes of death in HIV – infected patients from 2016 to 2018 in Ukraine: a cohort study

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Purpose: Death level in PLHIV in Ukraine remains high. We aimed to examine changes in causes of death in PLHIV over the period 2016–2018.
Method: A retrospective cohort study was conducted at Poltava Regional HIV Center in which routinely collected data for PLHIV enrolled and followed up between January 2016 and December 2018 were abstracted from the clinic's database. Patient follow up was initiated from the day of the first visit in clinic until exit by death, transfer out or loss to follow up. Percentage of deaths for each cause across calendar years was analyzed using Chi-square test.
Results: 268 of the 3559 study participants died during 9706 person-years of follow- up (crude incidence mortality rate, 2.7 per 100 person-years [95% CI 2.2–3.3]). 147 people were transferred out and 85 lost-to-follow-up. Compared with those that survived (n=3059), we recorded a higher proportion of deaths in men - 176 (65%) vs 1553 (50.7%), intravenous drug use risk for HIV acquisition - 94 (35.1%) vs 885 (28.9%), presented for care late in course of their HIV infection 126 (47.1%) vs 793 (25.9%), hepatitis C virus-positive - 185 (69%) vs 1850 (60.5%), previous AIDS diagnosis -173 (64.5%) vs 1070 (34.9%) (p<0.001), never exposed to ART 92 (34.3%) vs 176 (5.8%)(p<0.001). The most common causes of death were AIDS-related causes, followed by liver disease, and cardiovascular disease.

Table 1. Specific causes of death, 2016–2018

	Number of deaths (%)
Total death	268 (100%)
AIDS-related, including:	164 (61.2%)
- tuberculosis	80 (29.8%)
- toxoplasmosis of brain	33 (12.3%)
- pneumocystis pneumonia	12 (4.5%)
Liver-related (chronic viral hepatitis)	59 (22.0%)
Cardiovascular disease (CVD)-related	16 (5.9%)
Other or unknown, including:	29 (10.9%)
- drug overdose	17 (6.4%)

While AIDS remained the most common cause of death throughout the period 2016–2018 (62.6%–63.5%), the percentage of liver-related deaths increased (12% to 25.3%) and CVD- related deaths increased (2.6% to 10.6%), p<0.05, χ^2 test.
Conclusions: AIDS remained the most common cause of death over the period 2016–2018 in Ukraine. The percentage of liver-related and CVD-deaths increased, making it the joint leading non-AIDS cause of death with AIDS-related deaths.

PE20/7

Dynamic of CD4+/CD8+ ratio in late presenters: impact on clinical outcomes

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Purpose: To evaluate whether CD4+/CD8+ cell ratio (CD4/CD8) measured over time is associated with the development of AIDS-defining events (AE), non-AIDS defining events (NAE) and mortality in HIV+ late presenter (LP) individuals from the cohort of the Spanish HIV/AIDS Research Network (CoRIS).
Method: Late presentation was defined as HIV diagnosis with CD4+cell count $\leq$350 cells/μL or an AIDS defining event within 6 months of enrolment. Cox proportional hazard models allowing time-varying covariates were used to estimate hazard ratios (HR) for the association between time-varying CD4/CD8 and the first AE, the first NAE (cardiovascular, kidney, liver, neoplasms, bone, neuropsychiatric, metabolic or other event) and death. Models were adjusted for CD4+cell count and age, as time-varying covariates, transmission category, country of origin, educational level, presence of HCV antibodies, presence of HBV surface antigen and HIV-RNA at enrolment.
Results: Of the 10,486 out of 15,509 CoRIS participants by November 2018 included in the study, 4,643 were LP [prevalence: 44.3% (95% CI: 43.3; 45.2)]. Among LP, 159 patients had at least one AE [incidence: 0.61 (95% CI: 0.52; 072)×100 person-years], 593 experienced at least one NAE [incidence: 2.53 (95% CI: 2.33; 2.74)×100 person-years] and 213 died [mortality rate: 0.79 (95% CI: 0.68; 0.90)×100 person-years]. CD4/CD8<0.4 over time was associated with an increased risk of AE [HR: 1.79 (95% CI: 1.09; 2.96)] and NAE [HR: 1.25 (1.01; 1.55)], mainly cardiovascular events, as detailed in table 1 and with all-causes mortality [HR: 1.37 (0.96, 1.95)].

Association between CD4+/CD8+ ratio and the first non-AIDS event in late presenters (N=4,643)

	N of HIV+ late presenter individuals with at least one NAE and CD4/CD8 <0.4/CD4/CD8 ≥0.4	Incidence rate x 100 person-years (95% CI)	Adjusted HR for CD4+/CD8+ <0.4 vs ≥0.4
Cardiovascular events	38/45	0.35 (0.28; 0.44)	1.97 (1.18, 3.29)
Kidney events	18/38	0.24 (0.18, 0.31)	0.87 (0.41, 1.84)
Liver events	15/18	0.14 (0.10, 0.20)	0.60 (0.27, 1.37)
Neoplasms	58/83	0.60 (0.51; 0.71)	1.06 (0.68, 1.64)
Bone Events	32/62	0.40 (0.32, 0.49)	1.31 (0.78, 2.18)
Neuropsychiatric events	47/62	0.46 (0.38; 0.56)	1.45 (0.87, 2.40)
Metabolic events	38/61	0.42 (0.34, 0.51)	1.57 (0.93, 2.65)
Other events	6/3	0.04 (0.02, 0.07)	0.78 (0.20, 2.98)

Conclusion: Low CD4/CD8 measured over time was associated with increased risk of AE, NAE and mortality regardless of CD4+cell count. These preliminary findings supports the predictive role of variation of CD4/CD8 over time and the need for further research on therapeutic tools, whether antiretroviral therapy or not, to improve the recovery of the CD4/CD8.

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DAIG
Deutsche AIDS-Gesellschaft e.V

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