Table 1. Baseline characteristics full Athero-Express Biobank Study

| **Characteristic** | **female  N = 1,2281** | **male  N = 2,7891** | **p-value2** |
| --- | --- | --- | --- |
| **Hospital.** |  |  | 0.7 |
| St. Antonius, Nieuwegein | 524 (43%) | 1,211 (43%) |  |
| UMC Utrecht | 704 (57%) | 1,578 (57%) |  |
| **Year of surgery.** |  |  | 0.8 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| 2002 | 33 (2.7%) | 61 (2.2%) |  |
| 2003 | 58 (4.7%) | 146 (5.2%) |  |
| 2004 | 83 (6.8%) | 206 (7.4%) |  |
| 2005 | 87 (7.1%) | 222 (8.0%) |  |
| 2006 | 95 (7.7%) | 190 (6.8%) |  |
| 2007 | 71 (5.8%) | 163 (5.8%) |  |
| 2008 | 75 (6.1%) | 148 (5.3%) |  |
| 2009 | 83 (6.8%) | 184 (6.6%) |  |
| 2010 | 110 (9.0%) | 197 (7.1%) |  |
| 2011 | 71 (5.8%) | 198 (7.1%) |  |
| 2012 | 97 (7.9%) | 215 (7.7%) |  |
| 2013 | 83 (6.8%) | 179 (6.4%) |  |
| 2014 | 85 (6.9%) | 213 (7.6%) |  |
| 2015 | 23 (1.9%) | 56 (2.0%) |  |
| 2016 | 40 (3.3%) | 84 (3.0%) |  |
| 2017 | 21 (1.7%) | 65 (2.3%) |  |
| 2018 | 26 (2.1%) | 59 (2.1%) |  |
| 2019 | 27 (2.2%) | 61 (2.2%) |  |
| 2020 | 25 (2.0%) | 45 (1.6%) |  |
| 2021 | 24 (2.0%) | 66 (2.4%) |  |
| 2022 | 11 (0.9%) | 31 (1.1%) |  |
| **Age** | 69 (10) | 69 (9) | 0.047 |
| **TC\_final** | 5.06 (3.06) | 4.69 (2.38) | <0.001 |
| Unknown | 565 | 1,295 |  |
| **LDL\_final** | 2.85 (1.12) | 2.69 (1.18) | 0.003 |
| Unknown | 647 | 1,507 |  |
| **HDL\_final** | 1.82 (11.71) | 1.14 (0.41) | <0.001 |
| Unknown | 603 | 1,420 |  |
| **TG\_final** | 1.70 (1.00) | 1.78 (1.21) | 0.3 |
| Unknown | 611 | 1,438 |  |
| **systolic** | 152 (26) | 150 (24) | 0.086 |
| Unknown | 154 | 357 |  |
| **diastoli** | 79 (25) | 80 (20) | 0.016 |
| Unknown | 154 | 359 |  |
| **GFR\_MDRD** | 73 (25) | 76 (25) | <0.001 |
| Unknown | 74 | 163 |  |
| **BMI** | 26.1 (5.0) | 26.5 (3.7) | <0.001 |
| Unknown | 78 | 133 |  |
| **KDOQI classification, where eGFR (MDRD based) of 90 mL/min/1.73m2 is considered normal, as no proteinuria data is available.** |  |  | <0.001 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| Normal kidney function | 242 (21%) | 680 (26%) |  |
| CKD 2 (Mild) | 558 (48%) | 1,336 (51%) |  |
| CKD 3 (Moderate) | 326 (28%) | 550 (21%) |  |
| CKD 4 (Severe) | 17 (1.5%) | 38 (1.4%) |  |
| CKD 5 (Failure) | 11 (1.0%) | 21 (0.8%) |  |
| Unknown | 74 | 164 |  |
| **BMI, categories according to WHO.** |  |  | <0.001 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| Underweight | 32 (2.8%) | 19 (0.7%) |  |
| Normal | 490 (43%) | 961 (36%) |  |
| Overweight | 429 (37%) | 1,280 (48%) |  |
| Obese | 198 (17%) | 395 (15%) |  |
| Unknown | 79 | 134 |  |
| **SmokerStatus** |  |  | <0.001 |
| Current smoker | 482 (42%) | 921 (35%) |  |
| Ex-smoker | 459 (40%) | 1,485 (56%) |  |
| Never smoked | 195 (17%) | 233 (8.8%) |  |
| Unknown | 92 | 150 |  |
| **AlcoholUse** | 586 (51%) | 1,904 (72%) | <0.001 |
| Unknown | 74 | 130 |  |
| **DiabetesStatus** |  |  | 0.012 |
| Control (no Diabetes Dx/Med) | 936 (76%) | 2,025 (73%) |  |
| Diabetes | 289 (24%) | 761 (27%) |  |
| Unknown | 3 | 3 |  |
