Supplementary File 1: PRISMA Checklist

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	N/A
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4 & 5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5 & 6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	4-5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5-6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	N/A

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	5-6
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	6-8
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	6
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	N/A
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	6
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	8-10
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	10
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	11

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Supplementary File 2: Electronic Database Search Strategy

Electronic database search strategy for a systematic review

Inflammation related terms

“Inflammation” OR "inflammat*" OR “Biomarker” OR “immune*"

Endothelial dysfunction related terms

“Endothelial activation” OR "Endothelial dysfunction" OR "endothelium" OR "Endothelial cell" OR "Endotheliocyte" OR "Endothelial cell function" OR "Endotheliosis" OR "Microvascular endothelial dysfunction" OR "Microvascular endothelial function" OR "Microvascular endothelial impairment" OR "Microvascular endothelial injury" OR "Microvascular endothelial damage" OR "Endothelial cytotoxicity" OR "Endothelial disease" OR "Vascular endothelial dysfunction" OR "Vascular endothelial function" OR "Vascular endothelial impairment" OR "Microvascular endothelial activation" OR "Endothelial impairment"

HIV Drugs

"ART" OR "antiretroviral treatment" OR "cART" OR "Combination Antiretroviral" OR "HAART" OR "Highly Active Antiretroviral Therapy" OR "combination antiretroviral therap*" OR "ANTIRETROVIRAL THERAPY"

HIV related terms

"Human immunodeficiency virus" OR "HIV" OR "AIDS" OR "Acquired immune deficiency syndrome" OR "aids virus" OR "acquired immune deficiency syndrome*"

Complete search strategy

"Inflammation" OR "inflammat*" OR "Biomarker" OR "Marker" AND "Endothelial activation" OR "Endothelial dysfunction" OR "endothelium" OR "Endothelial cell" OR "Endotheliocyte" OR "Endothelial cell function" OR "Endotheliosis" OR "Microvascular endothelial dysfunction" OR "Microvascular endothelial function" OR "Microvascular endothelial impairment" OR "Microvascular endothelial injury" OR "Microvascular endothelial damage" OR "Endothelial cytotoxicity" OR "Endothelial disease" OR "Vascular endothelial dysfunction" OR "Vascular endothelial function" OR "Vascular endothelial impairment" OR "Microvascular endothelial activation" OR "Endothelial impairment" AND "ART" OR "antiretroviral treatment" OR "cART" OR "Combination Antiretroviral" OR "HAART" OR "Highly Active Antiretroviral Therapy" OR "combination antiretroviral therap*" OR "ANTIRETROVIRAL THERAPY" AND "Human immunodeficiency virus" OR "HIV" OR "AIDS" OR "Acquired immune deficiency syndrome" OR "aids virus" OR "acquired immune deficiency syndrome*"

Supplementary File 3: Downs and Black Checklist

Appendix

Checklist for measuring study quality

Reporting

1. *Is the hypothesis/aim/objective of the study clearly described?*

yes	1
no	0

2. *Are the main outcomes to be measured clearly described in the Introduction or Methods section?*
   If the main outcomes are first mentioned in the Results section, the question should be answered no.

yes	1
no	0

3. *Are the characteristics of the patients included in the study clearly described ?*
   In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.

yes	1
no	0

4. *Are the interventions of interest clearly described?*
   Treatments and placebo (where relevant) that are to be compared should be clearly described.

yes	1
no	0

5. *Are the distributions of principal confounders in each group of subjects to be compared clearly described?*
   A list of principal confounders is provided.

yes	2
partially	1
no	0

6. *Are the main findings of the study clearly described?*
   Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).

yes	1
no	0

7. *Does the study provide estimates of the random variability in the data for the main outcomes?*
   In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes	1
no	0

8. *Have all important adverse events that may be a consequence of the intervention been reported?*
   This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).

yes	1
no	0

9. *Have the characteristics of patients lost to follow-up been described?*
   This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.

yes	1
no	0

10. *Have actual probability values been reported(e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?*

yes	1
no	0

External validity

All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.

