

ARIC Visit 4

Derived Variable Dictionary (45)

November, 2007

Dictionary for variables for the following derived files

Month & Year (Derived Var #)	UC # by which variables were placed in Derive File	Variables added and discontinued	Variables discontinued
July 2006 (Derive 44)		DERIVE44 + UBMG42 UBMGBF01 UBMGBM01 UBMGWF01 UBMGWM01 ECGMD41 ESMC03 STROKE41 ICTA04	
September 2007 (Derive45)	UC4764	DERIVE44 + CHDRISK10YR_41 STROKERISK10YR_41 DIABETESRISK9YR_41 HYPTMDCODE41 CHOLMDCODE41 CHOLMDCODE42	CHOLMD41 CHOLMD42

ARIC VISIT 4 Variable Dictionary

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Appendix B - AHFSCC Therapeutic Class Code

1.Alcohol Use

1.1.DRNKR41 (V4 Drinker Status)

DRNKR41	Frequency	Percent
.	111	0.95
1	5668	48.63
2	3466	29.74
3	2410	20.68
4	1	0.01

This is a numeric variable with values ranging from 1 to 4. These values are explained below.

- 1- Current drinker
- 2- Former drinker
- 3.- Never drinker
- 4 - Unknown

Note: This variable includes a historical component, but no use of Visit 1 and Visit 2 data has been made.

Table of assignment of values to DRNKR31

PHXB14: HAVE YOU EVER CONSUMED ALCOHOLIC BEVERAGES?	PHXB15: DO YOU PRESENTLY DRINK ALCOHOLIC BEVERAGES?		
	Y	N	MISSING
Y	1	2	4 (d)
N	Missing (a)	3	3 (b)
Missing	1	4 (c)	Missing

- (a) Bad data (contradictory answers)
- (b) Even though Q15 is not answered, Q14 clearly defines the person as a never drinker
- (c) Could be either former or never drinker
- (d) Could be either former or current drinker

1.2.ETHANL41 (V4 usual Ethanol Intake in g/wk)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
ETHANL41	11535	32.8	0.0	80.87	0.0	1293.6

This is a numeric variable.

- i. Current drinker (DRNKR41 =1)

Note: This variable includes a historical component, but no use of Visits 1 & 2 & 3 data has been made.

Algorithm:

$$\begin{aligned} \text{ETHANL41} = & [(\text{PHXB17A}) \times 10.8] \\ & + [(\text{PHXB18A}) \times 13.2] \\ & + [(\text{PHXB19A}) \times 15.1] \end{aligned}$$

- ii. Former or never drinker
[(DRNKR41 = 2) or (DRNKR41 =3)

$$\text{ETHANL41} = 0$$

- iii. Any of the following could not be determined:

- a. Drinking status
- b. Amount of wine
- c. Amount of beer
- d. Amount of hard liquor

$$\text{ETHANL41} = \text{missing}$$

PHXB17A: Number of glasses of wine per week
{4 oz. glasses; round down}

PHXB18A: Number of bottles/cans of beer per week
{12 oz. bottles/cans; round down}

PHXB19A: Number of drinks of hard liquor per week
{1.5 oz. shots; round down}

1.3.CURDRK41 (Current Drinker)

CURDRK41	Frequency	Percent
T	112	0.96
0	5876	50.41
1	5668	48.63

CURDRK41 is a categorical variable that takes values according to the definition table below:

CURDRK41	PHXB14	PHXB15
1	Y or Missing	Y
0	Any	N
	N	Missing
T	N	Y
	Not N	Missing

PHXB14: Have you ever consumed alcoholic beverages: Yes, No
 PHXB15: Do you presently drink alcoholic beverages? Yes, No

1.4.FORDRK41 (Former Drinker)

FORDRK41	Frequency	Percent
T	112	0.96
0	8078	69.30
1	3466	29.74

FORDRK31 is a categorical variable that takes values according to the definition table below:

FORDRK41	PHXB14	PHXB15
1	Y	N

0	Y or Missing	Y
	N	N or Missing
T	Missing	N
	N	Y
	Y or Missing	Missing

PHXB14: Have you ever consumed alcoholic beverages? Yes, No

PHXB15: Do you presently drink alcoholic beverages? Yes, No

1.5.EVRDRK41 (Ever Drinker)

EVRDRK41	Frequency	Percent
T	111	0.95
0	2410	20.68
1	9135	78.37

EVRDRK41 is a categorical variable that takes values according to the definition table below:

EVRDRK41	PHXB14	PHXB15
1	Missing	Y
	Y	Any
0	N	not Y
T	N	Y
	Missing	not Y

PHXB14: Have you ever consumed alcoholic beverages? Yes, No

PHXB15: Do you presently drink alcoholic beverages? Yes, No

2.Anthropometry

2.1.BMI41 (V4 Body Mass Index in Kg/m²)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
BMI41	11618	28.8	28.0	5.62	13.5	59.2

This is a numeric variable.

Algorithm:

$$\text{Body Mass Index} = \left[\frac{\text{Weight (lbs)}}{2.20} \right] / \left[\frac{\text{Height (cm)}}{100} \right]^2$$

$$\text{BMI41} = (\text{ANTD2} / 2.20) / (\text{ANTD1} / 100)^2$$

= missing, if either or both measure is missing

ANTD2 is weight to nearest pound.

ANTD1 is the standing height in Visit 4.

2.2.WSTHPR41 (V4 Waist-to-Hip Ratio)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
WSTHPR41	11623	1.0	1.0	0.07	0.5	1.9

This is a numeric variable.

$$\text{WSTHPR41} = \text{ANTD3A} / \text{ANTD3B}$$

ANTD3A : Girth of Waist in cm

ANTD3B : Girth of Hip in cm

3.B-Mode (Descriptions of B-Mode Ultrasound Variables)

File: UBMG42 and UBMGBF01, UBMGBM01, UBMGWF01, UBMGWM01

3.1.Original Derived Variables (See diagram for graphic illustration)

1. mx23: maximum near wall thickness is the maximum of all available (up to eleven) distances between pairs of points on the near wall, using splined data when five or more points were actually read in an interface, or using only observed data when four or less points were read.

There is a *mx23 for every site, where A*≅ is one of the prefixes listed in Appendix A, corresponding to the specific site.

lbidmx23	lindmx23	lopdmx23	qc1dmx23
rbidmx23	rindmx23	ropdmx23	qc2dmx23

2. mx45: is similarly defined, for the far wall

There is a *mx45 for every site, where A*= is one of the prefixes listed in Appendix A, corresponding to the specific site.

lbidmx45	lindmx45	lopdmx45	qc1dmx45
rbidmx45	rindmx45	ropdmx45	qc2dmx45

3. av45: mean far wall thickness, is the arithmetic mean of all available (up to eleven) distances between pairs of points on the far wall, using splined data when five or more points were actually read in an interface, or using only observed data when four or less points were read.

There is a *av45 for every site, where A*≅ is one of prefixes listed in Appendix A, corresponding to the specific site.

lbidav45	lindav45	lopdav45	qc1dav45
rbidav45	rindav45	ropdav45	qc2dav45

4. av23: is similarly defined, for the rear wall

there is a *av23 for every site, where A*≅ is one of the prefixes listed in Appendix A, corresponding to the specific site.

lbidav23	lindav23	lopdav23	qc1dav23
rbidav23	rindav23	ropdav23	qc2dav23

5. av25: arterial diameter is similarly defined, as the mean of all available 2-5 distances

There is a *av25 for every site, where A*≅ is one of the prefixes listed in Appendix A, corresponding to the specific site.

lbidav25	lindav25	lopdav25	qc1dav25
rbidav25	rindav25	ropdav25	qc2dav25

6. mn34: minimum lumen diameter, is the minimum of all available (up to eleven) distances between pairs of points on the 3-4 interfaces, using splined data when five or more points were actually read in an interface, or using only observed data when four or less points were read.