| **Do you have hypertension?** |  |  | <0.001 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 249 (21%) | 710 (26%) |  |
| yes | 948 (79%) | 1,994 (74%) |  |
| Unknown | 31 | 85 |  |
| **Treated for hypertension? Self-reported treatment for hypertension** |  |  | 0.005 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 311 (27%) | 841 (31%) |  |
| yes | 858 (73%) | 1,839 (69%) |  |
| Unknown | 59 | 109 |  |
| **Hypertension and/OR using hypertension drugs (to assess hypertension only, use Hypertension1)** |  |  | 0.6 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 159 (13%) | 382 (14%) |  |
| yes | 1,063 (87%) | 2,401 (86%) |  |
| Unknown | 6 | 6 |  |
| **Use of one or more antihypertensive drugs** |  |  | 0.2 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 275 (23%) | 574 (21%) |  |
| yes | 941 (77%) | 2,204 (79%) |  |
| Unknown | 12 | 11 |  |
| **Anti-coagulant use?** |  |  | <0.001 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 1,086 (90%) | 2,376 (86%) |  |
| yes | 122 (10%) | 388 (14%) |  |
| Unknown | 20 | 25 |  |
| **Anti platelet drug use?** |  |  | 0.007 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 143 (12%) | 415 (15%) |  |
| yes | 1,074 (88%) | 2,359 (85%) |  |
| Unknown | 11 | 15 |  |
| **Used any statin and/or LLD?** |  |  | 0.8 |
| No data available/missing | 0 (0%) | 0 (0%) |  |
| no | 264 (22%) | 590 (21%) |  |
| yes | 952 (78%) | 2,186 (79%) |  |
| Unknown | 12 | 13 |  |
| **Ever had a stroke (CVA) diagnosed?** |  |  | 0.3 |
| Missing | 0 (0%) | 0 (0%) |  |
| No stroke diagnosed | 936 (82%) | 2,116 (80%) |  |
| Stroke diagnosed | 205 (18%) | 517 (20%) |  |
| Unknown | 87 | 156 |  |
| **Cerebrovascular symptoms based on questionnaire AE (indication for CEA).** |  |  | 0.064 |
| missing | 0 (0%) | 0 (0%) |  |
| Asymptomatic | 89 (9.9%) | 264 (13%) |  |
| TIA | 365 (41%) | 730 (37%) |  |
| minor stroke | 153 (17%) | 309 (16%) |  |
| Major stroke | 87 (9.7%) | 228 (12%) |  |
| Amaurosis fugax | 145 (16%) | 287 (15%) |  |
| Four vessel disease | 16 (1.8%) | 27 (1.4%) |  |
| Vertebrobasilary TIA | 1 (0.1%) | 4 (0.2%) |  |
| Retinal infarction | 9 (1.0%) | 31 (1.6%) |  |
| Symptomatic, but aspecific symtoms | 15 (1.7%) | 49 (2.5%) |  |
| Contralateral symptomatic occlusion | 2 (0.2%) | 10 (0.5%) |  |
| retinal infarction | 2 (0.2%) | 7 (0.4%) |  |
| armclaudication due to occlusion subclavian artery, CEA needed for bypass | 1 (0.1%) | 0 (0%) |  |
| retinal infarction + TIAs | 0 (0%) | 1 (<0.1%) |  |
| Ocular ischemic syndrome | 12 (1.3%) | 17 (0.9%) |  |
| ischemisch glaucoom | 0 (0%) | 0 (0%) |  |
| subclavian steal syndrome | 1 (0.1%) | 1 (<0.1%) |  |
| TGA | 0 (0%) | 0 (0%) |  |
| Unknown | 330 | 824 |  |
| **Symptoms.5G** |  |  | 0.045 |
| Asymptomatic | 89 (9.9%) | 264 (13%) |  |
| Ocular | 157 (17%) | 304 (15%) |  |
| Other | 35 (3.9%) | 87 (4.4%) |  |
| Retinal infarction | 11 (1.2%) | 38 (1.9%) |  |
| Stroke | 240 (27%) | 537 (27%) |  |
| TIA | 366 (41%) | 735 (37%) |  |
| Unknown | 330 | 824 |  |
| **AsymptSympt** |  |  | 0.023 |
| Asymptomatic | 89 (9.9%) | 264 (13%) |  |
