POSTER

Epidemiology

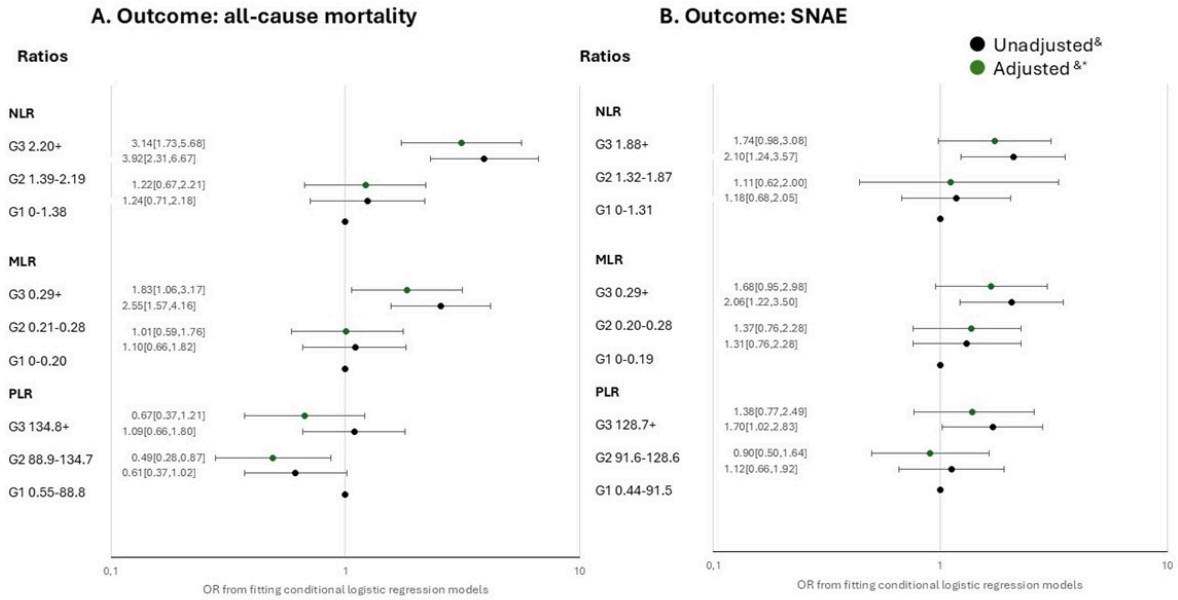
P 45 Association of neutrophil-to-lymphocyte ratio, monocyte-to-lymphocyte ratio, and platelet-to-lymphocyte ratio values with mortality and the occurrence of non-AIDS and AIDS events

Authors
V. Spagnuolo[1], A. Cozzi-Lepri[2], A. Cervo[3], G. Madeddu[4], A. Bandera[5], V. Mazzotta[6], G. D'Ettorre[7], G. Orofino[8], L. Sarmati[9], L. Calza[10], A .Mondi[6], A. Di Biagio[11], A. Cingolani[12], C. Mussini[3], A. Antinori[6], A. Castagna[1] on behalf of the Icona Foundation Study Group

Affiliation
[1]Unit of Infectious Diseases; IRCCS San Raffaele Hospital, Milan, Italy, [2]Centre for Clinical Research, Epidemiology, Modelling and Evaluation (CREME), Institute for Global Health, UCL, London, UK, [3]Department of Infectious Diseases, Azienda Ospedaliero-Universitaria di Modena, Policlinico di Modena, University of Modena and Reggio Emilia, Modena, Italy, [4]Unit of Infectious Disease, Department of Medicine, Surgery and Pharmacy, University of Sassari, Sassari, Italy, [5]Clinic of Infectious Diseases, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Department of Pathophysiology and Transplantation, University of Milan, Milan, Italy, [6]Clinical Infectious Diseases Department, National Institute for Infectious Diseases Lazzaro Spallanzani IRCCS, Rome, Italy, [7]Department of Public Health and Infectious Diseases, Umberto I Hospital, Sapienza University of Rome, Rome, Italy, [8]Division I of Infectious and Tropical Diseases, ASL Città di Torino, Turin, Italy, [9]Clinical Infectious Diseases, Department of System Medicine, Tor Vergata University, Policlinico Tor Vergata of Rome, Rome, Italy, [10]Infectious Diseases Unit, IRCCS Policlinico di Sant'Orsola, University of Bologna, Bologna, Italy, [11]Infectious Disease Clinic, IRCCS Ospedale Policlinico San Martino, Department of Health Science (DISSAL), University of Genova, Italy, [12]UOC Malattie Infettive, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Dipartimento di Sicurezza e Bioetica, Università Cattolica del Sacro Cuore, Rome, Italy

ABSTRACT
Background: In people living with HIV (PWH) neutrophil-to-lymphocyte ratio (NLR), monocyte-to-lymphocyte ratio (MLR), and platelet-to-lymphocyte ratio (PLR) measured at antiretroviral therapy (ART) initiation have been shown to be predictive of mortality and the occurrence of serious non-AIDS (SNAE) and AIDS-defining events (ADE) but their role during ART remains poorly investigated.
This study assessed the association between current NLR, MLR and PLR levels with mortality and the occurrence of SNAE and ADE in PWH.
Methods: We conducted 3 separate matched case-control studies nested within the ICONA Foundation Study cohort. Cases were defined as PWH who died or experienced a SNAE or ADE and were matched for age and CD4+ cell count pre-ART initiation. ART initiation was considered the baseline.
In each matched set, the survival time of controls was censored at the time matching the date of death/SNAE/ADE of the case (index date). The association between the last NLR, MLR and PLR values before the index date and outcomes was assessed using univariable and multivariable conditional logistic regression models. Ratios were fitted as 3-way categorical variables (G1-G3) using the tertiles of the distributions in the samples.
Results: We included 539 (140 cases), 525 (124 cases), and 329 (109 cases) PWH for the three analyses of all-cause mortality, occurrence of SNAE, and ADE, respectively. In the analysis with the primary endpoint of death, median age was 48 (IQR 40-57) years, 22% females, current CD4+ count was 575 (387-846) cells/mm3, 93% with HIV-RNA < 50copies/mL, on ART for a median of 8.3 (5.0-16.8) years. G1-G3 for NLR, MLR and PLR were defined using the cut-offs: (1.4; 2.2), (0.2; 0.29), (88.8; 134.7), respectively. In the analyses of all-cause mortality and SNAE, the proportion of participants in the G3 was higher in cases than controls (45% vs 31%; p<0.001 for NLR and 48% vs 31% for MLR; p <0.001 respectively). After adjusting for confounding (Figure 1), NLR values G3 vs. G1 were still associated with a higher risk of both all-cause mortality [aOR= 3.14 (1.73, 5.68)] and the occurrence of SNAE [aOR= 1.74 (0.98, 3.08)]. In addition, still compared to G1, MLR values in G3 were associated with a higher risk of death/SNAE [aOR= 1.83 (1.06, 3.17) and 1.68 (0.95, 2.98), respectively]. No evidence of an association was observed for any of the ratios in the ADE analysis.
Conclusions: In our analysis, current higher levels of inflammation markers (namely NLR and MLR) were associated with a higher risk of all-cause mortality and SNAEs occurence. As these biomarkers are derived from routinely collected blood samples, they are promising prognostic tools for use in daily practice.

Figure 1. Multivariable conditional logistic regression models



[&]matched for age and CD4 count at ART initiation
[*]adjusted for sex at birth, year of ART initiation, current HCV status, HIV-RNA at ART initiation and current CD4 count and HIV-RNA