Suppl Table 1

Table S1: Checkpoint multiplex protein panel

Checkpoint multiplex protein panel 1	Checkpoint multiplex protein panel 2
1. BTLA (B- and T-lymphocyte attenuator)* 2. CD27 (Cluster of differentiation 27)# 3. CD28 (Cluster of differentiation 28)* 4. CD40 (Cluster of differentiation 40)# 5. CD80/B7-1 (Cluster of differentiation 80/B7-1) * 6. CD86/B7-2 (Cluster of differentiation 86/B7-2* 7. CTLA-4 (cytotoxic T-lymphocyte-associated protein 4)* 8. GITRL (Ligand for receptor TNFRSF18/AITR/GITR)# 9. GITR (Glucocorticoid-induced TNFR-related protein) # 10. HVEM (Herpesvirus entry mediator) # 11. ICOS (Inducible T-cell costimulator)* 12. LAG-3 (Lymphocyte-activation gene 3)* 13. PD-L1 (Programmed death-ligand 1)* 14. PD-L2 (Programmed death-ligand 2)* 15. PD-1 (Programmed cell death protein 1)* 16. TIM-3 (T-cell immunoglobulin and mucindomain containing-3) * 17. TLR-2 (Toll like receptor 2) *	1. 4-1BBL/TNFSF9 # 2. 5'-NT/CD73 (5'-nucleotidase), 3. APRIL (TNFSF13) # 4. Arginase-1 5. B7-H2/ICOSL (Inducible T cell costimulator ligand* 6. B7-H3/CD276* 7. B7-H4/VTCN1 (V-set domain-containing T-cell activation inhibitor 1)* 8. B7-H5/VISTA (V-set immunoregulatory receptor)* 9. B7-H6 (Natural killer cell cytotoxicity receptor 3 ligand) * 10. BAFF/BLyS (TNFSF13B) # 11. CD25/IL-2Rα (Interleukin-2 receptor alpha) 12. CD30/TNFRSF8# 13. CD40L (CD40 ligand) # 14. CD137/4-1BB (TNFRSF9) # 15. CD226/DNAM-1 (DNAX accessory molecule 1)* 16. E-Cadherin 17. FGL1/Hepassocin (Fibrinogen-like protein 1) 18. Galectin-1 (Gal-1)* 19. Galectin-3 (Gal-3)*, 20. Granulysin* 21. Granzyme B* 22. IDO1 (Indoleamine 2,3-dioxygenase 1) 23. MICA (MHC class I polypeptide-related sequence A)* 24. MICB (MHC class I polypeptide-related sequence B)* 25. Nectin-2 (PVRL2, CD112)* 26. Nectin-4 (PVRL4)* 27. OX40/CD134 (TNFRSF4) # 28. Perforin* 29. PVR/CD155 (Poliovirus receptor cell adhesion molecule) * 30. Siglec-7 (Sialic acid-binding Ig-like lectin 7, CD328)* 31. Siglec-9 (Sialic acid-binding Ig-like lectin 9, CD329)*
*#TNF superfamily and *Ig superfamily molecules as some additional molecules were determined using Milliplex Checkpoint Protein Panel 1 and Panel 2 with the Flexmap3D instrument. Biomarker concentrations were determined based on standard curves and expressed in pg/ml.*	

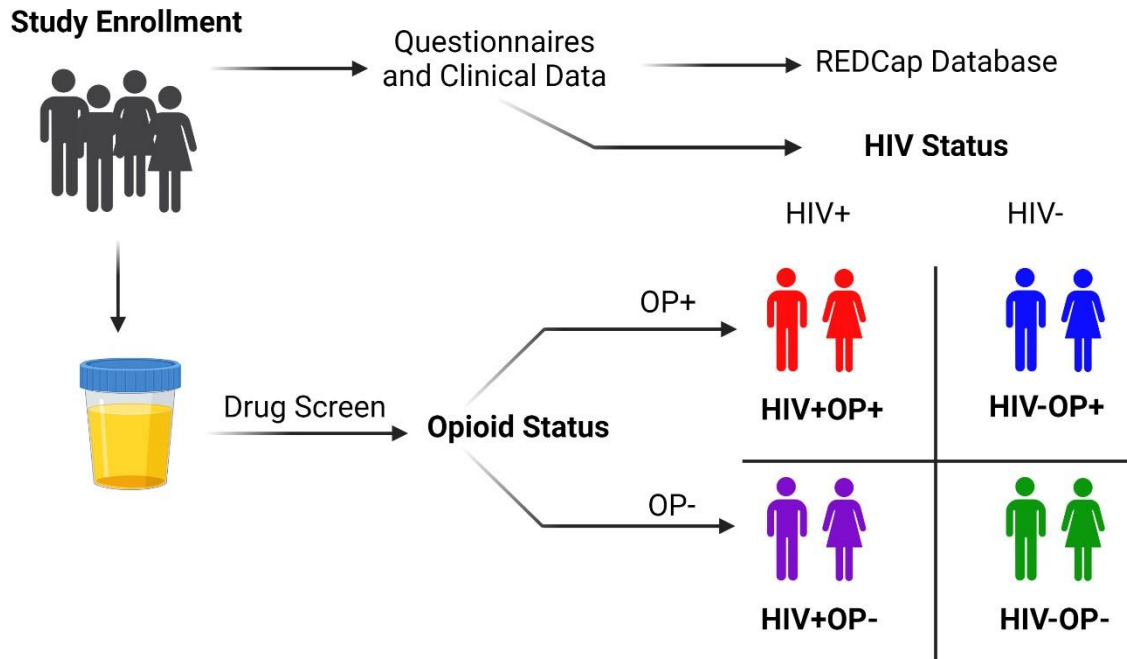**Figure Legends for Supplementary Figures:**