| Ocular and others | 203 (23%) | 429 (22%) |  |
| Symptomatic | 606 (67%) | 1,272 (65%) |  |
| Unknown | 330 | 824 |  |
| **AsymptSympt2G** |  |  | 0.008 |
| Asymptomatic | 89 (9.9%) | 264 (13%) |  |
| Symptomatic | 809 (90%) | 1,701 (87%) |  |
| Unknown | 330 | 824 |  |
| **Symptoms.Update2G** |  |  | 0.014 |
| Asymptomatic | 205 (28%) | 528 (33%) |  |
| Symptomatic | 539 (72%) | 1,084 (67%) |  |
| Unknown | 484 | 1,177 |  |
| **Symptoms.Update3G** |  |  | 0.034 |
| Asymptomatic | 205 (27%) | 528 (32%) |  |
| Symptomatic | 539 (70%) | 1,084 (65%) |  |
| Unclear | 23 (3.0%) | 58 (3.5%) |  |
| Unknown | 461 | 1,119 |  |
| **Was the operated artery restenotic or de novo lesion?** |  |  | 0.017 |
| missing | 0 (0%) | 0 (0%) |  |
| de novo | 1,054 (89%) | 2,446 (91%) |  |
| restenosis | 122 (10%) | 237 (8.8%) |  |
| stenose bij angioseal na PTCA | 5 (0.4%) | 2 (<0.1%) |  |
| Unknown | 47 | 104 |  |
| **Preoperative degree of stenosis of the operated artery (measured with duplex). in case of more operated segments(femoral), worst stenosis.** |  |  | 0.3 |
| missing | 0 (0%) | 0 (0%) |  |
| 0-49% | 7 (0.6%) | 20 (0.8%) |  |
| 50-70% | 75 (6.5%) | 216 (8.3%) |  |
| 70-90% | 474 (41%) | 959 (37%) |  |
| 90-99% | 365 (32%) | 834 (32%) |  |
| 100% (Occlusion) | 166 (14%) | 404 (16%) |  |
| NA | 1 (<0.1%) | 3 (0.1%) |  |
| 50-99% | 28 (2.4%) | 76 (2.9%) |  |
| 70-99% | 40 (3.5%) | 83 (3.2%) |  |
| 99 | 0 (0%) | 2 (<0.1%) |  |
| Unknown | 72 | 192 |  |
| **Which artery was operated on, summarized?** |  |  | 0.056 |
| No artery known (yet), no surgery (patient ill, died, exited study), re-numbered to AAA | 0 (0%) | 0 (0%) |  |
| carotid (left & right) | 859 (70%) | 1,900 (68%) |  |
| femoral/iliac (left, right or both sides) | 334 (27%) | 835 (30%) |  |
| other carotid arteries (common, external) | 17 (1.4%) | 34 (1.2%) |  |
| carotid bypass and injury (left, right or both sides) | 6 (0.5%) | 3 (0.1%) |  |
| aneurysmata (carotid & femoral) | 1 (<0.1%) | 1 (<0.1%) |  |
| aorta | 3 (0.2%) | 5 (0.2%) |  |
| other arteries (renal, popliteal, vertebral) | 4 (0.3%) | 9 (0.3%) |  |
| femoral bypass, angioseal and injury (left, right or both sides) | 4 (0.3%) | 2 (<0.1%) |  |
| **History of MI, CAD and/or coronary intervention(s) (PTCA and/or CABG)? (based on heart317/heart320/heart321)** |  |  | <0.001 |
| Missing | 0 (0%) | 0 (0%) |  |
| No history CAD | 908 (74%) | 1,713 (62%) |  |
| History CAD | 312 (26%) | 1,070 (38%) |  |
| Unknown | 8 | 6 |  |
| **Peripheral arterial occlusive disease (PAOD), femoral intervention, claudication, ABI<0.70.** |  |  | 0.031 |
| missing/no data | 0 (0%) | 0 (0%) |  |
| no | 721 (59%) | 1,537 (55%) |  |
| yes | 502 (41%) | 1,247 (45%) |  |
| Unknown | 5 | 5 |  |
| **History of peripheral intervention (including interventions in carotid and upper limb arteries?** | 384 (32%) | 828 (30%) | 0.3 |
| Unknown | 11 | 17 |  |
| **Composite cardiovascular endpoints during follow-up.** |  |  | 0.2 |
| No data available. | 0 (0%) | 0 (0%) |  |
| No composite endpoints | 774 (67%) | 1,715 (64%) |  |
