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Demographic and HIV-specific characteristics of participants enrolled in the INSIGHT Strategic Timing of AntiRetroviral Treatment trial

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Abstract

Objectives—The risks and benefits of initiating antiretroviral treatment (ART) at high CD4 cell counts have not been reliably quantified. The Strategic Timing of AntiRetroviral Treatment (START) study is a randomised international clinical trial that compares immediate with deferred initiation of ART for HIV-positive individuals with CD4 cell counts above 500 cells/ μ L. We describe the demographics, HIV-specific characteristics and medical history of this cohort.

Methods—Data collected at baseline include demographics, HIV-specific laboratory values, prior medical diagnoses and concomitant medications. Baseline characteristics were compared by geographical region, gender, and age.

Results—START enrolled 4685 HIV-positive participants from 215 sites in 35 countries. The median age is 36 years (IQR: 29–44), 27% are female, 45% self-identify as white, 30% black, 14% Latino/Hispanic, 8% Asian and 3% other. HIV acquisition is reported as 55% men who have sex with men, 38% heterosexual sex, 1% injecting drug use, and 5% other/unknown. Median time since HIV diagnosis is 1.0 year (IQR: 0.4–3.0) and the median CD4 and HIV RNA values at study entry are 651 cells/ μ L (584–765) and 12,754 copies/mL (IQR: 3,014–43,607), respectively.

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Disclosures

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Conclusion—START has enrolled a diverse group of ART-naïve individuals with high CD4 cell counts who are comparable to the HIV-positive population from the regions they were enrolled. The information collected with this robust study design will provide a database to evaluate the risks and benefits of early ART use for many important outcomes.

Keywords

HIV; clinical trial; when to start antiretroviral therapy; START trial

Introduction

The Strategic Timing of AntiRetroviral Treatment (START) study is the first randomised clinical trial designed to evaluate the use of antiretroviral treatment (ART) in asymptomatic HIV-positive individuals with CD4 cell counts above 500 cells/ μ L in about two decades. Earlier studies included the European-Australian Collaborative Group, which enrolled 984 individuals of whom 72% had CD4 cell counts >500 cells/ μ L (1); the Concorde study, which enrolled 1749 individuals among whom 42% had CD4 cell counts >500 cells/ μ L (2); and the ACTG 019 study that enrolled 1650 participants with CD4 cell counts >500 cells/ μ L(3). In each of these trials zidovudine monotherapy was studied; all included predominantly white, homosexual/bisexual men with an average age between 30 and 35 years at sites in the United States, Europe or Australia.

The demographic characteristics and geographic distribution of HIV-positive individuals has changed dramatically since the early 1990s. Largely as a consequence of improved treatments, mortality has declined substantially resulting in an increasing number of individuals living with HIV. Most HIV-positive individuals live in developing countries. In developed regions, the epidemic progressively affects nonwhite heterosexual populations (4). The epidemic in men who have sex with men (MSM) shows no signs of decline and is increasing in some areas (4). In 1990, approximately 43% of individuals above 15 years of age living with HIV were women, compared to 55% in 2012 (4,5). Causes of death have dramatically changed with non-AIDS-related causes becoming increasingly important (6-8). Unlike earlier when-to-start studies, detailed medical histories collected in trials of HIV-positive individuals now also include serious non-AIDS conditions and treatments used for these conditions (9).

To date, START is one of the largest most globally representative clinical trials undertaken in HIV-positive individuals. In this paper, we describe baseline data, specifically demographics, HIV-specific characteristics, and medical history of START participants enrolled from 35 countries.

Methods

The design and data collection plan of START have been previously described (10). Briefly, HIV-positive ART-naïve participants with CD4 cell counts >500 cells/ μ L have been enrolled by 215 sites in 35 countries. Prior to randomisation, data collected included demographic characteristics (age, gender, self-identified race), HIV-specific factors (likely mode of infection, time since HIV diagnosis), HIV-specific baseline laboratory values

(current CD4 and CD8 cell counts, nadir CD4 cell count, current plasma HIV RNA levels, highest recorded plasma HIV RNA level), hepatitis B and C serologies, prior medical diagnoses as reported in clinical records (non-AIDS cancer, cardiovascular disease [CVD], liver and kidney disease, other medical conditions including alcoholism and psychiatric diagnosis), and specified concomitant medication usage. For this analysis, hepatitis B coinfection was based on a surface antigen test in the year before randomisation, and hepatitis C coinfection was based on a core antibody test from any time before randomisation.