There is a *mn34 for every site, where A*≅ is one of the prefixes listed in Appendix A, corresponding to the specific site.

lbidmn34	lindmn34	lopdmn34	qc1dmn34
rbidmn34	rindmn34	ropdmn34	qc2dmn34

7. DEPTH41 is the overall average depth in pixels
8. DEPTH42 is the overall average depth in millimeters
9. QC41 is the site name of the first repeat site scanned
10. QC42 is the site name of the second repeat site scanned
11. QCCNT4 is the number of QC sites with repeated scans

3.2.Imputed Ultrasound Data for Far Wall Thickness

(To be Updated in the Near Future)

This section contains details concerning the imputed ultrasound datasets provided on the ARIC Visit 4 data tapes. The topics covered are:

- * description of data set contents
- * data sets and variable naming conventions
- * imputed versus unimputed data

Description of Data Set Contents

Included on the updated data tapes are four data sets containing imputed ultrasound values. The data set names and variables included in each data set are described below.

Data Set and Variable Naming Conventions

Data Sets Containing Imputed Values

Because gender-race specific regression models were used to perform the imputation, a separate data set exists for White Males, White Females, Black Males, and Black Females. Each data set name consists of UBMG (indicating ultrasound) + WM, WF, BF, or BM (indicating the specific gender-race group)+01(updated version number). For example, the data set containing imputed ultrasound data for white males is named UBMGWM01. Similarly, the data set containing imputed ultrasound data for black females is named UBMGBF01. A similar pattern holds for the other gender-race groups.

The variables contained within the data sets are summarized in the table below. Most variable names consist of LBID, RBID, LOPD, ROPD, LIND, or RIND (indicating location) + DA or WA (indicating the type of statistic) +45 (indicating that the measurement is of the far wall). There are a few other summary variables which have unique names. These are included in the following list.

VARIABLE	DESCRIPTION	TYPE
ID	Participant ID number	Character
*DA45	Imputed site-specific average far wall thickness *=LBID, RBID, LOPD, ROPD, LIND, RIND	Continuous
*WA45	Weight for site-specific imputed average wall thickness *=LBID, RBID, LOPD, ROPD, LIND, RIND	Continuous
SUM45_41	Simple average of *DA45	Continuous
SUM45_42	Weighted average of *DA45	Continuous
SUM45_43	Z score summary statistic for *DA45	Continuous
SUM4WT45	Number of observed values / 6 = weight for Sum45_41, Sum45_42, or Sum45_43	Continuous

Imputed versus Unimputed Data

You may want to rerun analyses previously run on unimputed (observed) ultrasound data (using the UBMG41 data set), on imputed data (using the UBMGxx01 data sets, where xx can be BM, BF, WM, or WF). Because of the naming conventions used, this should be a relatively easy task. Note that the data set containing unimputed ultrasound data (UBMG) contains variables of average far wall width, such as LINDAV45 and LBIDAV45. These unimputed variables on the UBMG data set correspond to the imputed variables LINDDA45 and LBIDDA45, respectively, on the UBMGxx01 data sets. Thus, only the middle component of the variable name must be changed for AV (unimputed average) to DA (imputed average). This logic holds true for all of the site-specific averages.

Use of Weights

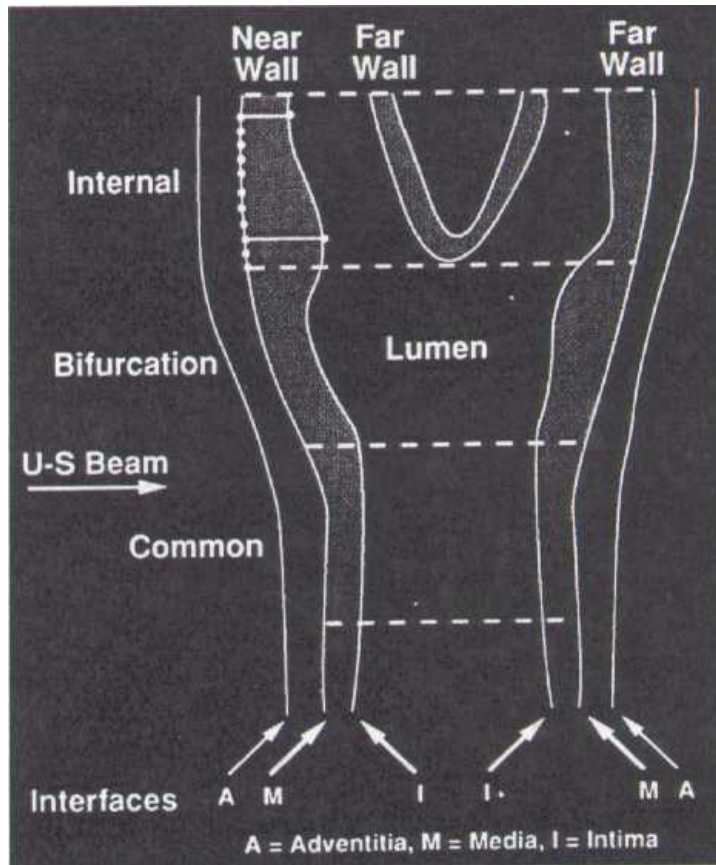
The weights are a measure of precision which varies by number of sites observed. Regression estimates, using *DA45 or SUM45_41 as dependent variables, will generally be more precise if weighted regression is used.

Appendix A

B-Mode Derived Variable Site Prefixes

LBI	Left Bifurcation
RBI	Right Bifurcation
LIN	Left Internal Carotid
RIN	Right Internal Carotid
LOP	Left Common Carotid: Optimal Angle
ROP	Right Common Carotid: Optimal Angle
QCC1	First QC Repeat Scan (refer to QC01 for site identification)
QCC2	Second QC Repeat Scan (refer to QC02 for site identification)

Schematic Overview of Carotid Artery B-Mode Ultrasound Measurements



- Interfaces:**
- 1- Boundary between the periadventitia and adventitia of the near wall (not measured)
 - 2- Boundary between the adventitia and media of the near wall
 - 3- Boundary between the intima of the near wall and the blood
 - 4- Boundary between blood and intima of the far wall
 - 5- Boundary between media and adventitia of the far wall
 - 6- Boundary between adventitia and periadventitia of the far wall (not measured)

Max 23 = B-A; Max 45 = D-C; Min 34 = H-G

The extracranial carotid system is divided into one-centimeter segments: I = internal carotid; II = carotid bifurcation; III = common carotid. A maximum of eleven measurements is made by URC readers on each arterial wall interface, in each arterial segment. These measurements are placed equidistant at 1 millimeter intervals, represented by the eleven points placed on interface B2 on the internal carotid. Also shown on this schematic is the definition of a maximum and a minimum wall thickness variable. Computational formulae for these variables are shown in this appendix.

3.3.Reader Trend Adjusted Derived Variables for Far Wall Thickness

(TO BE UPDATED IN THE NEAR FUTURE)

Because of method drift over the visit and systematic differences between readers, an additional set of far wall thickness variables was derived to adjust for these problems. These are the Reader Trend Adjusted (RTA) variables for the far wall thickness (ie boundaries 4 and 5) as illustrated in the schematic in Appendix A. The following variables appear in the RTA data files.

<u>Variable Name</u>	<u>Description</u>
id	Aric subject id
lbidrt45	Imputed RTA far wall thickness, LBID
lbidwt45	Weight for lbidrt45
lindrt45	Imputed RTA far wall thickness, LIND
lindwt45	Weight for lindrt45
lopdrt45	Imputed RTA far wall thickness, LOPD
lopdwt45	weight for lopdrt45
mnd45_1	Mean of the *rt45 variables
rbidrt45	Imputed RTA far wall thickness, RBID
rbidwt45	Weight for rbidrt45 variables
rindrt45	Imputed RTA far wall thickness, RIND
rindwt45	Weight for rindrt45 variables
ropdrt45	Imputed RTA far wall thickness, ROPD
ropdwt45	Weight for ropdrt45

Data Set Names

The data sets containing these variables are: rtabf41, rtabm41, rtawf41, and rtawm41 where rta indicates the variables are reader trend adjusted, the next two letters indicate the gender-race group, the 4 indicates it is a Visit 4 data set, and the 1 is a placeholder for the version of the data set.