| Composite endpoints | 388 (33%) | 946 (36%) |  |
| Unknown | 66 | 128 |  |
| **EP\_composite\_time** | 17.82 (529.11) | 2.30 (1.20) | 0.6 |
| Unknown | 69 | 130 |  |
| **Major cardiovascular events (endpoints) during follow-up.** |  |  | 0.8 |
| No data available. | 0 (0%) | 0 (0%) |  |
| No major events (endpoints) | 1,005 (86%) | 2,292 (86%) |  |
| Major events (endpoints) | 157 (14%) | 369 (14%) |  |
| Unknown | 66 | 128 |  |
| **EP\_major\_time** | 33.93 (752.10) | 2.70 (1.06) | 0.4 |
| Unknown | 69 | 130 |  |
| **MAC\_rankNorm** | 0.01 (0.99) | 0.00 (0.99) | 0.7 |
| Unknown | 443 | 1,011 |  |
| **SMC\_rankNorm** | 0.13 (1.01) | -0.06 (0.99) | <0.001 |
| Unknown | 446 | 1,010 |  |
| **Macrophages in the plaque (binned)** |  |  | 0.001 |
| no/minor | 583 (59%) | 1,207 (52%) |  |
| moderate/heavy | 408 (41%) | 1,098 (48%) |  |
| Unknown | 237 | 484 |  |
| **SMC in the plaque (binned)** |  |  | <0.001 |
| no/minor | 261 (26%) | 796 (34%) |  |
| moderate/heavy | 735 (74%) | 1,525 (66%) |  |
| Unknown | 232 | 468 |  |
| **Neutrophils\_rankNorm** | -0.32 (0.90) | 0.16 (0.97) | <0.001 |
| Unknown | 1,121 | 2,555 |  |
| **MastCells\_rankNorm** | -0.33 (0.95) | 0.13 (0.99) | 0.001 |
| Unknown | 1,152 | 2,601 |  |
| **Intraplaque Hemorrhage (based on the articles by W. Hellings and W. Peeters (Circulation)).** | 509 (51%) | 1,442 (62%) | <0.001 |
| Unknown | 231 | 453 |  |
| **VesselDensity\_rankNorm** | -0.01 (0.98) | 0.01 (0.99) | 0.6 |
| Unknown | 613 | 1,434 |  |
| **Calcifications in the plaque (binned)** |  |  | 0.030 |
| no/minor | 495 (48%) | 1,250 (52%) |  |
| moderate/heavy | 535 (52%) | 1,149 (48%) |  |
| Unknown | 198 | 390 |  |
| **Collagen in the plaque (binned)** |  |  | 0.5 |
| no/minor | 179 (19%) | 432 (20%) |  |
| moderate/heavy | 760 (81%) | 1,730 (80%) |  |
| Unknown | 289 | 627 |  |
| **Fat in the plaque (binned at 10%)** |  |  | <0.001 |
| <10% | 495 (48%) | 896 (37%) |  |
| >10% | 533 (52%) | 1,505 (63%) |  |
| Unknown | 200 | 388 |  |
| **Fat in the plaque (binned at 40%)** |  |  | <0.001 |
| <40% | 879 (86%) | 1,781 (74%) |  |
| >40% | 149 (14%) | 620 (26%) |  |
| Unknown | 200 | 388 |  |
| **OverallPlaquePhenotype** |  |  | <0.001 |
| atheromatous | 141 (14%) | 597 (25%) |  |
| fibroatheromatous | 308 (30%) | 754 (32%) |  |
| fibrous | 576 (56%) | 1,030 (43%) |  |
| Unknown | 203 | 408 |  |
| **Plaque\_Vulnerability\_Index** |  |  | <0.001 |
| 0 | 374 (30%) | 673 (24%) |  |
| 1 | 254 (21%) | 522 (19%) |  |
| 2 | 285 (23%) | 563 (20%) |  |
| 3 | 212 (17%) | 610 (22%) |  |
| 4 | 85 (6.9%) | 310 (11%) |  |
| 5 | 18 (1.5%) | 111 (4.0%) |  |
| **PCSK9\_plasma** | 35,287 (19,676) | 30,379 (17,400) | <0.001 |
| Unknown | 763 | 1,782 |  |
| **PCSK9\_plasma\_rankNorm** | 0.18 (1.02) | -0.09 (0.98) | <0.001 |
| Unknown | 763 | 1,782 |  |
| 1n (%); Mean (SD) | | | |
| 2Pearson's Chi-squared test with simulated p-value  (based on 2000 replicates); Fisher's Exact Test for Count Data with simulated p-value  (based on 2000 replicates); Wilcoxon rank sum test | | | |