Participants were required to have two CD4 cell counts above 500 cells/ μ L at least two weeks apart within 60 days before randomisation. If available, up to three additional most recent CD4 cell counts prior to the two qualifying CD4 cell counts were also reported. All laboratory tests, including CD4 cell count and plasma HIV RNA load, were performed locally at the routine pathology service for participating sites.

Statistical Methods

Demographics and HIV-specific factors were assessed by subgroups of geographical region, age at enrolment, and gender. For geographical distributions, enrolling countries were grouped into six regions: North America (United States), Europe (plus Israel), South America (plus Mexico), Africa, Asia, and Australia.

For each participant, the rate of change (i.e., slope) in CD4 measurements prior to randomisation was calculated using all available CD4 cell counts (range of 2-5 measurements) using repeated measures with random intercepts and random slopes. The time span for prior CD4 cell counts varied with 50% of participants having 72 days between the first and last measurements (IQR 23 – 296 days). Given this variability in the time span for available prior CD4 data, a sensitivity analysis was performed by limiting the calculation to data from participants with at least six weeks between the first and last measurements (n=2761). Results were similar so slopes using all available data are cited. CD4 slopes were compared by geographic region, gender, and age groups.

Continuous variables are presented as medians with frequency distributions or interquartile ranges, and categorical variables are presented as percentages. SAS software, version 9.3 (SAS Institute Inc., Cary, North Carolina, United States, 2002-2010), was used.

Results

Baseline Characteristics by Geographic Region

A total of 4688 participants were enrolled in START. Three participants were later found to be HIV negative and have been administratively withdrawn from the study. This report is based on the remaining 4685 HIV-positive participants.

Overall and region-specific demographic characteristics and factors related to HIV history are presented in Table 1. Approximately 33% of participants are from Europe, 25% from South America, 21% from Africa, 11% from North America, 8% from Asia and 2% from Australia. The median age at entry is 36 years (IQR: 29-44). Overall, 27% are female with

the highest region-specific female representation in Africa (69%), Asia (38%) and North America (22%). Forty-five percent of the cohort are white, 30% black, 14% Latino/Hispanic, 8% Asian, and 3% other.

Fifty-two percent have completed up to 12 years of education with the remainder having completed education beyond high/secondary school (e.g., vocational training/college degree or higher). Regionally, participants in Africa and Asia had the least amount of education at entry.

The likely mode of HIV infection is reported as 55% MSM, 38% heterosexual contact, and 1.4% injecting drug use (IDU); 5% reported other or unknown modes of transmission. Most participants reporting IDU are from North America (n=24) and Europe (n=32). The median documented time since HIV diagnosis is 1.0 year (IQR: 0.4-3.0). Thirty-three percent of participants have been diagnosed up to six months before study entry and 14% diagnosed for five years or longer. South America and Asia have the highest proportion of recently diagnosed participants (< 6 months) with 49% and 40%, respectively. In Africa and North America, 24% and 20%, respectively, are reported as having been diagnosed for > 5 years. Overall, hepatitis B and C coinfections rates at entry are low at 3% and 4%, respectively.

Distributions of HIV-specific laboratory data, overall and by geographical region, are presented in Table 2. The median CD4 and nadir CD4 cell counts are 651 cells/ μ L (IQR: 584-765) and 553 cells/ μ L (IQR: 488-654), respectively. Twenty percent of baseline CD4 cell counts are < 800 cells/ μ L. The median plasma HIV RNA level at baseline is 12,754 copies/mL (IQR: 3,014-43,607). Eight percent have plasma HIV RNA < 400 copies/mL, and 10% have values over 100,000 copies/mL. By region, participants in Africa, North America and South America have the lowest median HIV RNA values (approximately 7400-12,000 copies/mL) while those in Europe and Asia have higher median values of approximately 20,000 copies/mL. Further analysis of baseline HIV RNA in this cohort is presented elsewhere in this supplement (11).