3.4.Reader Trend Adjusted Shifted Derived Variables for Far Wall Thickness

(TO BE UPDATED IN THE NEAR FUTURE)

Similar to the reader trend adjusted variables described in section 3.3, but includes a race/sex/site specific constant added at visit 4 (and also at visit2, visit3 old equipment, at visit3 new equipment) to make mean wall thickness the same as at visit1 for the same race/sex/site/age/BMI.

<u>Variable Name</u>	<u>Description</u>
ID	ARIC SUBJECT ID (CIR)
LBIDJS45	Imputed R/T adjusted av45, shifted, LBI
LBIDWT45	Weight for LBIDJS45: < 1 implies Imputed
LINDJS45	Imputed R/T adjusted av45, shifted, LIN
LINDWT45	Weight for LINDJS45: < 1 implies Imputed
LOPDJS45	Imputed R/T adjusted av45, shifted, LOP
LOPDWT45	Weight for LOPDJS45: < 1 implies Imputed
MND45_1S	MEAN OF THE JS45 VARIABLES
RBIDJS45	Imputed R/T adjusted av45, shifted, RBI
RBIDWT45	Weight for RBIDJS45: < 1 implies Imputed
RINDJS45	Imputed R/T adjusted av45, shifted, RIN
RINDWT45	Weight for RINDJS45: < 1 implies Imputed
ROPDJS45	Imputed R/T adjusted av45, shifted, ROP
ROPDWT45	Weight for ROPDJS45: < 1 implies Imputed
SUMWTD45	WEIGHT FOR MND45_1S (=NO. OF OBS SITES/6)

Data Set Names

The data sets containing these variables are: RTASBF4?, RTASBM4?, RTASWF4?, and RTASWM4?, where rtas indicates the variables are reader trend adjusted shifted, the next two letters indicate the gender-race group (B-black, W-white, M-male, F-female), the 4 indicates it is a visit 4 data set, and ? is 1 which is a placeholder for the version of the data set.

4.Disease Prevalence

4.1.DIABTS41 (Diabetes - Lower Cutpoint 140 mg/dL)

DIABTS41	Frequency	Percent
.	41	0.35
T	102	0.88
0	9861	84.60
1	1652	14.17

DIABTS41 is a categorical Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	Diabetes = Yes
0	Diabetes = No
.T	Diabetes = Missing

Table of assignment of values to DIABTS41

	LIPD4A	FAST0841	PHXB6C	MSRD2	MSRD24G
DIABTS41 = 1	≥200	any	any	any	any
	≥140	1	any	any	any
	Any	any	Y	any	any
	Any	any	any	not T	Y
DIABTS41 = 0	not missing and <140	any	N or U	any	not Y
DIABTS41 = .T	Any	0	not Y	any	not Y
	not ≥ 140	any	missing	any	not Y
	not ≥ 140	any	not Y	not T	missing

LIPD4A: Blood Glucose Level in mg/dL

FAST0841: 8 hours or more of fasting time

PHXB6C: Diabetes (Sugar in Blood)? Y, N, U (Unsure).

MSRD2*: Took no medications in past 2 weeks? T (no meds) F

MSRD24G: Were any of the medications you took for Diabetes or high blood sugar?
Y, N, U (Unknown)

*A value of T on this item skips the patient over MSRD24G.

4.2.DIABTS42 (Diabetes - Lower Cutpoint 126 mg/dL)

DIABTS42	Frequency	Percent
.	41	0.35
T	105	0.90
0	9567	82.08
1	1943	16.67

DIABTS42 is a categorical Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	Diabetes = Yes
0	Diabetes = No
.T	Diabetes = Missing

Table of assignment of values to DIABTS42

	LIPD4A	FAST0841	PHXB6C	MSRD2	MSRD24G
DIABTS42 = 1	≥200	any	any	any	any
	≥126	1	any	any	any
	Any	any	Y	any	any
	Any	any	any	not T	Y
DIABTS42 = 0	not missing and <126	any	N or U	any	not Y

DIABTS42 = .T	Any	0	not Y	any	not Y
	not ∃ 126	any	missing	any	not Y
	not ∃ 126	any	not Y	not T	missing

LIPD4A: Glucose in mg/dL

FAST0841: 8 hours or more of fasting time

PHXB6C: Diabetes (Sugar in Blood)? Y, N, U (Unsure).

MSRD2*: Took no medications in past 2 weeks? T (no meds) F

MSRD24G: Were any of the medications you took for Diabetes or high blood sugar?
Y, N, U (Unknown)

* A value of T on this item skips the patient over MSRD24G

4.3.QWAVE44A

(V4 Diagnostic Q-wave present from Adjudicated ECG Data)

QWAVE44A	Frequency	Percent
.	83	0.71
T	27	0.23
0	11359	97.45
1	187	1.60

In this definition, diagnostic Q-wave corresponds to Minnesota codes in 1-1-x to 1-2-x, but without ST-T changes (Minnesota codes 4 or 5). This numeric Visit 4 variable does not correspond with definitions provided in the ARIC ECG manual. The variable assumes the following values according to the table below.

Value	Description
1	Diagnostic Q-wave present = Yes
0	Diagnostic Q-wave present = No
.T or .	Missing value

Table of assignment of values to QWAVE44A

	ECGMDFLG	ECGMD09*	ECGMD10*	ECGMD11*
QWAVE44A = 1	1	11-25 OR 27	any	any
		any	11-25 OR 27	any
		any	any	11-25 or 27
QWAVE44A = 0	1	nonmiss & not 11-25 & not 27	nonmiss & not 11-25 & not 27	nonmiss & not 11-25 & not 27
QWAVE44A = .T	0	any	any	any
QWAVE44A = .	Any other combination of values			

* The values for these variables in this table correspond to the last two digits of the Minnesota codes: that is, the initial 1 contained in the Minnesota codes has been dropped.

Variable	Description	Range of Possible Values
ECGMDFLG	Whether ECG Form present or not	
ECGMD09	Q-Q.S. Pattern I, aVL, V6	1-1-x, 1-2-x, 1-3-x
ECGMD10	Q-Q.S. Pattern II, III, aVF	1-1-x, 1-2-x, 1-3-x
ECGMD11	Q-Q.S. Pattern V1-V5	1-1-x, 1-2-x, 1-3-x

4.4.QWAVE47A

(Major Q-Wave present with no 7-1-1, 7-1-2, or 7-4, from Adjudicated ECG Records)

QWAVE47A	Frequency	Percent
.	84	0.72
M	27	0.23
T	16	0.14
0	11459	98.31
1	70	0.60

In this definition, major Q-waves correspond to Minnesota codes 1-1-x. This numeric Visit 4 variable is based on definition A in the ARIC ECG Manual and assumes the following values according to the table below.

Value	Description
1	Diagnostic Q-wave present = Yes
0	Diagnostic Q-wave present = No
.T or .M or .	Missing value

Table of assignment of values to QWAVE47A

	ECGMDFLG	ECGMD09*	ECGMD10*	ECGMD11*	ECGMD24**
QWAVE47A = 1	1	11-17	any	any	nonmiss & not (1, 4, or 11)
		any	11-17	any	
		any	any	11-17	
QWAVE47A = 0	1	nonmiss & not 11-17	nonmiss & not 11-17	nonmiss & not 11-17	any
QWAVE47A = .T	1	11-17	any	any	1 or 4 or 11 or missing
		any	11-17	any	
		any	any	11-17	
QWAVE47A = .M	0	any	any	any	any
QWAVE47A = .	Any other combination of values				

* The values for these variables in this table correspond to the last two digits of the Minnesota codes: that is, the initial 1 contained in the Minnesota codes has been dropped.

