**SUPPLEMENTAL MATERIAL**

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| **Supplemental Table 1. Plaque Progression Metrics KETO-CTA vs Other Cohorts.** | | | |
| **Study** | **Baseline PAV** | **ΔPAV(%/year)** | **Notes** |
| KETO-CTA | 1.6 (0.5 – 4.9) | 0.8 (0.3 – 1.73) | n = 100 |
| KETO-CTACACbl = 0 | 0.6 (0.2 – 1.2) | 0.5 (0.3 – 1.0) | n = 57 |
| KETO-CTA10yCVDrisk > 5% | 4.5 (1.1 – 9.4) | 1.4 (0.5 – 2.7) | n = 28 |
| KETO-CTACACbl > 100 | 9.6 (7.2 – 12.2) | 2.4 (1.4 – 3.4) | n = 17 |
| Nakanishi et al.(1) | 7.64 (2.0 – 13.7) § | 0.7 (0.0 – 1.1)§ | Non-DM group |
| Won et al. (2) | 1.6 (0.0 – 6.1) | 0.3 (0.0 – 0.9) | Low TyG tertile |
| Won et al.(2) | 9.4 (1.4 – 27.7) | 0.5 (0.1 – 1.4) | High TyG tertile |
| Han et al.(3) | NA | 0.5 (0.1 – 1.1)\* | Low 10-year CVD risk group |
| Han et al.(3) | NA | 1.0 (0.1 – 2.2)\* | High 10-year CVD risk group |
| vanRosendael et al.(4) | 4.7 (1.3 – 10.8) | 0.8 (0.4 – 1.2) | PARADIGM cohort |
| Nurmohamed et al.(5) | 2.5 (0.7 – 8.1) | 0.4 (0.1 – 0.9) | Annualized over 10 years |

*Values are medians and 25th-75th percentiles. PAV=Percentage Atheroma Volume. \* = Estimated from SD in Supplemental Table 1.* § = *estimated from follow-up total volume and vessel volume follow-up values. Apart from KETO-CTA (present study), all values are annualized.*

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| **Supplemental Table 2. Baseline characteristics of Participants with High Adherence.** | | |
| Sex (Male) | 48.2 % | |
| **Ethnicity** | | |
| Asian | 10.7 % | |
| Hispanic | 5.4 % | |
| White | 83.9 % | |
|  | **Mean ± SD** | **Median (Q1 – Q3)** |
| Age (years) | 57.0 ±8.7 | 58.0 (52.8 - 63.0) |
| Ketogenic Diet Duration (days) | 1731.2 ±1050.6 | 1427 (990 – 1970) |
| Body Mass Index (kg/m2) | 22.3 ±2.9 | 22.0 (20.0 - 24.1) |
| Systolic Blood Pressure (mmHg) | 120.1 ±24.8 | 120 (107 – 136) |
| Total Cholesterol (mg/dL) | 361.4 ±102.1 | 357 (296 – 406.3) |
| LDL-C (mg/dL) | 255.9 ±95.7 | 234.5 (197.5 – 309.5) |
| HDL-C (mg/dL) | 89.3 ±18.6 | 90 (76 – 101.2) |
| Triglycerides (mg/dL) | 70.4 ±36.8 | 63.5 (49 – 80) |
| ApoB (mg/dL) | 192.3 ±55.6 | 185 (150.3 – 226.3) |
| Non-Calcified Plaque Volume (mm3) | 69.7 ±90.5 | 32.5 (12.7 – 93.5) |
| Coronary Artery Calcium Score | 45.2 ±104.1 | 0 (0 – 22.5) |
| Percentage Atheroma Volume | 2.85 ± 3.7 | 1.3 (0.5 – 3.6) |
| Total Plaque Score | 1.59 ± 2.7 | 0 (0 – 2.0) |
| 10-year CVD Risk (MESAETH-CAC, %) | 5.3 ±5.8 | 3.4 (2.0 – 6.0) |