The median CD4 decline prior to enrolment is -23 (IQR -51, -1) cells/ μ L per year, and 7% of participants have a decline of > 100 cells/ μ L per year. The rates of decline are closer to zero in Asia and Africa and more negative in the other regions.

Baseline Characteristics by Gender and Age

The median age at entry for women is 37 years (IQR: 30-45) and for men is 35 years (IQR: 28-43). Sixty-three percent of women are black and 15% are white; 18% of men are black, and 55% are white. A greater proportion of men than women have at least 12 years of education. Median (IQR) time from HIV diagnosis is 1.5 years (IQR: 0.5-4.4) for women and 0.9 years (IQR: 0.3-2.5) for men.

The median CD4 cell count for men and women is 646 cells/ μ L (IQR: 582-750) and 674 cells/ μ L (IQR: 591-805), respectively (Table 3). There are differences in plasma HIV RNA by gender, with men having a higher median value of 16,379 copies/mL compared to women with 6444 copies/mL. This difference is consistent across regions, with the exception of North America where the difference is much smaller (8234 copies/mL versus

6900 copies/mL). Prior to study entry, the median CD4 cell count, HIV RNA level and rate of CD4 decline per year are similar across age groups (Table 3).

Medical History and Concomitant Medications

Medical history is summarised in Table 4. History of non-AIDS-related cancer, including basal or squamous cell skin cancer, is reported for 0.6% of participants. About 0.5% have a prior diagnosis of a clinically significant CVD event (i.e., acute myocardial infarction, stroke or coronary revascularisation). Almost 1% have a prior serious non-AIDS event of CVD or non-AIDS cancer. The most common medical diagnoses at entry are alcoholism or other substance abuse (3%) and psychiatric illness (6%), with these conditions being more prevalent in North America, Europe and Australia.

The most commonly prescribed medications are blood-pressure-lowering drugs (8%), antidepressants (6%), hormonal therapy (4%), lipid-lowering drugs (4%), nonsteroidal anti-inflammatory drugs excluding aspirin (3%), proton pump inhibitors (3%), benzodiazepines (2%), drug treatment for diabetes (2%), >2 weeks of aspirin use (2%) and anti-*Pneumocystis jirovecii pneumonia* (PjP) agents (2%). All anti-PjP drug use is in Africa as prophylaxis for opportunistic infections.

Discussion

The START cohort is diverse and globally well represented with over half of the participants enrolled from low- and middle-income countries. This diversity makes the population significantly different from earlier when-to-start studies (1-3) that included primarily white males in high-income countries. START participants are comparable with the current characteristics of the global untreated HIV-positive population and are similar to those with HIV in the regions from which they were enrolled with the exception of injecting drug users. For example, in the United States, of persons living with HIV in 2010, 52% were MSM, 27% contracted HIV from heterosexual contact, 44% were black, 19% Hispanic/Latino, and 24% female (12). The START population in the United States has similar demographic characteristics. In the European Economic Area (EEA) new diagnoses in 2012 occurred in the ratio of 3:2 for males to females, 34% of cases were from heterosexual contact (including cases due to migration from Sub-Saharan Africa), 40% MSM, 6% IDU and 20% unknown (13). START in contrast has a lower participation in Europe for each of these groups except for MSM. In Australia, most new diagnoses in 2012 were primarily MSM (67%); 25% of cases were due to heterosexual contact with 58% of these cases being individuals originating from high-prevalence countries (14). Australian participants in START are primarily MSM, white, and slightly older than the current median incidence age of 36 in the region (14). In the Asia/Pacific region, 36% of persons living with HIV in 2012 were women, and MSM and heterosexual contact were the main demographic for new infections (15); these groups are well represented in the START population recruited in Asia. Enrolment of African women in START (69%) is representative of women in Africa with HIV; in 2012, Sub-Saharan African women accounted for 57% of infections (4). In South America, the epidemic as reported in 2012 was stable, with MSM as a growing

demographic of new infections in addition to heterosexual contact (4). START is represented in this region with 70% MSM and 15% women.