** A value of 1 for this variable corresponds to Minnesota codes 7-1-1 or 7-1-2. A value of 4 corresponds to Minnesota code 7-4.

Variable	Description	Range of Possible Values
ECGMDFLG	Whether composite ECG Record with Adjudicated Values is present or not	
ECGMD09	Q-Q.S. Pattern I, aVL, V6	1-1-x, 1-2-x, 1-3-x
ECGMD10	Q-Q.S. Pattern II, III, aVF	1-1-x, 1-2-x, 1-3-x
ECGMD11	Q-Q.S. Pattern V1-V5	1-1-x, 1-2-x, 1-3-x
ECGMD24	Ventricular Conduction Defect	7-1-1 through 7-8

4.5.QWAVEM47

(V3 Major Q-wave present with no 7-1-1, 7-1-2, or 7-4, from Original Machine Coded ECG Records)

QWAVEM47	Frequency	Percent
.	114	0.98
T	23	0.20
0	11427	98.04
1	92	0.79

In this definition, major Q-waves correspond to Minnesota codes 1-1-x. This numeric Visit 4 variable is based on definition A in the ARIC ECG Manual and assumes the following values according to the table below.

Value	Description
1	Major Q-wave present = Yes
0	Major Q-wave present = No
.T or .M or .	Missing value

Table of assignment of values to QWAVEM47

	ECGEFLAG	ECGE09*	ECGE10*	ECGE11*	ECGE24*
QWAVEM47 = 1	1	11-17	any	any	nonmiss & not (1,4, or 11)
		any	11-17	any	
		any	any	11-17	
QWAVEM47 = 0	1	nonmiss & not 11-17	nonmiss & not 11-17	nonmiss & not 11-17	any
QWAVEM47 = .T	1	11-17	any	any	1, 4, 11, or missing
		any	11-17	any	
		any	any	11-17	
QWAVEM47 = .M	0	any	any	any	any
QWAVEM47 = .	Any other combination of values				

* The values for these variables in this table correspond to the last two digits of the Minnesota codes: that is, the initial 1 contained in the Minnesota codes has been dropped.

** A value of 1 for this variable corresponds to Minnesota codes 7-1-1 or 7-1-2. A value of 4 corresponds to Minnesota code 7-4.

Variable	Description	Range of possible values
ECGEFLAG	Whether composite ECG Record with Adjudicated Values is present or not	
ECGE09	Q-Q.S. Pattern I, aVL, V6	1-1-x, 1-2-x, 1-3-x
ECGE10	Q-Q.S. Pattern II, III, aVF	1-1-x, 1-2-x, 1-3-x
ECGE11	Q-Q.S. Pattern V1-V5	1-1-x, 1-2-x, 1-3-x
ECGE24	Ventricular Conduction Defect	7-1-1 through 7-8

4.6.QWAVE48B

(V4 Minor Q-Wave present with ST or T codes and no 7-1-1, 7-1-2, or 7-4 codes from Adjudicated ECG Records)

QWAVE48B	Frequency	Percent
.	87	0.75
M	27	0.23
0	11507	98.72
1	35	0.30

In this definition, minor Q-wave corresponds to Minnesota codes 1-2-x, ST segment corresponds to codes 4-x, and T-wave corresponds to definition B in the ARIC ECG Manual. The variable assumes the following values according to the table below.

Value	Description
1	Minor Q-wave present = Yes.
0	Minor Q-wave present = No.
T or M. or .	Missing value.

Table of assignment of values to QWAVE48B

	ECGMDFLG	ECGMD09, 10, 11*	ECGMD12 - ECGMD17**	ECGMD24 ⁺
QWAVE48B = 1	1	ECGMD09= (21-25, 27, or 28) or ECGMD10= (21-25, 27, or 28) or ECGMD11= (21-25, 27, or 28)	ECGMD12 = 2, 11, or 12 ECGMD13 = 2, 11 or 12 ECGMD14 = 2, 11, or 12 ECGMD15 = 1 or 2 ECGMD16 = 1 or 2 ECGMD17 = 1 or 2	nonmiss & not (1, 4, or 11)
		nonmiss & not (21-25, 27, or 28)	any	any

QWAVE48B = 0	1	any	(ECGMD12, ECGMD13, and ECGMD14 not missing) and not (2, 11, or 12) and (ECGMD15, ECGMD16, and ECGMD17 not 1 & 2 and not missing)	any
QWAVE48B = .T	1	Values of ECGMD09-11 and ECGMD12-17 that would give QWAVE48B = 1		1, 4, 11, or missing
QWAVE48B = .M	0	any	any	any
QWAVE48B = .	Any other combination of values			

* The values for these variables in this table correspond to the last two digits of the Minnesota codes: that is, the initial 1 contained in the Minnesota codes has been dropped.

** The values for these variables correspond to the last one or two digits of the Minnesota codes: that is, for variables ECGMD12-ECGMD14, the initial 4 contained in the Minnesota codes has been dropped, and for variables ECGMD15-ECGMD17, the initial 5 contained in the Minnesota codes has been dropped.

+ A value of 1 for this variable corresponds to Minnesota codes 7-1-1 or 7-1-2. A value of 4 corresponds to Minnesota code 7-4.

Variable	Description	Range of Possible Values
ECGMDFLG	Whether composite ECG Record with Adjudicated Values is present or not	
ECGMD09	Q-Q.S. Pattern I, aVL, V6	1-1-x, 1-2-x, 1-3-x
ECGMD10	Q-Q.S. Pattern II, III, aVF	1-1-x, 1-2-x, 1-3-x
ECGMD11	Q-Q.S. Pattern V1-V5	1-1-x, 1-2-x, 1-3-x
ECGMD12	ST Junction & Segment Depression I, aVL, V6	4-1-1 through 4-4
ECGMD13	ST Junction & Segment Depression II, III, aVF	4-1-1 through 4-4
ECGMD14	ST Junction & Segment	4-1-1 through 4-4

	Depression V1-V5	
ECGMD15	T Wave I, aVL, V6	5-1 through 5-4
ECGMD16	T Wave II, III, aVF	5-1 through 5-4
ECGMD17	T Wave V1-V5	5-1 through 5-4
ECGMD24	Ventricular Conduction Defect	7-1-1 through 7-8

4.7.QWVEM48B

(Minor Q-wave present with ST or T codes and no 7-1-1, 7-1-2, or 7-4 codes, from Original Machine Coded ECG Records)

QWVEM48B	Frequency	Percent
.	87	0.75
M	27	0.23
0	11500	98.66
1	42	0.36

In this definition, minor Q-wave corresponds to Minnesota codes 1-2-x, ST segment corresponds to codes 4-x, and T-wave corresponds to codes 5-1 or 5-2. This numeric Visit 4 variable is based on definition B in the ARIC ECG Manual. The variable assumes the following values according to the table below.

Value	Description
1	Minor Q-wave present = Yes.
0	Minor Q-wave present = No.
T or M. or .	Missing value.

Table of assignment of values to QWVEM48B

	ECGEFLAG	ECGE09, 10, 11*	ECGE12 - ECGE17**	ECGE24 ⁺
QWVEM48B = 1	1	ECGE09= (21-25, 27, or 28) or ECGE10= (21-25, 27, or 28) or ECGE11= (21-25, 27, or 28)	ECGE12 = 2, 11 or 12 ECGE13 = 2, 11 or 12 ECGE14 = 2, 11 or 12 ECGE15 = 1 or 2 ECGE16 = 1 or 2 ECGE17 = 1 or 2	nonmiss & not (1,4,or 11)
		nonmiss & not (21-25, 27, or 28)	any	any

QWVEM48B = 0	1	any	(ECGE12, ECGE13, and ECGE14 not missing & not 2, 11, or 12) and (ECGE15, ECGE16, and ECGE17 not missing & not 1 or 2)	any
QWVEM48B = .T	1	Values of ECGE09-11 and ECGE12-17 that would give QWVEM48B = 1		1,4, 11, or missing
QWVEM48B = .M	0	any	any	any
QWVEM48B = .	Any other combination of values			

* The values for these variables in this table correspond to the last two digits of the Minnesota codes: that is, the initial 1 contained in the Minnesota codes has been dropped.

