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POSTER PRESENTATION

Subclinical Myocardial Fibrosis in Adults With HIV Identified by CMR: A Systematic Review and Meta-Analysis

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INTRODUCTION

HIV infection is increasingly linked to subclinical myocardial injury and fibrosis, despite the widespread use of antiretroviral therapy (ART).

Cardiac magnetic resonance (CMR) detects fibrosis sensitively:

- **LGE** – focal replacement fibrosis
- **Native T1 mapping** – diffuse myocardial change
- **ECV** – extracellular volume fraction

However, published observational studies remain small and heterogeneous.

AIM

To evaluate myocardial fibrosis in adults living with HIV compared with HIV-uninfected controls, using CMR-derived LGE, native T1 and ECV.

METHODS

1 Search
Major databases · observational studies · 2013–2024

2 Eligibility
Adults with HIV vs HIV-uninfected controls, fibrosis assessed by CMR

3 Included
12 studies · 1,704 participants · 1,071 PWH

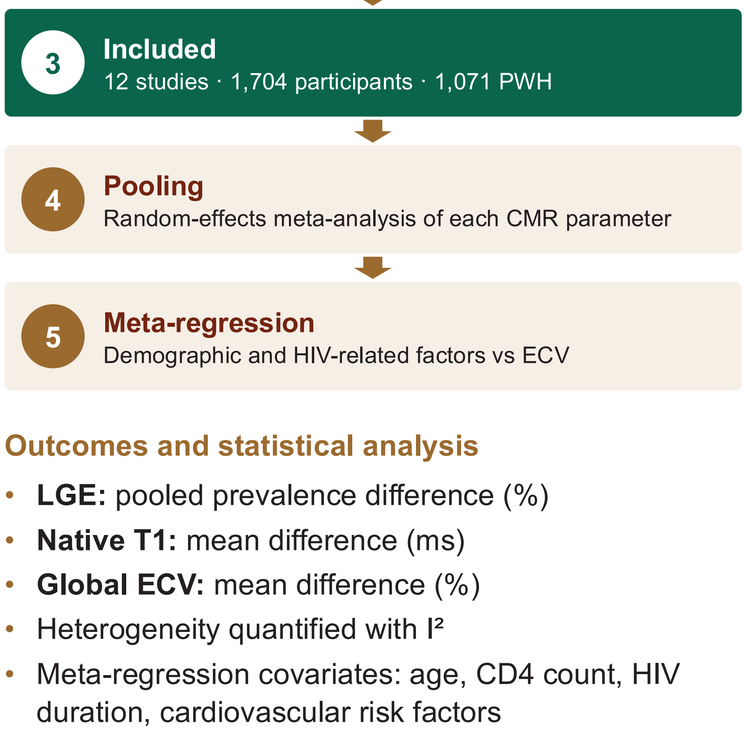
4 Pooling
Random-effects meta-analysis of each CMR parameter

5 Meta-regression
Demographic and HIV-related factors vs ECV

Outcomes and statistical analysis

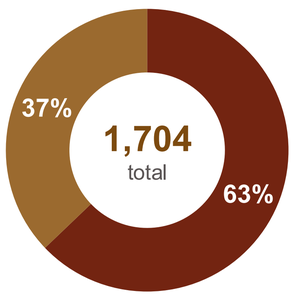
- **LGE:** pooled prevalence difference (%)
- **Native T1:** mean difference (ms)
- **Global ECV:** mean difference (%)
- Heterogeneity quantified with I^2
- Meta-regression covariates: age, CD4 count, HIV duration, cardiovascular risk factors

Figure 1. Studies contributing to each CMR outcome



RESULTS

Study population



12	eligible studies
1,071	people with HIV (PWH)
633	HIV-uninfected controls

Key pooled findings (PWH vs controls)