*n = 56. BMI = Body Mass Index, SBP= Systolic Blood Pressure;* ***10-year CVD Risk*** *= Based on Risk Equation from the Multi-Ethnic Study of Atherosclerosis with Ethnicity and CAC Inputs.*

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| **Supplemental Table 3. Diet Composition in Participants with High Adherence.** | | |
| **N = 56** | **Mean ±** **SD** | **Median (Q1 - Q3)** |
| Carbohydrates (g/day) | 34.4 ± 26.0 | 30.8 (12.6 – 51.1) |
| Fat (g/day) | 120.4 ± 47.6 | 113.1 (89.8 – 139.3) |
| Saturated Fat (g/day) | 43.5 ± 14.4 | 39.4 (29.9 – 52.6) |
| Sugar (g/day) | 15.4 ± 13.9 | 11.1 (6.3 – 22.2) |
| Fiber (g/day) | 7.6 ± 7.3 | 6.86 (1.3 – 11.3) |
| Sodium (mg/day) | 3073.6 ± 1169.7 | 2931.4 (2217 – 3625.7) |

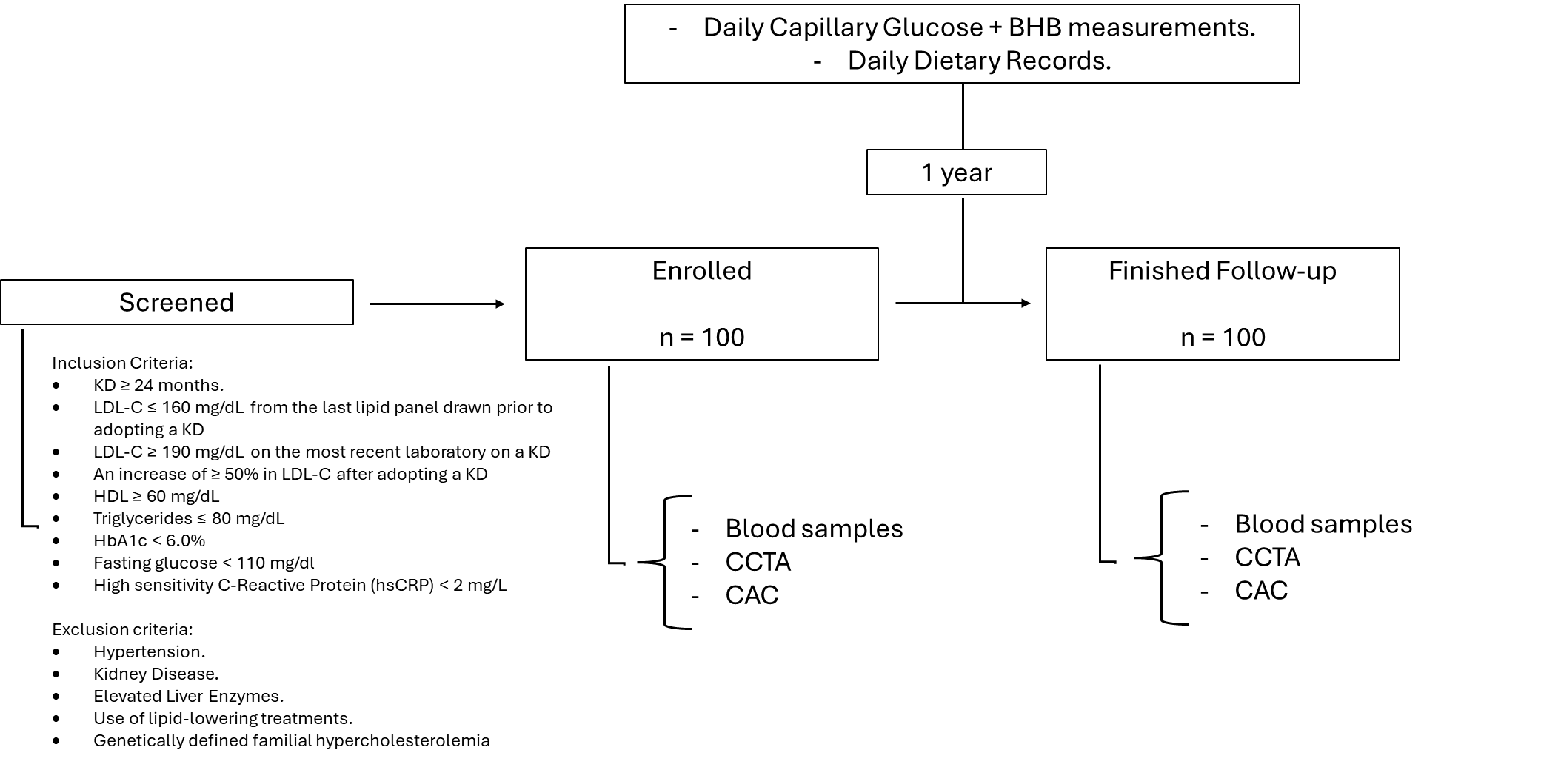
*n = 56. Pooled data from all available dietary records.*