The rate of CD4 decline at entry for this population is -23 cells/ μL per year. This rate should be interpreted with caution, especially in comparisons to other cohorts not selected based on CD4 cell counts. Due to limited prerandomisation data, the slope for 42% of participants is based on the two qualifying screening CD4 cell counts, both required to be within 60 days before randomisation.

Other trials besides START have been designed to address the when-to-start question since effective combination ART became available. Three of these trials have been completed, and one is ongoing (16-21). These trials differ from START in several ways: 1) the CD4 deferral strategy for the control group is lower; 2) CD4 at study entry is lower (by approximately 200 cells/ μL); 3) sample size is smaller; 4) the primary endpoints differ; and 5) they are not as geographically diverse as START. For example, considering the completed trials, one was carried out in Haiti where participants had a median CD4 cell count of 280 cells/ μL (16); a second, the HPTN 052 trial, was conducted primarily in Asia, Africa, and two sites in Brazil and at study entry participants had a median CD4 cell count of 436 cells/ μL (17,18); and a third was a post-hoc subgroup analysis of the SMART study with only 477 participants (19). The deferral strategy was to wait for a CD4 cell count of 250 cells/ μL in two of these trials (17-19) and 200 cells/ μL in the other (16). The Temprano (ANRS 12136) trial (20) is currently ongoing and is being conducted in Côte d'Ivoire; the median CD4 cell count at entry for 1952 of the 2076 randomised participants is 469 cells/ μL (21).

In summary, START has enrolled 4685 participants with CD4 cell counts >500 cells/ μL from 215 sites in 35 countries. The broad inclusion criteria, the diversity of sites and study participants, and the careful and extensive characterisation of the cohort will enable the study results to be broadly generalised and permit assessment of the consistency of the findings across key demographic, geographic, HIV and other factors assessed at study entry.

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Table 1

Demographics and Selected Other Characteristics, by Region

Factor, N (%) or Median	North America	Europe	South America	Australia	Asia	Africa	Overall
<i>Participants</i>	507 (10.8)	1539 (32.8)	1174 (25.1)	109 (2.3)	356 (7.6)	1000 (21.3)	4685
Demographics							
Age, years	36	38	32	40	33	38	36
< 25	78 (15.4)	93 (6.0)	200 (17.0)	3 (2.8)	61 (17.1)	65 (6.5)	500 (10.7)
25-34	150 (29.6)	524 (34.0)	468 (39.9)	36 (33.0)	145 (40.7)	292 (29.2)	1615 (34.5)
35-44	125 (24.7)	513 (33.3)	306 (26.1)	40 (36.7)	114 (32.0)	391 (39.1)	1489 (31.8)
45	154 (30.4)	409 (26.6)	200 (17.0)	30 (27.5)	36 (10.1)	252 (25.2)	1081 (23.1)
Female	111 (21.9)	140 (9.1)	175 (14.9)	4 (3.7)	136 (38.2)	691 (69.1)	1257 (26.8)
Race							
Black, male	172 (33.9)	51 (3.3)	107 (9.1)	2 (1.8)	0 (0.0)	286 (28.6)	618 (13.2)
Black, female	68 (13.4)	46 (3.0)	26 (2.2)	1 (0.9)	0 (0.0)	651 (65.1)	792 (16.9)
Latino, male	68 (13.4)	62 (4.0)	409 (34.8)	1 (0.9)	0 (0.0)	0 (0.0)	540 (11.5)
Latina, female	23 (4.5)	7 (0.5)	69 (5.9)	0 (0.0)	0 (0.0)	0 (0.0)	99 (2.1)
Asian, male	8 (1.6)	20 (1.3)	0 (0.0)	5 (4.6)	216 (60.7)	0 (0.0)	249 (5.3)
Asian, female	1 (0.2)	2 (0.1)	0 (0.0)	0 (0.0)	136 (38.2)	0 (0.0)	139 (3.0)
White, male	144 (28.4)	1241 (80.6)	401 (34.2)	93 (85.3)	2 (0.6)	13 (1.3)	1894 (40.4)
White, female	17 (3.4)	81 (5.3)	59 (5.0)	3 (2.8)	0 (0.0)	32 (3.2)	192 (4.1)
Other, male	4 (0.8)	25 (1.6)	82 (7.0)	4 (3.7)	2 (0.6)	10 (1.0)	127 (2.7)
Other, female	2 (0.4)	4 (0.3)	21 (1.8)	0 (0.0)	0 (0.0)	8 (0.8)	35 (0.7)
Education							
< year 12	71 (14.0)	239 (15.5)	217 (18.5)	17 (15.6)	130 (36.5)	723 (72.3)	1397 (29.8)
completed year 12	124 (24.5)	315 (20.5)	333 (28.4)	22 (20.2)	55 (15.4)	167 (16.7)	1016 (21.7)
vocational/some college	192 (37.9)	506 (32.9)	356 (30.3)	19 (17.4)	56 (15.7)	85 (8.5)	1214 (25.9)
bachelors or higher	120 (23.7)	479 (31.1)	268 (22.8)	51 (46.8)	115 (32.3)	25 (2.5)	1058 (22.6)
HIV History							
Mode of infection							
IDU	24 (4.7)	32 (2.1)	3 (0.3)	4 (3.7)	1 (0.3)	0 (0.0)	64 (1.4)
MSM	302 (59.6)	1179 (76.6)	829 (70.6)	97 (89.0)	148 (41.6)	24 (2.4)	2579 (55.0)