Figure S1: Opioid Immunity Study (OPIS) Study Design**.** (A) Four groups are recruited based on HIV status and opioid use status. Urine samples are collected to test opioid and polydrug use. Red represents HIV+OP+, Blue represents HIV-OP+, Purple represents HIV+OP-, and Green represents HIV-OP-. Participants of all genders are recruited into the study.
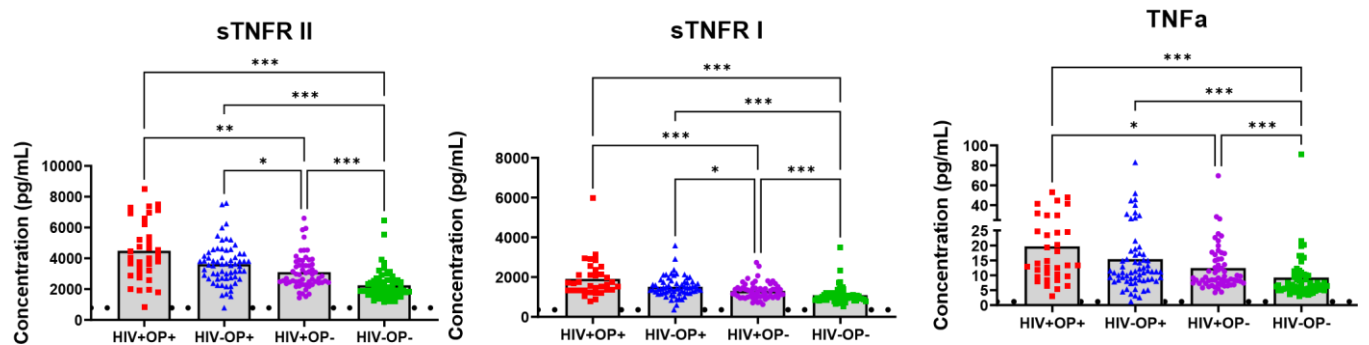Design Figure was created with BioRender.com.

Figure S2: Raw Baseline Concentration of sTNFRII, sTNFRI and TNFa**.** Individual box plots with mean and SEM confidence intervals of sTNFRII, sTNFRI and TNFa. Red represents HIV+OP+, Blue represents HIV-OP+, Purple represents HIV+OP-, and Green represents HIVOP-. Nonparametric Kruskal Wallis test was corrected for multiple comparisons by controlling the FDR (original FDR method of Benjamini and Hochberg). Adjusted p-values: ****$p<0.0001$, ***$p<0.001$, **$p<0.01$, *$p<0.05$. The limit of detection is indicated with a dotted line.
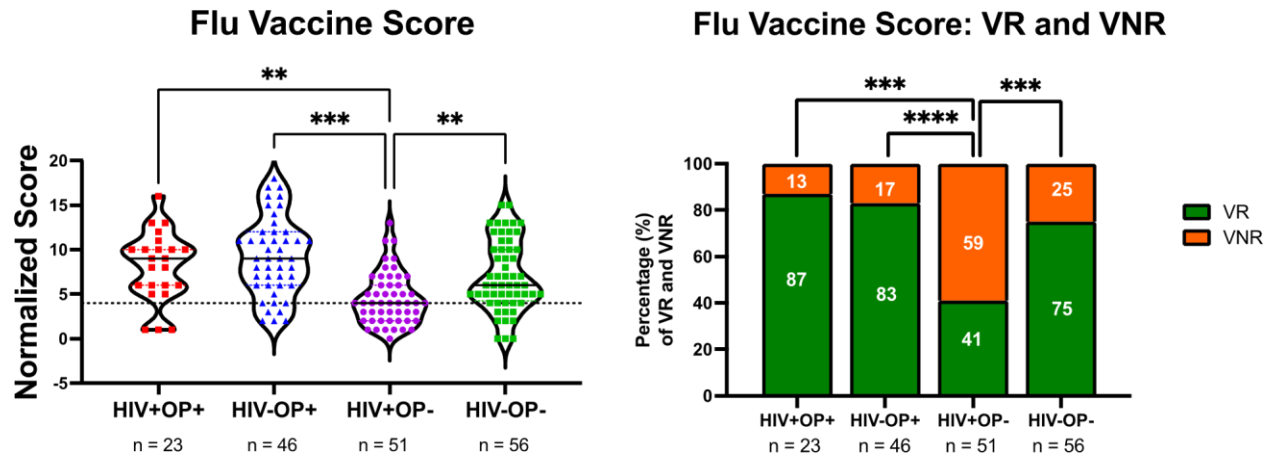
Figure S3: Violin dot plots with the median expression of normalized flu vaccine score. (Non-parametric Kruskal-Wallis test with Dunn's multiple group comparisons. **p<0.01, ***p<0.001). Stacked bar plots displaying percentages of vaccine responders (VR) and vaccine non-responders (VNR) based on normalized flu vaccine scores. Vaccine responders are defined by a vaccine score greater than 4, while people with a vaccine score of less than or equal to 4 were classified as vaccine non-responders (Non-parametric Chi-Square test with Fisher's Exact Test comparison between two groups. **p<0.01), ***p<0.001, ****p<0.0001).