11. *Were the subjects asked to participate in the study representative of the entire population from which they were recruited?*
    The study must identify the source population for patients and describe how the patients were selected. Patients would be representative if they comprised the entire source population, an unselected sample of consecutive patients, or a random sample. Random sampling is only feasible where a list of all members of the relevant

population exists. Where a study does not report the proportion of the source population from which the patients are derived, the question should be answered as unable to determine.

yes	1
no	0
unable to determine	0

12. *Were those subjects who were prepared to participate representative of the entire population from which they were recruited?*
The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.

yes	1
no	0
unable to determine	0

13. *Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?*
For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.

yes	1
no	0
unable to determine	0

Internal validity - bias

14. *Was an attempt made to blind study subjects to the intervention they have received ?*
For studies where the patients would have no way of knowing which intervention they received, this should be answered yes.

yes	1
no	0
unable to determine	0

15. *Was an attempt made to blind those measuring the main outcomes of the intervention?*

yes	1
no	0
unable to determine	0

16. *If any of the results of the study were based on "data dredging", was this made clear?*
Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.

yes	1
no	0
unable to determine	0

17. *In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls ?*
Where follow-up was the same for all study patients the answer should yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no.

yes	1
no	0
unable to determine	0

18. *Were the statistical tests used to assess the main outcomes appropriate?*
The statistical techniques used must be appropriate to the data. For example non-parametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes	1
no	0
unable to determine	0

19. *Was compliance with the intervention/s reliable?*
Where there was non compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.

yes	1
no	0
unable to determine	0

20. *Were the main outcome measures used accurate (valid and reliable)?*

For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.

yes	1
no	0
unable to determine	0

Internal validity - confounding (selection bias)

21. *Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?*
For example, patients for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and case-control studies where there is no information concerning the source of patients included in the study.

yes	1
no	0
unable to determine	0

22. *Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time?*
For a study which does not specify the time period over which patients were recruited, the question should be answered as unable to determine.

yes	1
no	0
unable to determine	0

23. *Were study subjects randomised to intervention groups?*
Studies which state that subjects wererandomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no because it is predictable.

yes	1
no	0
unable to determine	0

24. *Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?*
All non-randomised studies should be answered no. If assignment was concealed from patients but not from staff, it should be answered no.

yes	1
no	0
unable to determine	0

25. *Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?*
This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In non-randomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no.

yes	1
no	0
unable to determine	0

26. *Were losses of patients to follow-up taken into account?*
If the numbers of patients lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes.

yes	1
no	0
unable to determine	0

Power

27. *Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?*
Sample sizes have been calculated to detect a difference of x% and y%.

	Size of *smallest* intervention group	
A	$<n_1$	0
B	n_1–n_2	1
C	n_3–n_4	2
D	n_5–n_6	3
E	n_7–n_8	4
F	n_8+	5

Supplementary file 4: Quality of Evidence

	Downs and Black domains																														
Eligible studies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	***Total scores***	**11**	**12**	**13**	***Total score***	**14**	**15**	**16**	**17**	**18**	**19**	**20**	***otal score***	**21**	**22**	**23**	**24**	**25**	**26**	***otal score***	**27**	**Total score/study**	**Judgement**
	REPORTING BAIS											**EXTERNAL VALIDITY**				**INTERNAL VALIDITY**								**SELECTION BIAS**							**POWER**		
Francisci *et al* ., 2014	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	24	Excellent
Pirs *et al* ., 2014	1	1	1	1	2	1	1	1	1	1	***11***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	25	Excellent
Young *et al* ., 2014	1	1	1	1	2	1	1	1	1	1	***11***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	1	24	Excellent
Leng *et al* ., 2015	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	1	23	Excellent
So-Armah *et al* ., 2016	1	1	1	1	2	1	1	1	1	0	***10***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	0	22	Excellent
Calza *et al* ., 2017	1	1	1	1	2	1	1	1	1	1	***11***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	25	Excellent
Dirajlal-Fargo *et al* ., 2017	1	1	1	1	2	1	1	1	1	1	***11***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	1	24	Excellent
Iantorno *et al* ., 2017	1	1	1	1	2	1	1	1	1	0	***10***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	0	22	Excellent
deFilippi *et al* ., 2018	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	1	1	1	1	1	1	1	***7***	1	1	1	1	1	1	***6***	1	27	Excellent
Heijden *et al* ., 2018	1	1	1	1	2	1	1	1	1	0	***10***	1	1	0	***2***	0	1	1	1	1	1	1	***6***	1	1	1	0	1	0	***4***	0	22	Excellent
Siedner *et al* ., 2018	1	1	1	1	2	1	1	1	1	1	***11***	1	1	1	***3***	0	0	1	1	1	1	1	***5***	1	1	0	0	1	1	***4***	1	24	Excellent
O'Halloran *et al* ., 2018	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	24	Excellent
Kumar *et al* ., 2020	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	24	Excellent
Gonzalez-Cordon *et al* ., 2021	1	1	1	1	2	1	1	1	0	1	***10***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	23	Excellent
Cossarizza *et al* ., 2023	1	1	1	1	2	1	1	1	1	1	***11***	1	1	0	***2***	0	0	1	1	1	1	1	***5***	1	1	1	0	1	1	***5***	1	24	Excellent
Mean scores											***10,73***				***2,47***								***5,20***							***4,60***	***0,80***		