Factor, N (%) or Median	North America	Europe	South America	Asia	Africa	Overall
Heterosexual	145 (28.6)	252 (16.4)	308 (26.2)	182 (51.1)	898 (89.8)	1790 (38.2)
Other/unknown ^a	36 (7.1)	76 (4.9)	34 (2.9)	25 (7.0)	78 (7.8)	252 (5.4)
Years since diagnosis	1.4	1.1	0.5	0.9	1.6	1.0
0.5	140 (27.6)	406 (26.4)	579 (49.3)	24 (22.0)	249 (24.9)	1541 (32.9)
0.51 - 1.0	78 (15.4)	309 (20.1)	197 (16.8)	38 (10.7)	121 (12.1)	768 (16.4)
1.01 - 3.0	124 (24.5)	436 (28.3)	238 (20.3)	89 (25.0)	265 (26.5)	1186 (25.3)
3.01 - 5.0	66 (13.0)	207 (13.5)	80 (6.8)	40 (11.2)	125 (12.5)	529 (11.3)
> 5.0	99 (19.5)	181 (11.8)	80 (6.8)	46 (12.9)	240 (24.0)	661 (14.1)
Hepatitis						
Hepatitis B	4 (0.8)	28 (1.9)	20 (1.7)	24 (6.8)	52 (5.2)	130 (2.9)
Hepatitis C	43 (8.6)	81 (5.5)	22 (1.9)	9 (2.5)	11 (1.1)	171 (3.7)

IDU= injecting drug use; MSM=men who have sex with men.

^aOther/unknown includes: 0.6% blood products, 1.0% other, 3.8% unknown.