+27% LGE prevalence

+23.8 ms Native T1

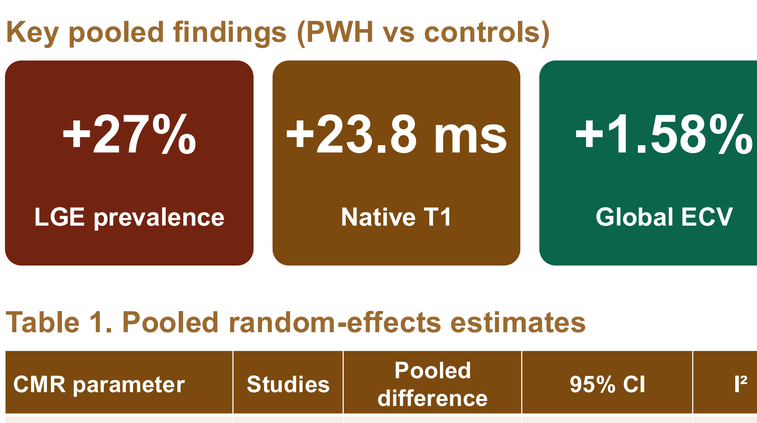
+1.58% Global ECV

Table 1. Pooled random-effects estimates

CMR parameter	Studies	Pooled difference	95% CI	I^2
LGE prevalence	7	**27%**	8% to 46%	89%
Native T1 (ms)	8	**23.8 ms**	9.7 to 37.9	84%
Global ECV (%)	10	**1.58%**	0.48 to 2.68	87%

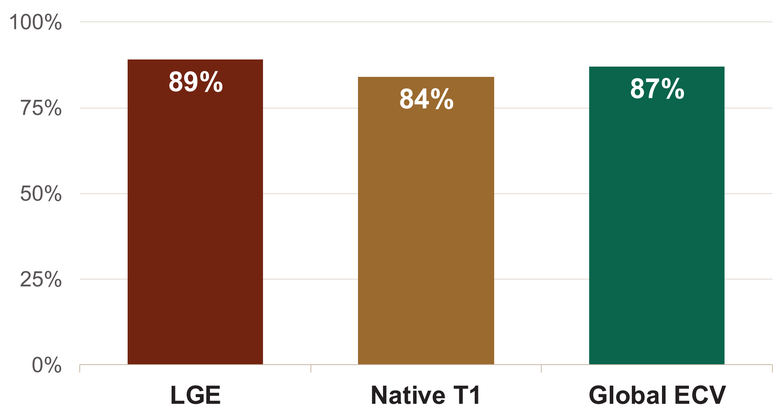
All three pooled estimates favour more fibrosis in PWH; no 95% CI crosses zero.

Figure 2. Pooled differences with 95% CI



Each parameter is shown on its own scale; dashed line = no difference.

Figure 3. Between-study heterogeneity (I^2)



I^2 > 75% indicates high heterogeneity across all three outcomes.

Table 2. Meta-regression of ECV

Covariate	Association with ECV
Age	Not significant
CD4 count	Not significant
HIV duration	Not significant
Cardiovascular risk factors	Not significant

DISCUSSION

- Both **focal** (LGE) and **diffuse** (native T1, ECV) fibrosis markers were higher in PWH.
- All three CMR measures pointed in the same direction, supporting early, subclinical myocardial involvement.
- ECV was not explained by age, CD4 count, HIV duration or cardiovascular risk factors, suggesting additional HIV-related mechanisms may be involved.
- High heterogeneity (I^2 84–89%) may reflect differences in populations, scanners and CMR protocols.
- These findings are consistent with earlier CMR cohorts describing myocardial fibrosis, steatosis and inflammation in PWH [1, 2].

LIMITATIONS

- Observational, mostly cross-sectional designs
- Substantial heterogeneity across all outcomes
- Non-standardised T1 and ECV acquisition
- Prognostic significance not yet established

CONCLUSIONS

Adults living with HIV show increased prevalence and severity of myocardial fibrosis on CMR, suggesting early subclinical myocardial involvement.

Standardised imaging protocols and longitudinal studies are needed to clarify mechanisms and prognostic implications.

Clinical take-home

- CMR with T1/ECV mapping can reveal fibrosis before symptoms
- Consider HIV a potential contributor to myocardial disease

REFERENCES

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4. Higgins JPT, Thompson SG. Quantifying heterogeneity in a meta-analysis. Stat Med. 2002;21:1539–1558.