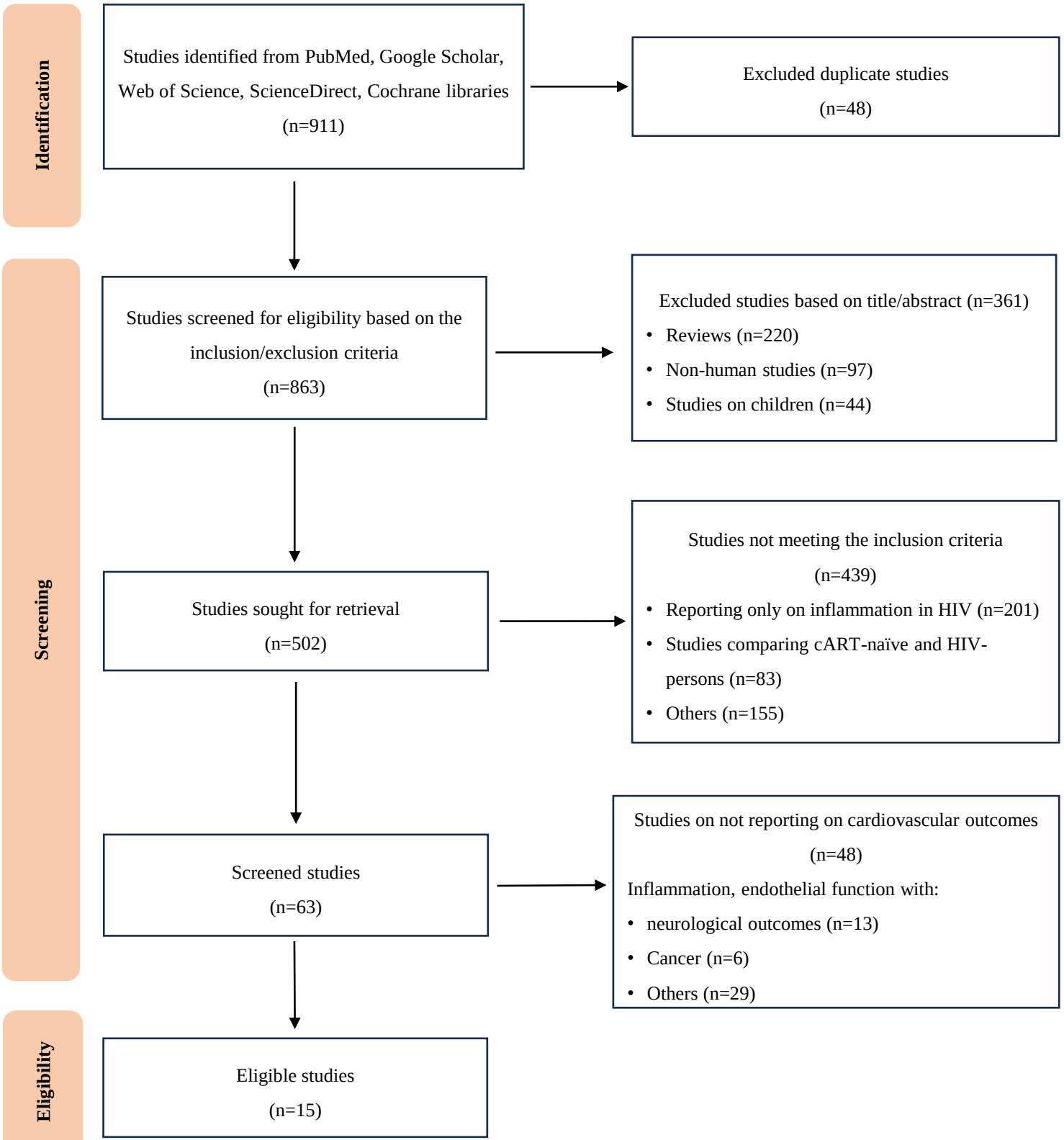
Identification
Studies identified from PubMed, Google Scholar, Web of Science, ScienceDirect, Cochrane libraries (n=911)
Excluded duplicate studies (n=48)
Screening
Studies screened for eligibility based on the inclusion/exclusion criteria (n=863)
Excluded studies based on title/abstract (n=361)
• Reviews (n=220)
• Non-human studies (n=97)
• Studies on children (n=44)
Studies sought for retrieval (n=502)
Studies not meeting the inclusion criteria (n=439)
• Reporting only on inflammation in HIV (n=201)
• Studies comparing cART-naïve and HIV- persons (n=83)
• Others (n=155)
Screened studies (n=63)
Studies on not reporting on cardiovascular outcomes (n=48)
Inflammation, endothelial function with:
• neurological outcomes (n=13)
• Cancer (n=6)
• Others (n=29)
Eligibility
Eligible studies (n=15)