Table 2

HIV-Specific Characteristics, by Region

Factor, N (%) or Median [IQR]	North America	Europe	South America	Australia	Asia	Africa	Overall
Participants	507 (10.8)	1539 (32.8)	1174 (25.1)	109 (2.3)	356 (7.6)	1000 (21.3)	4685
CD4 slope (cells/ μ L/year) slope 100 decline	-31 [-56, -8] 35 (6.9)	-33 [-60, -12] 133 (8.6)	-20 [-49, -1] 72 (6.1)	-49 [-71, -31] 14 (12.8)	8 [-16, 25] 9 (2.5)	-10 [-38, 9] 46 (4.6)	-23 [-51, -1] 309 (6.6)
CD4 ^{d1} (cells/ μ L)	666	645	642	652	632	684	651
500 - 599	150 (29.6)	497 (32.3)	404 (34.4)	33 (30.3)	134 (37.6)	257 (25.7)	1475 (31.5)
600-699	144 (28.4)	523 (34.0)	359 (30.6)	42 (38.5)	109 (30.6)	283 (28.3)	1460 (31.2)
700-799	110 (21.7)	257 (16.7)	188 (16.0)	15 (13.8)	54 (15.2)	189 (18.9)	813 (17.4)
800-899	46 (9.1)	128 (8.3)	109 (9.3)	11 (10.1)	24 (6.7)	119 (11.9)	437 (9.3)
900	57 (11.2)	134 (8.7)	114 (9.7)	8 (7.3)	35 (9.8)	152 (15.2)	500 (10.7)
Nadir CD4 (cells/ μ L)	552	531	558	556	542	595	553
< 400	27 (5.3)	167 (10.9)	70 (6.0)	6 (5.5)	18 (5.1)	45 (4.5)	333 (7.1)
400-499	121 (23.9)	398 (25.9)	211 (18.0)	24 (22.0)	72 (20.2)	131 (13.1)	957 (20.4)
500-599	176 (34.7)	535 (34.8)	451 (38.4)	41 (37.6)	153 (43.0)	339 (33.9)	1695 (36.2)
600-699	95 (18.7)	230 (14.9)	218 (18.6)	27 (24.8)	52 (14.6)	200 (20.0)	822 (17.5)
700-799	39 (7.7)	107 (7.0)	120 (10.2)	4 (3.7)	35 (9.8)	126 (12.6)	431 (9.2)
800	49 (9.7)	102 (6.6)	104 (8.9)	7 (6.4)	26 (7.3)	159 (15.9)	447 (9.5)
CD8 (cells/ μ L)	989	1082	1043	1030	1112	968	1040
< 500	29 (5.7)	61 (4.0)	46 (3.9)	3 (2.8)	12 (3.4)	59 (6.2)	210 (4.5)
500-999	231 (45.7)	596 (39.0)	485 (41.3)	48 (44.0)	121 (34.0)	445 (46.5)	1926 (41.6)
1,000-1,499	152 (30.1)	509 (33.3)	420 (35.8)	35 (32.1)	143 (40.2)	295 (30.9)	1554 (33.6)
1,500-1,999	65 (12.9)	211 (13.8)	147 (12.5)	14 (12.8)	52 (14.6)	109 (11.4)	598 (12.9)
2,000	28 (5.5)	152 (9.9)	76 (6.5)	9 (8.3)	28 (7.9)	48 (5.0)	341 (7.4)
HIV RNA (copies/mL)	8000	19440	12256	15033	20506	7450	12754
400	42 (8.3)	60 (3.9)	76 (6.5)	4 (3.7)	27 (7.6)	161 (16.1)	370 (7.9)
401-3,000	116 (23.0)	214 (13.9)	199 (17.0)	13 (11.9)	49 (13.9)	203 (20.3)	794 (17.0)
3,001-10,000	122 (24.2)	286 (18.6)	257 (21.9)	26 (23.9)	55 (15.6)	193 (19.3)	939 (20.1)
10,001-100,000	190 (37.6)	774 (50.4)	557 (47.4)	58 (53.2)	166 (47.0)	354 (35.4)	2099 (44.9)
>100,000	35 (6.9)	202 (13.2)	85 (7.2)	8 (7.3)	56 (15.9)	88 (8.8)	474 (10.1)

Factor, N (%) or Median [IQR]	North America	Europe	South America	Australia	Asia	Africa	Overall
Highest HIV RNA (copies/mL)	13544	44000	18413	44700	22726	8307	21842
400	27 (5.3)	26 (1.7)	47 (4.0)	1 (0.9)	27 (7.6)	156 (15.6)	284 (6.1)
401-3,000	81 (16.0)	112 (7.3)	155 (13.2)	9 (8.3)	47 (13.3)	191 (19.1)	595 (12.7)
3,001-10,000	109 (21.5)	204 (13.3)	255 (21.7)	12 (11.0)	50 (14.2)	193 (19.3)	823 (17.6)
10,001-100,000	229 (45.2)	740 (48.1)	574 (48.9)	62 (56.9)	170 (48.2)	363 (36.3)	2138 (45.7)
>100,000	61 (12.0)	457 (29.7)	143 (12.2)	25 (22.9)	59 (16.7)	96 (9.6)	841 (18.0)

^a Average of 2 screening values.