** The values for these variables correspond to the last one or two digits of the Minnesota codes: that is, for variables ECGE12-ECGE14, the initial 4 contained in the Minnesota codes has been dropped, and for variables ECGE15-ECGE17, the initial 5 contained in the Minnesota codes has been dropped.

+ A value of 1 for this variable corresponds to Minnesota codes 7-1-1 or 7-1-2. A value of 4 corresponds to Minnesota code 7-4.

Variable	Description	Range of Possible Values
ECGEFLAG	Whether original machine coded ECG is present or not	
ECGE09	Q-Q.S. Pattern I, aVL, V6	1-1-x, 1-2-x and 1-3-x
ECGE10	Q-Q.S. Pattern II, III, aVF	1-1-x, 1-2-x and 1-3-x
ECGE11	Q-Q.S. Pattern V1-V5	1-1-x, 1-2-x and 1-3-x
ECGE12	ST Junction & Segment Depression I, aVL, V6	4-1-1 through 4-4
ECGE13	ST Junction & Segment Depression II, III, aVF	4-1-1 through 4-4

ECGE14	ST Junction & Segment Depression V1-V5	4-1-1 through 4-4
ECGE15	T Wave I, aVL, V6	5-1 through 5-4
ECGE16	T Wave II, III, aVF	5-1 through 5-4
ECGE17	T Wave V1-V5	5-1 through 5-4
ECGE24	Ventricular Conduction Defect	7-1-1 through 7-8

4.8.PRVCHD42 (V4 Prevalent CHD-unverified)

(UC3508.04)

PRVCHD42	Frequency	Percent
.	68	0.58
T	104	0.89
0	10499	90.07
1	985	8.45

This is a numeric Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	Coronary Heart Disease = Yes.
0	Coronary Heart Disease = No.
.T or .	Missing value.

Table of assignment of values to PRVCHD42

PRVCHD42	ECGMI41	HXOFMI41	HHXD4	HHXD5A	HHXD6	HHXD7A
1	1	any	any	any	any	any
	any	1	any	any	any	any
	any	any	not N	Y	any	any
	any	any	any	any	not N	Y
0	0	0	any	N	any	N
			N	not Y	N	not Y
			N	not Y	any	N
			N	not Y	N	not Y
.T	missing	not 1	any	not Y	any	not Y
	not 1	missing	any	not Y	not N	not Y
	not 1	not 1	N	Y	any	not Y
			Y	missing		
					N	Y

	not 1	not 1	any	not Y	Y	missing
missing	Any other combination of values					

ECGMI41: V4 MI According to Adjudicated ECG.
 MDDXMI41: V4 MD Diagnosed Myocardial Infarction.
 HHXD4: Heart, neck or leg surgery? Y, N
 HHXD5A: Coronary Bypass. Y, N
 HHXD6: Balloon angioplasty on heart or legs? Y, N
 HHXD7A: Angioplasty of Coronary Artery (ies). Y, N

4.9.MDDXMI41 (V4 MD Diagnosed Myocardial Infarction)

MDDXMI41	Frequency	Percent
0	10909	93.59
1	747	6.41

This is a numeric Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	Reported MD Diagnosed MI = Yes.
0	Reported MD Diagnosed MI = No.
.T or .	Missing value.

Table of assignment of values to MDDXMI41

		CONSIDER CONTACT YEARS 8, 9, 10			
MDDXMI41	PHXB6A	AFUx07	AFUx17	AFUx18	AFUx19
1	any	Y	Y	Y	H
	Y	any	any	any	any
0		Y	Y	Y	0
		Y	Y	N	missing
		Y	N	N or missing	missing
		N	N or missing	missing	missing
.T		missing	any	any	any
		Y	missing	any	any
		Y	Y	Y	missing
		Y	Y	missing	any
		Y	N	Y	any
		Y	N	missing	H or O

		N	Y	any	any
		N	missing	Y or N	any
		N	missing	missing	H or O

MDDXMI41 = . Any other pattern of response

- PHXB6A: Has a doctor ever told you that you had a heart attack? Y, N, U
 AFUx07: Have you ever had any pain or discomfort in your chest? Y, N
 AFUx17: Have you ever had a severe pain across the front of your chest lasting for half an hour or more? Y, N
 AFUx18: Did you see a doctor because of this pain? Y, N
 AFUx19: What did he say it was? H (Heart Attack), O (Other Disorder)

Note: The algorithm below requires use of Annual Follow-up (AFUx) variables from contact years 8, 9, 10 (afd0802, afe0802, aff0802, afd0902, afe0902, aff0902, aff1002).

Algorithm:

1. If PHXB6A = Y or
 ((AFUx07 = Y) and (AFUx17 = Y) and (AFUx18 = Y) and (AFUx19 = H))
 then set MDDXMI41 = 1 (Positive)
2. If [(AFUx07 = Y and AFUx17 = Y) and (AFUx18 = Y and AFUx19 = O)] or
 [(AFUx07 = Y and AFUx17 = Y) and
 (AFUx18 = N and AFUx19 = missing)] or

 [(AFUx07 = Y and AFUx17 = N) and
 (AFUx18 = missing and AFUx19 = missing)] or

 [(AFUx07 = N and AFUx17 = missing) and
 (AFUx18 = missing and AFUx19 = missing)] and
 then set MDDXMI41 = 0. (Negative)
3. If [(AFUx07 = missing)] or
 [(AFUx07 = Y) and (AFUx17 = missing)] or
 [(AFUx07 = Y) and (AFUx17 = Y) and
 (AFUx18 = Y) and (AFUx19 = missing)] or
 [(AFUx07 = Y) and (AFUx17 = Y) and (AFUx18 = missing)] or
 [(AFUx07 = Y) and (AFUx17 = N) and
 (AFUx18 = Y or AFUx18 = N)] or
 [(AFUx07 = Y) and (AFUx17 = N) and
 (AFUx18 = missing) and (AFUx19 = H or AFUx19 = 0)] or
 [(AFUx07 = N) and (AFUx17 = Y or AFUx17 = N)]

[(AFUx07 = N) and (AFUx17 = missing) and
(AFUx18 = Y or AFUx18 = N)] or
[(AFUx07 =N) and (AFUx17 = missing) and
(AFUx18 = missing) and (AFUx19 = H or AFUx19 = 0)]
then set MDDXMI41 to missing.

4.10.HXOFMI41 (V4 History of Myocardial Infarction)

HXOFMI41	Frequency	Percent
0	10817	92.80
1	839	7.20

This is a numeric Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	Self or Physician-Reported Heart Attack = Yes.
0	Self or Physician-Reported Heart Attack = No.
.T or .	Missing value.

Table of assignment of values to HXOFMI41

HXOFMI41	MDDXMI41	AFUX30
1	1	any
	any	Y
0	0	N or U
.T	Not 1	missing
	missing	N or U

HXOFMI41 = . Any other combination of values

MDDXMI41: MD Diagnosed Myocardial Infarction.

AFUx30: Have you been hospitalized for a heart attack? Y, N, U (Unknown)

Note: Definition requires use of Annual Follow-up (AFUx) variables from contact years 8, 9, 10 (afd0802, afe0802, aff0802, afd0902, afe0902, aff0902, aff1002).

4.11.ECGMI41

(Prevalent Myocardial Infarction from Adjudicated Electrocardiograms)

ECGMI41	Frequency	Percent
T	127	1.09
0	11432	98.08
1	97	0.83

This is a numeric Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	MI from ECG = Yes.
0	MI from ECG = No.
.T or .	Missing value.

