



F. Voit ^{1*}, S. Breitschwerdt ², A. Balogh ³, H. Bidner ⁴, S. Egert-Schwender ⁴, C. Boesecke ², L. Wagner ¹, E. Wolf ³⁺, C.D. Spinner ¹⁺

¹ TUM School of Medicine and Health, Department of Clinical Medicine – Clinical Department for Internal Medicine II, University Medical Center, Technical University of Munich, Germany, ² University Hospital Bonn, Department of Internal Medicine I, Bonn, Germany, ³ MUC Research, Munich, Germany, ⁴ TUM School of Medicine and Health, Münchner Studienzentrum (MSZ), University Medical Center, Technical University of Munich, Germany, + These authors contributed equally.

Objectives

This post-hoc evaluation of the DUALIS study aimed to examine cardiovascular risk and the achievement of low-density lipoprotein cholesterol (LDL-C) targets in a virologically suppressed cohort of people living with human immunodeficiency virus (HIV) (PLWH) in Germany.

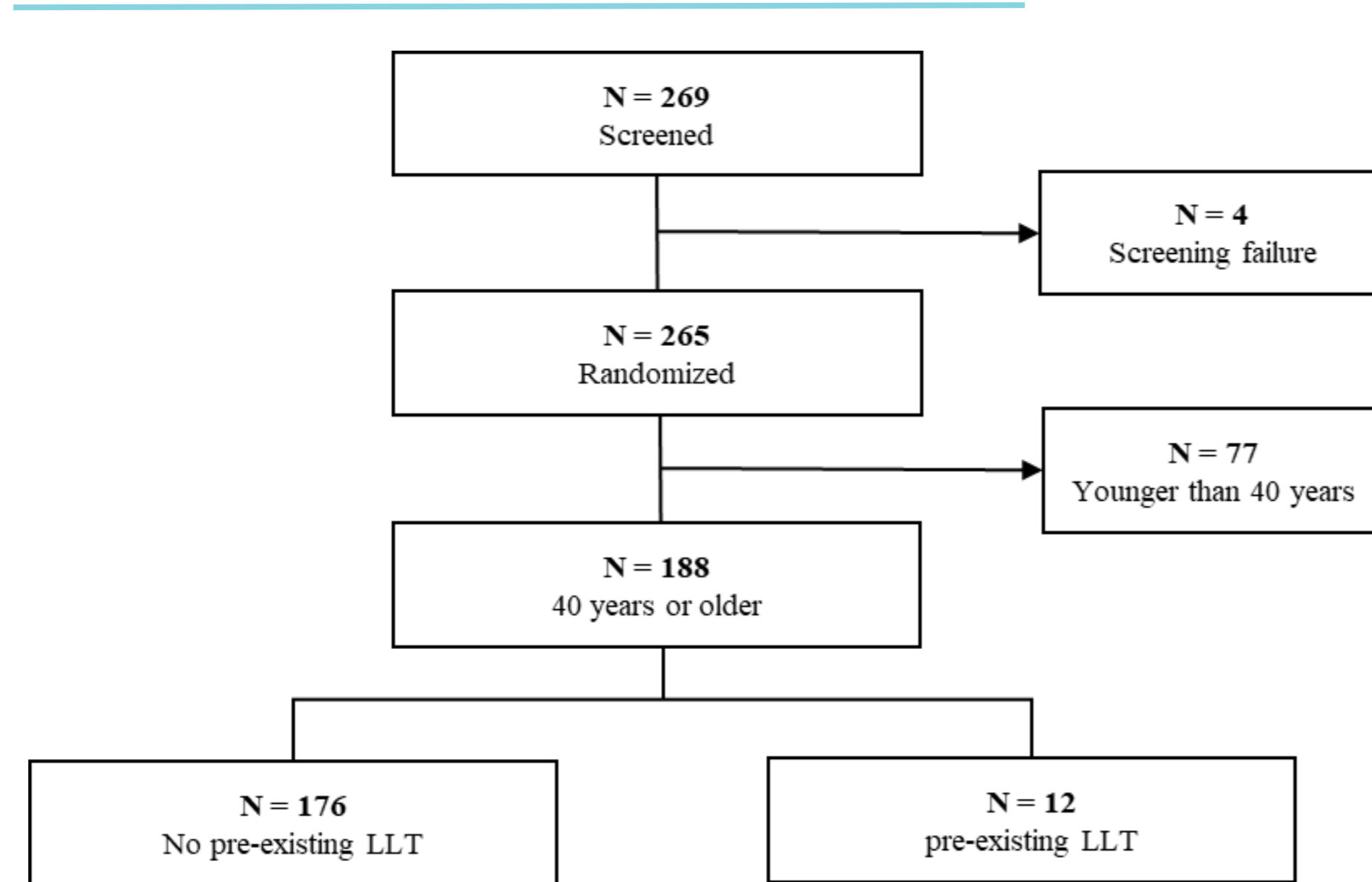
Methods

Baseline cardiovascular risk was assessed using the European Society of Cardiology (ESC)-Systematic COronary Risk Evaluation 2 (SCORE2)/SCORE2-Older Persons (OP) and the current ESC guideline-recommended LDL-C targets among participants aged ≥40 years in the DUALIS study. Risk categorization was based on the ESC-SCORE2/SCORE2-OP results and the presence of specific comorbidities indicative of high risk and very high risk of CVD.