Table 3

HIV-Specific Characteristics, by Gender and Age Groups

Factor, N(%) or Median [IQR]	Gender		Age Group (Years)			
	Males	Females	< 25	25-34	35-44	45
<i>Participants</i>	3428 (73.2)	1257 (26.8)	500 (10.7)	1615 (34.5)	1489 (31.8)	1081 (23.1)
CD4 slope (cells/ μ L/year)	-25 [-52, -6]	-22 [-52, -1]	-19 [-45, -3]	-29 [-56, -11]	-26 [-55, -6]	-23 [-51, -2]
100 decline slope	231 (6.7)	85 (6.7)	17 (3.4)	118 (7.3)	122 (8.2)	80 (7.4)
CD4 (cells/ μ L)	646	674	646	649	652	654
500-599	1124 (32.8)	351 (27.9)	160 (32.0)	525 (32.5)	454 (30.5)	336 (31.1)
600-699	1103 (32.2)	357 (28.4)	169 (33.8)	503 (31.1)	464 (31.2)	324 (30.0)
700-799	589 (17.2)	224 (17.8)	80 (16.0)	277 (17.2)	256 (17.2)	200 (18.5)
800-899	312 (9.1)	125 (9.9)	44 (8.8)	157 (9.7)	138 (9.3)	98 (9.1)
900	300 (8.8)	200 (15.9)	47 (9.4)	153 (9.5)	177 (11.9)	123 (11.4)
HIV RNA (copies/mL)	16379	6444	13688	14143	11983	11700
400	184 (5.4)	186 (14.8)	28 (5.6)	103 (6.4)	141 (9.5)	98 (9.1)
401-3,000	502 (14.7)	292 (23.3)	83 (16.6)	270 (16.8)	251 (16.9)	190 (17.6)
3,001-10,000	668 (19.5)	271 (21.6)	104 (20.8)	329 (20.4)	296 (19.9)	210 (19.5)
10,001-100,000	1667 (48.7)	432 (34.5)	242 (48.4)	751 (46.6)	641 (43.1)	465 (43.1)
>100,000	402 (11.7)	72 (5.7)	43 (8.6)	158 (9.8)	157 (10.6)	116 (10.8)

Table 4
Prior Medical History

Diagnosis	N (%)
<i>Participants</i>	4685
Non-AIDS Cancer	
Basal or squamous cell skin cancer	10 (0.2)
Other cancer (excluding above)	19 (0.4)
Cardiovascular Disease	
Acute myocardial infarction	12 (0.3)
Stroke	6 (0.1)
Coronary revascularisation	10 (0.2)
Coronary artery disease requiring drug treatment	11 (0.2)
Congestive heart failure	9 (0.2)
Myocarditis	5 (0.1)
Pericarditis	3 (0.1)
Deep vein thrombosis	16 (0.3)
Peripheral arterial disease	4 (0.1)
Pulmonary embolism	5 (0.1)
Liver/Kidney Disease	
Chronic liver disease (excluding infectious hepatitis)	17 (0.4)
Cirrhosis (biopsy/clinical diagnosis; including infectious hepatitis-related)	2 (0.0)
Hepatic steatosis (liver biopsy)	9 (0.2)
Pancreatitis	6 (0.1)
End-stage renal disease	0 (0.0)
Chronic kidney disease	9 (0.2)
<i>Any of the above</i>	122 (2.6)
<i>Any prior cardiovascular disease (CVD)^a</i>	23 (0.5)
<i>Any prior serious non-AIDS^b</i>	41 (0.9)

^aPrior clinical CVD = acute myocardial infarction, stroke, or coronary revascularisation

^bPrior serious non-AIDS (SNA) as included in the START endpoint definition: cardiovascular disease, non-AIDS cancer (excluding basal or squamous cell skin cancer), or end-stage renal disease. Note that the START SNA definition also includes decompensated liver disease, which is an exclusionary criteria and not part of prior history.