Table of assignment of values to ECGMI41

	QWAVE47A	QWAVE48B
ECGMI41 = 1	1	any
	any	1
ECGMI41 = 0	0	0
ECGMI41 = .T	missing	not 1
	not 1	missing
ECGMI41 = .	Any other combination of values	

QWAVE47A: Major Q-Wave present with no 7-1-1 or 7-4.

QWAVE48B: Minor Q-Wave present with S or ST and no 7-1-1 or 7-4.

4.12.MACHMI41

(Prevalent Myocardial Infarction from Original Machine Coded Electrocardiograms)

MACHMI41	Frequency	Percent
T	137	1.18
0	11386	97.68
1	133	1.14

This is a numeric Visit 4 variable which assumes the following values according to the table below.

Value	Description
1	MI from ECG = Yes.
0	MI from ECG = No.
.T or .	Missing value.

Table of assignment of values to MACHMI41

	QWAVEM47	QWVEM48B
MACHMI41 = 1	1	any
	any	1
MACHMI41 = 0	0	0
MACHMI41 = .T	missing	not 1
	not 1	missing
MACHMI41 = .	Any other combination of values	

QWAVEM47: Major Q-wave present with no 7-1-1 or 7-4.

QWVEM48B: Minor Q-wave present with S or ST and no 7-1-1 or 7-4.

4.13.PRVCHD43

(Prevalent CHD at Visit 4, definition 3)

PRVCHD43	Frequency	Percent
.	227	1.95
0	10446	89.62
1	983	8.43

PRVCHD43= 1 if PRVCHD05=1 or (IN_00SP=1 and .<DATISP<=V4DATE41) or (IN_00SP=1 and V4DATE41=. and DATEISP<=V1DATE01 +9*365.25).

PRVCHD43= 0 if PRVCHD05=0 and (IN_00SP=0 or DATISP>V4DATE41>.) or (V4DATE41=. and DATEISP>V1DATE01 +9*365.25)

Else PRVCHD43=. (missing)

4.14.PRVSTR41 (Prevalent Stroke at Visit 4)

PRVSTR41	Frequency	Percent
.	25	0.21
0	11360	97.46
1	271	2.32

PRVSTR43= 1 if HOM10D=1 or (IN00DP=1 and .<ED00DP<=V4DATE41) or (IN00DP=1 and V2DATE21=. and ED00DP<=V1DATE01 +9*365.25).

PRVSTR43= 0 if HOM10D=0 and (IN00DP=0 or ED00DP>V4DATE41>.) or (V4DATE41=. and ED00DP>V1DATE01 +9*365.25).

Else PRVSTR43=. (missing)

5.ECG Derived Variables (Descriptions of ECG Variables)

ECGMD41 Data Set (ECG Composite File at Visit 4)

The ECGMD41 data set is the final study ECG data set for Visit 4. There is 1 ECG Machine coded data set in Visit 4, ECGE. The Visual Coded record from the ECG Reading Center in Minnesota is the ETLD record. All significant findings plus 10% random sample per protocol in ECG records were sent to be visually coded at Minnesota in Visit 4. About half of the visual coded records were sent for quality control purposes and the remainder sent because an algorithm determined these records needed visual coding. Of these roughly 3100 visual coded (ETLD) records, about one third were found to have some significant differences between the visual and machine coding. The ECG Visual Reading Center was requested to re-code the portions of the records where differences occurred. These are the adjudicated ECAD records.

The ECGMD41 data set utilizes all of the different ECG data sets to some extent. First, if there is only an ECGE record for a particular ID, the ECGE record for that ID is duplicated in the ECGMD41 data set. Second, if there is a Visual Coded record for an ID but there was no need for adjudication, the ECGE record for that ID is duplicated in the ECGMD41 data set. Lastly, when there is an ECAD adjudicated record, the ECGE record is written to the ECGMD41 data set with the exception that the adjudicated values overwrite the original ECGE values when machine coded value is not in substantial agreement with the visual coded value. Details of the criteria for agreement can be found in Section 2.1.2 of ARIC Manual #5. Thus, records with ECAD adjudicated values are the only records that are potentially different from the original ECGE records in the ECGMD41 data set. If only a paper tracing was read (electronic ECG was lost), the composite record contains ETLD values.

Attached is a listing of variables contained in the ECGMD41 data set. Unless specifically requested otherwise, these variables should be used in official ARIC analyses, although the ECGE (*Machine Coding*) and ETLD (*Visual Coding*) records are also distributed.

ESMC Data Set (ECG Serial Changes at Visit 4)

The ECGMD41 data set was compared with the baseline ECG composite file (ECGMA03 ECGMB22 ECGMC35). Note that baseline ECG could be from Visit 2 (3) when visit 1(1 & 2) ECG was not available. Potential cases with ECG serial changes were selected by computer algorithm at CSCC. The ECG machine coding center also compared ECGE data with baseline ECG (ECGX02, ECGC, ECGD) to select potential cases with ECG serial changes by NOVA codes. The two serial changes listing were sent to the ECG Visual Reading Center for determination of serial changes using their algorithm. The result file is ESMC.

SAS NAME: ECGMD41

Variable	Description
ECGMD09	MINNESOTA CODE L1
ECGMD10	MINNESOTA CODE F1
ECGMD11	MINNESOTA CODE V1
ECGMD12	MINNESOTA CODE L4
ECGMD13	MINNESOTA CODE F4
ECGMD14	MINNESOTA CODE V4
ECGMD15	MINNESOTA CODE L5
ECGMD16	MINNESOTA CODE F5
ECGMD17	MINNESOTA CODE V5
ECGMD18	MINNESOTA CODE L92
ECGMD19	MINNESOTA CODE F92
ECGMD20	MINNESOTA CODE V92
ECGMD21	MINNESOTA CODE C2
ECGMD22	MINNESOTA CODE C3
ECGMD23	MINNESOTA CODE C6
ECGMD24	MINNESOTA CODE C7
ECGMD25	MINNESOTA CODE C91
ECGMD26	MINNESOTA CODE C93
ECGMD27	MINNESOTA CODE C94
ECGMD28	MINNESOTA CODE C95
ECGMD29	MINNESOTA CODE E7

ECGMD41 VARIABLES

<u>VARIABLE</u>	<u>TYPE</u>	<u>INFORMATION</u>
ECGMD09	CHAR	Minnesota Code L1 Q and QS Patterns Anterolateral Sites (Leads I, AVL, V6)
		Blank No Minnesota Code Equivalent
		0 No Minnesota Code Equivalent
		11 Code 1-1-1
		12 Code 1-1-2
		13 Code 1-1-3
		21 Code 1-2-1
		22 Code 1-2-2
		23 Code 1-2-3
		28 Code 1-2-8
		31 Code 1-3-1
		33 Code 1-3-3

ECGMD10 CHAR Minnesota Code F1
Q and QS Patterns
Posterior (Inferior) Site (Leads II, III, AVF)

Blank	No Minnesota Code Equivalent
0	No Minnesota Code Equivalent
11	Code 1-1-1
12	Code 1-1-2
14	Code 1-1-4
15	Code 1-1-5
21	Code 1-2-1
22	Code 1-2-2
23	Code 1-2-3
24	Code 1-2-4
25	Code 1-2-5
26	Code 1-2-6
31	Code 1-3-1
34	Code 1-3-4
35	Code 1-3-5
36	Code 1-3-6

ECGMD11 CHAR Minnesota Code V1
Q and QS Patterns
Anterior Site (Leads V1, V2, V3, V4, V5)

Blank	No Minnesota Code Equivalent
0	No Minnesota Code Equivalent
11	Code 1-1-1
12	Code 1-1-2
16	Code 1-1-6
17	Code 1-1-7
21	Code 1-2-1
22	Code 1-2-2
27	Code 1-2-7
28	Code 1-2-8
31	Code 1-3-1
32	Code 1-3-2