Results

The use of lipid-lowering therapy (LLT) was low in the DUALIS study, with only 12 out of 188 participants (6%) receiving the treatment. The median ESC-SCORE2/SCORE2-OP was 5.0. Overall, 92 participants (49%) had low-to-moderate CVD risk, 77 (41%) had high risk, and 19 (10%) had very high risk. Only one participant in the high risk group and none in the very high risk group met the guideline-recommended LDL-C targets. Even when using the less stringent LDL-C targets valid at the time of data collection (2016 ESC guideline), only 19.7% of the high risk and none of the very high risk participants met these targets. In addition, a strong correlation regarding the estimated CVD risk was observed between the D:A:D (R) and ESC SCORE2/SCORE2-OP scores (r = 0.95).

Figure 1: Disposition of study participants



N: number of participants, LLT: lipid-lowering therapy.

Table 1: Participants' baseline characteristics

Category	Value/N	IQR
Median age (years)	50.0	9
Age categories		
<50 years	86	
50–69 years	100	
≥70 years	2	
Sex		
Male	169	
Female	19	
Smoking status		
Never smoker	57	
Ex smoker	36	
Current smoker	89	
Median LDL-C (mg/dL)		
No LLT	133.5	46
LLT	115.5	48.5

Table 2: ESC-SCORE2/SCORE2-OP of the participants at baseline

ESC SCORE2/SCORE2-OP: CVD risk within 10 years (%)	N	Mean	SD	Min	Max	Median	25th pctl	75th pctl
No LLT								
<50 years	83	4.3	2.7	1.1	19.2	3.6	2.5	5.9
50–69 years	91	6.9	3.4	1.1	16.4	6.4	4.4	8.4
≥70 years	2	12.3	5.2	8.7	16.0	12.3	8.7	16.0
Total	176	5.7	3.4	1.1	19.2	4.9	3.2	7.3
LLT								
<50 years	3	3.9	0.9	2.9	4.4	4.3	2.9	4.4
50–69 years	9	8.9	3.1	6.1	16.6	7.6	7.3	9.8
Total	12	7.7	3.5	2.9	16.6	7.4	5.2	9.2
Total								
<50 years	86	4.3	2.7	1.1	19.2	3.6	2.5	5.7
50–69 years	100	7.1	3.4	1.1	16.6	6.8	4.5	8.7
≥70 years	2	12.3	5.2	8.7	16.0	12.3	8.7	16.0
Total	188	5.9	3.5	1.1	19.2	5.0	3.3	7.5

CVD: cardiovascular disease, max: maximum, min: minimum, N: number of participants, pctl: percentile, SD: standard deviation, LLT: lipid-lowering therapy.

Table 3: Risk categories according to current ESC guidelines on cardiovascular disease prevention in clinical practice at baseline

CVD risk within 10 years	No LLT		LLT		Total	
	N	%	N	%	N	%
Low/moderate risk	89	50.6	3	25.0	92	48.9
High risk	69	39.2	8	66.7	77	41.0
Very high risk	18	10.2	1	8.3	19	10.1
<50 years						
Low/moderate risk	57	32.4	3	25.0	60	31.9
High risk	25	14.2			25	13.3
Very high risk	1	0.6			1	0.5
50–69 years						
Low/moderate risk	32	18.2			32	17.0
High risk	43	24.4	8	66.7	51	27.1
Very high risk	16	9.1	1	8.3	17	9.0
≥70 years						
High risk	1	0.6			1	0.5
Very high risk	1	0.6			1	0.5
Total	176	100.0	12	100.0	188	100.0

CVD: cardiovascular disease, N: number of participants, LLT: lipid-lowering therapy, Low/moderate risk <50 years: <2.5% / 50–69 years: <5% / ≥70 years: <7.5%; High risk <50 years: 2.5 to <7.5% / 50–69 years: 5 to <10% / ≥70 years: 7.5 to <15%; Very high risk <50 years: ≥7.5% / 50–69 years: ≥10% / ≥70 years: ≥15%.

Table 4: Achievement of LDL-C target levels according to 2021 ESC guidelines on cardiovascular disease prevention in clinical practice at baseline

	None	LLT	Total
	N	N	%
Low/moderate risk			
Above target levels	67	2	69
Below target levels	22	1	23
High risk			
Above target levels	68	8	76
Below target levels	1	1	1.3
Very high risk			
Above target levels	18	1	19
Below target levels	0	0	0
Total			
Above target levels	153	11	164
Below target levels	23	1	24
Total	176	12	188

N: number of participants, %: percentage indicates the proportion of individuals within the respective risk group, LLT: lipid-lowering therapy, Low/moderate risk <50 years: <2.5% / 50–69 years: <5% / ≥70 years: <7.5%; High risk <50 years: 2.5 to <7.5% / 50–69 years: 5 to <10% / ≥70 years: 7.5 to <15%; Very high risk <50 years: ≥7.5% / 50–69 years: ≥10% / ≥70 years: ≥15%.

Conclusion

► The achievement of guideline-recommended LDL-C targets was low in the high- and very high-CVD-risk groups in the DUALIS study, reflecting low utilization of LLT in clinical practice.

Funding

This study is funded by Technical University of Munich and supported by grants from Janssen-Cilag and Viiv Healthcare.