Figure 1:

Table 1: An abstract of research reports outlining the physio-pathological link connecting inflammation and endothelial activation in people living with the human immunodeficiency virus (PLWH) on combination antiretroviral therapy (cART) for a period equal or less than 12 months.

Authors, year	Region of study	Study design	Population	Intervention	Key observations
Francisci *et al*., 2014 [31]	Italy	Pilot study	PLWH on cART (n=20), having an average age of 47 years (75% male). Majority of the participants were of Caucasian (90%) ethnicity.	Received raltegravir (RAL) or maraviroc (MVC)-based regimens for a period of 12 months	Inflammatory markers like interleukin (IL-6), tumor necrosis factor alpha (TNF- α), IL-17, and monocyte chemoattractant protein-1 (MCP-1), including endothelial activation makers such as circulating vascular cell adhesion molecule-1 (sVCAM-1), and plasminogen activator inhibitor-1 (PAI-1) were elevated. But reduced by treatment.
Leng *et al*., 2015 [32]	United States	Observational study	PLWH on cART (n=316), having an average age of 47 years (69% male). Majority of the participants (88%) were of African American ethnicity.	The cART regimen was not disclosed; however, participants were monitored for 1 month	Inflammatory markers such as IL-6 and soluble tumor necrosis factor receptor-2 (sTNFR-2) were elevated. Moreover, IL-6 levels were linked with age, sex, HIV status, tumor necrosis factor receptor-1 (sTNFR-1), and sTNFR-2.
Calza *et al*., 2017 [33]	Italy	Observational study	PLWH on cART (n=62), having an average age of 47 years (77% male). Majority of the participants (94%) were of Caucasian ethnicity.	Received tenofovir disoproxil fumarate (TDF)-emtricitabine (FTC) (60%), abacavir (ABC)-lamivudine (3TC) (40%), a ritonavir-boosted protease inhibitor (PI-r) (56.5%), and efavirenz (EFV) (43.5%) and starting a rosuvastatin treatment, for 12 months	Inflammatory and endothelial activation markers such as IL-8/IL-12 and D-Dimer were decreased by treatment combination with a statin, rosuvastatin from baseline to moth 12 of follow-up.
Iantorno *et al*., 2017 [34]	United states	Observational study	PLWH on cART (n=18), having an average age of 52 years (63% male). Ethnicity was not reported.	The cART regimen was not disclosed; however, participants were on treatment for at least 12 months.	Inflammatory marker IL-6 was inversely associated with endothelial activation.
deFilippi *et al*., 2018 [35]	United States	Randomized controlled trial	PLWH on cART (n=40), having an average age of 52 years (79% male). Majority of the participants (68%) were of Caucasian ethnicity.	The cART regimen was not disclosed; however, participants were followed for 12 months	Inflammatory markers such as MCP-1 and IL-6 were positively associated with endothelial function. The inflammatory marker soluble suppression of tumorigenicity-2 (sST2) increased over time.
van der Heijden *et al*., 2018 [36]	Netherlands	Randomized controlled trial	PLWH on cART (n=40), having an average age of 48 years (98% male). Participant's ethnicity was not reported.	Received RAL twice daily with a backbone of TDF-FTC or ABC-3TC, for 2.5 months	No differences in inflammatory markers like platelet reactivity measured by P-selectin, fibrinogen, platelet factor 4, betathromboglobulin, and high sensitivity C-reactive protein (hsCRP). Switching regimen did not reduce inflammation and immune activation.
O'Halloran *et al*., 2018 [37]	Ireland	Randomized controlled trial	PLWH on cART (n=310) having an average age of 36 years (83% male), with dyslipidaemia (56%). Majority of the participants (62%) were of Caucasian ethnicity.	Switched from 3TC-ABC to FTC-TDF for 12 months	Inflammation and endothelial activation markers incorporating sP-selectin, and von Willebrand factor (vWF) were not affected by switching treatment. However, switching treatment was linked with elevated soluble glycoprotein VI, indicative of altered platelet-collagen interactions.
Kumar *et al*., 2020 [38]	United States	Exploratory pilot study	PLWH on cART (n=8), having an average age of 55 years (75% male). Participant's ethnicity was not reported.	Received atazanavir (ATV) and ritonavir ® (with a backbone of ABC-3TC or FTC-TDF) for 3 months. One participant was on ABC-dolutegravir (DTG)-3TC.	Inflammatory markers incorporating IL6, hsCRP, and TNF-α were elevated, including endothelial activation markers like sICAM-1, sVCAM-1, and sE-selectin.
González-Cordón *et al*., 2021 [39]	Spain	Randomized controlled trial	PLWH on cART (n=313), prone to manifest cardiovascular disease and having an average age of 54 years (89% male). Majority of the participants (88%) were of Caucasian ethnicity.	Switched to DTG versus remaining on a PI-r regimen for 12 months	Inflammatory markers such as hsCRP and adiponectin were diminished by switching treatment.
Cossarizza *et al*., 2023 [14]	Italy	Randomized controlled trial	PLWH on cART (n=66), having an average age of 54 years (86% male). Majority of the participants (86%) were of Caucasian ethnicity.	Switched to Bictegravir (BIC)-FTC-tenofovir alafenamide (TAF) or DTG-FTC for 12 months	Inflammatory marker such as IL-6, including immune activation indicators such as monocytes, or $CD4^+$ or $CD8^+$ T cells were not affected by switching treatment.