ECGMD12 CHAR Minnesota Code L4
ST Junction (J) and Segment Depression
Anterolateral Site (Leads I, AVL, V6)

Blank	No Minnesota Code Equivalent
0	No Minnesota Code Equivalent
11	Code 4-1-1
12	Code 4-1-2

2 Code 4-2
3 Code 4-3
4 Code 4-4

ECGMD13 CHAR Minnesota Code F4
ST Junction (J) and Segment Depression
Posterior (Inferior) Site (Leads II, III, AVF)

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
11 Code 4-1-1
12 Code 4-1-2
2 Code 4-2
3 Code 4-3
4 Code 4-4

ECGMD14 CHAR Minnesota Code V4
ST Junction (J) and Segment Depression
Anterior Site (Leads V1, V2, V3, V4, V5)

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
11 Code 4-1-1
12 Code 4-1-2
2 Code 4-2
3 Code 4-3
4 Code 4-4

ECGMD15 CHAR Minnesota Code L5
T-Wave Items
Anterolateral Site (Leads I, AVL, V6)

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
1 Code 5-1
2 Code 5-2
3 Code 5-3
4 Code 5-4

ECGMD16 CHAR Minnesota Code F5
T-Wave Items
Posterior (Inferior) Site (Leads II, III, AVF)

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
1 Code 5-1
2 Code 5-2

3 Code 5-3
 4 Code 5-4

ECGMD17 CHAR Minnesota Code V5
 T-Wave Items
 Anterior Site (Leads V2, V3, V4, V5)

Blank No Minnesota Code Equivalent
 0 No Minnesota Code Equivalent
 1 Code 5-1
 2 Code 5-2
 3 Code 5-3
 4 Code 5-4

ECGMD18 CHAR Minnesota Code L92
 ST Segment Elevation
 Anterolateral Site (Leads I, AVL, V6)

Blank No Minnesota Code Equivalent
 0 No Minnesota Code Equivalent
 2 Code 9-2

ECGMD19 CHAR Minnesota Code F92
 ST Segment Elevation
 Posterior (Inferior) Site (Leads II, III, AVF)

Blank No Minnesota Code Equivalent
 0 No Minnesota Code Equivalent
 2 Code 9-2

ECGMD20 CHAR Minnesota Code V92
 ST Segment Elevation
 Anterior Site (Leads V1, V2, V3, V4, V5)

Blank No Minnesota Code Equivalent
 0 No Minnesota Code Equivalent
 2 Code 9-2

ECGMD21 CHAR Minnesota Code C2
 QRS Axis Deviation Codes

Blank	No Minnesota Code Equivalent		
0	Code 2-0	0 - 90 Degrees	Minn Code 2-0
11	Code 2-1-1	0 - -30 Degrees	Minn Code 2-0
12	Code 2-1-2	-30 - -90 Degrees	Minn Code 2-1
21	Code 2-2-1	90 - 120 Degrees	Minn Code 2-3
22	Code 2-2-2	120 - 150 Degrees	Minn Code 2-2

3	Code 2-3	-150 - -190 Degrees	Minn Code 2-4
4	Code 2-4	UNDETERMINATE	Minn Code 2-5

ECGMD22 CHAR Minnesota Code C3
High Amplitude R Wave Codes

Blank	No Minnesota Code Equivalent		
0	Code 3-0	No Minnesota Code Equivalent	
11	Code 3-1-1	Equivalent to Minn Code 3-4	
12	Code 3-1-2	{the SUM of 3-1-2 + 3-1-3 + 3-1-4 Equals Minn 13 Code 3-1-3 Code 3-1}	
14	Code 3-1-4		
2	Code 3-2	Equivalent to Minn Code 3-2	
31	Code 3-3-1	{the SUM of 3-3-3 + 3-3-2 Equals Minn Code 3-3}	
32	Code 3-3-2		

ECGMD23 CHAR Minnesota Code C6
AV Conduction Defect Codes

Blank	No Minnesota Code Equivalent	
0	Code 6-0	No Minnesota Code Equivalent
11	Code 6-1-1	Equivalent to Minn Code 6-1-1
2	Code 6-2	Equivalent to Minn Code 6-2-1 OR 6-2-2 OR 6-2-3
3	Code 6-3	Equivalent to Minn Code 6-3
4	Code 6-4	Equivalent to Minn Code 6-4-1 OR 6-2-3
5	Code 6-5	Equivalent to Minn Code 6-5

ECGMD24 CHAR Minnesota Code C7
Ventricular Conduction Defect Codes

Blank	No Minnesota Code Equivalent	
0	Code 7-0	No Minnesota Code Equivalent
1	Code 7-1	Equivalent to Minn Code 7-1-1 OR 7-1-2
2	Code 7-2	Equivalent to Minn Code 7-2-1 OR 7-2-3
3	Code 7-3	Equivalent to Minn Code 7-3
4	Code 7-4	Equivalent to Minn Code 7-4
5	Code 7-5	Equivalent to Minn Code 7-5
6	Code 7-6	Equivalent to Minn Code 7-6
7	Code 7-7	Equivalent to Minn Code 7-7
8	Code 7-8	Equivalent to Minn Combination of 7-2 and 7-7

ECGMD25 CHAR Minnesota Code C91
Low QRS Amplitude

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
1 Code 9-1

ECGMD26 CHAR Minnesota Code C93
P-Wave Amplitude ≥ 2.5 MM In Any of Leads II, III, AVF in
Majority of Beats

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
3 Code 9-3

ECGMD27 CHAR Minnesota Code C94
QRS Transition Zone

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
1 Code 9-4-1
2 Code 9-4-2

ECGMD28 CHAR Minnesota Code C95
T-Wave Amplitude

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
5 Code 9-5

ECGMD29 CHAR Minnesota Code E7
Duration Criteria for R-E Score for LVH

Blank No Minnesota Code Equivalent
0 No Minnesota Code Equivalent
7 QRS Duration ≥ 90 MS OR Intrinsic Deflection V5 OR
V6 ≥ 50 MS

6.Hypertension

6.1.HYPERT44 (V4 Hypertension, definition 4)

HYPERT44	Frequency	Percent
.	73	0.63
0	7113	61.02
1	4470	38.35

HYPERT44 = 1 if (SBPD20 \geq 90) OR
 [(MSRD24A = Y) and (MSRD2 not equal T)]
 = 0 if (0 \neq SBPD20 < 90) AND {MSRD24A = N or
 [(MSRD24A = missing) and (MSRD2 = T)] }
 = missing Otherwise

Table of assignment of values to HYPERT44

HYPERT44	SBPD20	MSRD24A	MSRD2
1	\geq 90	any	any
	any	Y	Not T
0	[0,90)	N	any
		missing	T
missing	otherwise		

SBPD20: 1st and 2nd diastolic BP average

MSRD24A: Were any of the medications you took during the past two weeks for high blood pressure? Y, N, U (Unknown)

MSRD2: Reason why did not bring all medications

6.2.HYPERT45 (V4 Hypertension, definition 5)

HYPERT45	Frequency	Percent
.	56	0.48
0	6043	51.84
1	5557	47.68

HYPERT45 = 1 if (SBPD20 ≥ 90) or (SBPD19 ≥ 140) or
 [(MSRD24A = Y) and (MSRD2 ≠ T)]

= 0 if (0 ≠ SBPD20 < 90) and (0 < SBPD19 < 140)
 and {MSRD24A = N or [(MSRD24A = missing)
 and (MSRD2 = T)]}

= missing Otherwise

Table of assignment of values to HYPERT45

HYPERT45	SBPD20	SBPD19	MSRD24A	MSRD2
1	≥90	any	any	any
	any	≥140	any	any
	any	any	Y	not T
0	[0,90)	(0,140)	N	any
			missing	T
missing	otherwise			