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| **Supplemental Table 4. Model Results in Participants with High Adherence.** | | | | | |
|  | | **β** | **P-value** | **R2** | **BF** |
| **LDL-C exposure** |  | | | | |
| NCPVfinal ~ LDL-Cexp | | 0.00 | 0.92 | -0.02 | (01) 7.66 |
| PAVfinal ~ LDL-Cexp | | 0.00 | 0.96 | -0.02 | (01) 7.69 |
| **ApoB** | | | | | |
| ΔNCPV ~ ΔApoB | | 0.04 | 0.63 | -0.01 | (01) 6.90 |
| ΔNCPV ~ ApoBbl | | 0.06 | 0.09 | -0.04 | (01) 1.83 |
| **Plaque Metrics** | | | | | |
| ΔNCPV ~ CACbl | | 0.20 | <0.001 | 0.39 | \*(10) >10.0 |
| ΔNCPV ~ NCPVbl | | 0.28 | <0.001 | 0.60 | \*(10) >10.0 |
| ΔNCPV ~ PAVbl | | 6.84 | <0.001 | 0.55 | \*(10) >10.0 |
| ΔNCPV ~ TPSbl | | 7.74 | <0.001 | 0.39 | \*(10) >10.0 |
| ΔNCPV ~ CACbl\* ΔApoB | |  |  |  |  |
| CACbl | | 0.17 | <0.001 | 0.41 | N/A |
| ΔApoB | | 0.08 | 0.08 | N/A | N/A |
| CACbl : ΔApoB | | -0.00 | 0.12 | N/A | N/A |
| **Saturated Fat** | | | | | |
| ΔNCPV ~ Saturated Fat Intake | | 0.25 | 0.34 | -0.00 | (01) 5.0 |
| ApoB ~ Saturated Fat Intake | | -0.06 | 0.88 | -0.02 | (01) 7.62 |
| **Age Mediation Analyses** | | | | | |
| NCPVfinal ~ Age | | 3.48 | 0.06 | 0.05 | (01) 1.34 |
| NCPVfinal ~ Age + Life-LDL-Cexp | | 2.81|0.00 | 0.21|0.61 | 0.03 | (01) 1.34 / 2.54 |
| NCPVfinal ~ Age + Life-LDL-Cexp + CACbl | | 0.1|0.0 |0.8 | 0.96|0.24|<0.001 | 0.45 | (01) 1.34|2.54|>10.0\* |