Table 2: An abstract of research reports outlining the physio-pathological link connecting inflammation and endothelial activation in people living with the human immunodeficiency virus (PLWH) on combination antiretroviral therapy (cART) for a period longer than 12 months.

Authors, year	Region of study	Study design	Population	Intervention	Key observations
Pirš *et al*., 2014 [39]	Slovenia	Observational study	PLWH on cART (n=82), with an average age of 39 years (100% male). No reported ethnicity.	Received protease inhibitor (PI) or non-nucleoside reverse transcriptase inhibitor (NNRTI) based regime, with a majority being on cART for 56 months	Inflammatory markers such as high sensitivity C reactive protein (hsCRP) were elevated and consistent with increased concentrations of endothelial activation markers such as soluble vascular cell adhesion molecule 1 (sVCAM-1)
Young *et al*., 2014 [40]	United states	Randomized clinical trial	PLWH on cART (n=4073), having an average age of 47 years (78% male). Majority of the participants (56%) were of Caucasian ethnicity.	The cART regimen was not disclosed; however, participants were followed-up for 17 months	Inflammatory and coagulation markers such as D-Dimer, hsCRP and interleukin-6 (IL-6) were elevated and associated with reduced cardiac autonomic function
So-Armah *et al*., 2016 [41]	United States	Observational study	PLWH on cART (n=1521), having an average age of 52 years (58% male), with 50% having controlled hypertension. Majority of the participants (69%) were of African ethnicity.	The cART regimen was not disclosed; however, participants were monitored for 13 months	Inflammatory cytokines and coagulation markers such as IL-6, and monocyte activation soluble cluster differentiation-14 (sCD14) and D-Dimer were consistently elevated.
Dirajlal-Fargo *et al*., 2017 [42]	United States	Observational study	PLWH on cART (n=93), having an average age of 51 (81% female). Majority of the participants (63%) were African American.	The cART regimen was not disclosed; however, participants were on cART for at least 36 months	Inflammatory markers such as IL-6, hsCRP, soluble tumor necrosis factor receptor 1 and 2 (sTNFR-1 and sTNFR-2) were independently associated with endothelial activation as measured by impaired plasma levels of arginine.
Siedner *et al*., 2018 [43]	Uganda	Observational study	PLWH on cART (n=155), having an average age of 51 years (51% male). Participants (100%) were of African ethnicity.	The cART regimen was not disclosed; however, participants were on cART for 84 months	Inflammatory markers such as hsCRP and monocyte activation markers including sCD14 were elevated.