*n = 56.* ***ApoB*** *= ApoB on a Ketogenic Diet;* ***ΔApoB*** *= ApoB change during the study;* ***BF*** *= Bayes Factor.* ***CACbl****= CAC at baseline;* ***LDL-Cexp*** *= LDL-C exposure while on a Ketogenic Diet (mean 5.7 years); Life-****LDL-Cexp*** *= LDL-Cexposure over life course to date;* ***NCPVfinal*** *= Non-Calcified Plaque Volume at the end of the study,* ***TPSfinal*** *= Total Plaque Score at the end of the study.* ***ΔNCPV*** *= Change in Non-Calcified Plaque Volume,* ***ΔTPS*** *= Change in Total Plaque Score. β = Estimate (slope magnitude), R2 = Squared correlation coefficient (explained variability). \*Models on CAC are provided for the alternative hypothesis (10). All other models are provided for the null hypothesis (01).*

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| **Supplemental Table 5. Model Results in Participants with High CVD Risk.** | | | | |
|  | **β** | **P-value** | **R2** | **BF** |
| **LDL-C exposure** | | | | |
| NCPVfinal ~ LDL-Cexp | -0.01 | 0.57 | -0.03 | (01) 4.79 |
| PAVfinal ~ LDL-Cexp | -0.00 | 0.81 | -0.04 | (01) 5.43 |
| **ApoB** | | | | |
| ΔNCPV ~ ΔApoB | 0.10 | 0.57 | -0.03 | (01) 4.76 |
| ΔNCPV ~ ApoBbl | 0.11 | 0.52 | -0.02 | (01) 4.57 |
| **Plaque Metrics** | | | | |
| ΔNCPV ~ CACbl | 0.17 | 0.002 | 0.29 | \*(10) >10.0 |
| ΔNCPV ~ NCPVbl | 0.28 | <0.001 | 0.56 | \*(10) >10.0 |
| ΔNCPV ~ PAVbl | 5.47 | 0.003 | 0.37 | \*(10) >10.0 |
| ΔNCPV ~ TPSbl | 7.84 | 0.004 | 0.37 | \*(10) >10.0 |
| ΔNCPV ~ CACbl\* ΔApoB |  |  |  |  |
| CACbl | 0.16 | 0.004 | 0.30 | N/A |
| ΔapoB | 0.24 | 0.16 | N/A | N/A |
| CACbl : ΔApoB | -0.00 | 0.19 | N/A | N/A |
| **Saturated Fat** | | | | |
| ΔNCPV ~ Saturated Fat Intake | -0.08 | 0.84 | -0.04 | (01) 5.48 |
| ApoB ~ Saturated Fat Intake | -0.58 | 0.25 | 0.01 | (01) 2.97 |
| **Age Mediation Analysis** | | | | |
| NCPVfinal ~ Age | 3.40 | 0.48 | -0.02 | (01) 4.39 |
| NCPVfinal ~ Age + Life-LDL-Cexp | 4.11|-0.02 | 0.50|0.84 | -0.06 | (01) 0.18 / 0.22 |
| NCPVfinal ~ Age + Life-LDL-Cexp + CACbl | -1.70|0.0 |0.7 | 0.74|0.91|0.006 | 0.33 | (01) 0.18|0.22|>10.0\* |

*n = 28.* ***ApoB*** *= ApoB on a Ketogenic Diet;* ***ΔApoB*** *= ApoB change during the study;* ***BF*** *= Bayes Factor.* ***CACbl****= CAC at baseline;* ***LDL-Cexp*** *= LDL-C exposure while on a Ketogenic Diet (mean 5.7 years); Life-****LDL-Cexp*** *= LDL-Cexposure over life course to date;* ***NCPVfinal*** *= Non-Calcified Plaque Volume at the end of the study,* ***TPSfinal*** *= Total Plaque Score at the end of the study.* ***ΔNCPV*** *= Change in Non-Calcified Plaque Volume,* ***ΔTPS*** *= Change in Total Plaque Score.*  *β = Estimate (slope magnitude), R2 = Squared correlation coefficient (explained variability). \*Models on CAC are provided for the alternative hypothesis (10). All other models are provided for the null hypothesis (01).*



**Supplemental Figure 1. Participant Flow-Chart**.**REFERENCES**

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