SBPD19: 1st and 2nd systolic BP average

SBPD20: 1st and 2nd diastolic BP average

MSRD24A: Were any of the medications you took during the past two weeks for high blood pressure? Y, N, U (Unknown)

MSRD2: Reason why did not bring all medications

6.3.6.3 HYPERT46 (V4 Hypertension, definition 6)

HYPERT46	Frequency	Percent
.	69	0.59
0	7017	60.20
1	4570	39.21

HYPERT46 = 1 if (SBPD20 ≥ 95) or (SBPD19 ≥ 160) or [(MSRD24A = Y) and (MSRD2 ≠ T)]

= 0 if (0 ≠ SBPD20 < 95) and (0 < SBPD19 < 160) and {MSRD24A = N or [(MSRD24A = missing) and (MSRD2 = T)]}

= missing Otherwise

Table of assignment of values to HYPERT46

HYPERT46	SBPD20	SBPD19	MSRD24A	MSRD2
1	≥95	any	any	any
	any	≥160	any	any
	any	any	Y	not T
0	[0,95)	(0,160)	N	any
			missing	T
missing	otherwise			

SBPD19: 1st and 2nd systolic BP average

SBPD20: 1st and 2nd diastolic BP average

MSRD24A: Were any of the medications you took during the past two weeks for high blood pressure? Y, N, U (Unknown)

MSRD2: Reason why did not bring all medications

7.Lipids Recalculated

7.1.LDL41 (V4 Recalculated LDL Cholesterol)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
LDL41	11374	122.6	120.8	33.47	7.4	434.0

This is a numeric variable.

Algorithm:

$$\text{LDL41} = \text{LIPD1A} - \text{LIPD3A} - (\text{LIPD2A}/5).$$

1. If (LIPD1A = missing) or
(LIPD2A = missing) or
(LIPD3A = missing) or
(LIPD2A > 400)

then set LDL41 = missing. (Missing)
2. If LDL41 = negative

then set LDL41 = 0. (Negative)

SAS Code:

```
LDL41 = LIPD1A - LIPD3A - LIPD2A/5;  
if LIPD2A > 400 then LDL41 = .;  
if .z < LDL41 < 0 then LDL41 = 0;
```

LIPD1A : Total cholesterol in mg/dL.

LIPD2A : Total triglycerides in mg/dL.

LIPD3A : HDL cholesterol in mg/dL.

8. Medication Use

Medication records were collected at each clinic visit. Participants were reminded to bring all medications used in the previous two weeks. Names of the medications were transcribed and coded by the ARIC medication coding system, developed by a pharmacist at UNC. The ARIC medication codes were then mapped to Medi-Span Therapeutic Classification (MTC) codes and American Hospital formulary Service Classification Compilation (AHFSCC) codes. Variable names for the MTC codes are MSRMTTC1-MSRMTTC17, and MSRAHF1-MSRAHF17 for AHFSCC codes (in file MSRCOD41 for Visit 4). Definitions of the MTC and AHFSCC codes are given in Appendices A and B.

8.1. CHOLMD41 (Discontinued: Replaced by CHOLMDCODE41)

8.2. CHOLMDCODE41: (Cholesterol Lowering Medication in past 2wks- Using 2004 Med Code (UC4735)

CHOLMDCODE41	Frequency	Percent
T	48	0.41
0	9939	85.27
1	1669	14.32

Algorithm.

If CODE1-CODE17 have at least one of the following: 771030, 390000--399999, then FOUND1 = 1. Else FOUND1 = 0. If all CODE1-CODE17 = missing then ALLMISS = 1. Else ALLMISS = 0.

1. If (MSRD2 = F or MSRD2 = missing) and ALLMISS=1 then CHOLMDCODE41 = .T .
2. Else if [MSRD2 NE T] and FOUND1=1 then set CHOLMDCODE41 = 1.
3. Else if [MSRD2 = T and ALLMISS=1] or FOUND1=0 then set CHOLMDCODE41 = 0.
4. Otherwise, set CHOLMDCODE41 = .

	FOUND1	ALLMISS	MSRD2
CHOLMDCODE41 = 1	1	0	Not T
CHOLMDCODE41 = 0	0	Any	Any
	Any	1	T
CHOLMDCODE41 = .T	Any	1	F or missing

CODE1--17: Updated Medication Code number.

MSRD2: Reason why did not bring all medications.
T (Took no medications),
F (Forgot or was unable to bring medications).

8.3.CHOLMD42 (Discontinued: Replaced by CHOLMDCODE42)

8.4.CHOLMDCODE42: Medications Which Secondarily Affect Cholesterol-Using 2004 Med Code (UC4735)

CHOLMDCODE42	Frequency	Percent
T	48	0.41
0	7475	64.13
1	4133	35.46

Algorithm:

If CODE1-CODE17 have at least one of the following: 331000, 332000, 340000, 363000, 369920, 372000, 376000, 379900 and 379910, then FOUND2 = 1. Else FOUND2 =0.

If all CODE1-CODE17 = missing then ALLMISS = 1. Else ALLMISS = 0.

1. If (MSRD2 = F or MSRD2 = missing) and ALLMISS=1 then CHOLMDCODE42 = .T .
2. Else if [MSRD2 NE T] and FOUND2=1 then CHOLMDCODE42 = 1.
3. Else if [MSRD2 = T and ALLMISS=1] or FOUND2=0 then CHOLMDCODE42 = 0.

4. Otherwise, set CHOLMDCODE42 = .

	FOUND2	ALLMISS	MSRD2
CHOLMDCODE42 = 1	1	0	Not T
CHOLMDCODE42 = 0	0	Any	Any
	Any	1	T
CHOLMDCODE42 = .T	Any	1	F or missing

CODE1--17: Updated Medication Code number.

MSRD2: Reason why did not bring all medications.
 T (Took no medications),
 F (Forgot or was unable to bring medications).

8.5.HYPTMD41 (V4 Hypertension Medications in Past 2 Weeks: Self-reported)

HYPTMD41	Frequency	Percent
T	72	0.62
0	7323	62.83
1	4261	36.56

This is numeric Visit 4 variable which assumes the following values according to the table below.

<u>Value</u>	<u>Description</u>
1	Took Hypertension Lowering Med. = Yes
0	Took Hypertension Lowering Med. = No

Table of assignment of values to HYPTMD41

	MSRD2	MSRD24A
HYPTMD41 = 1	Not T	Y
HYPTMD41 = 0	T	missing
	any	N
HYPTMD41 = .T	Not T	U or missing
	T	Non-missing

MSRD2 : Reason why did not bring all medications.
T (Took no medications).
F (Forgot or was unable to bring medications).

MSRD24A : High blood pressure medications in past 2 weeks.
Y, N, U (Unknown).

Algorithm:

1. If (MSRD2 NE T)] and (MSRD24A = Y)
then set HYPTMD41 = 1.
2. If (MSRD2 = T and MSRD24A = missing) or (MSRD24A = N)

then set HYPTMD41 = 0.

3. If [(MSRD2 NE T) and (MSRD24A = U or MSR24A = missing)] or [(MSRD2 = T) & (MSRD24A = Y or U)] then set HYPTMD41 to missing.

8.6.HYPTMDCODE41 (Hypertension Lowering Meds w/in past 2 wks using 2004 med code)
(UC4688)

HYPTMDCODE41	Frequency	Percent
0	6548	56.18
1	5108	43.82

HYPTMDCODE41 is a categorical variable that takes on the values of:

- 1 Participant has taken hypertension lowering medication in past two weeks
- 0 Participant has not taken hypertension lowering medication in past two weeks
- Z Unknown whether participant has taken hypertension lowering medication in past two weeks

Definition:

If participants are on medications and reported to have taken an antihypertensive medications within the last two weeks or taking a medication which is classified as an antihypertensive then set HYPTMDCODE41=1.

If participants did not bring any medications because no medications were being taken, and subsequently confirmed they had not taken any medication to lower blood pressure in the last two weeks or confirmed they had no medications listed, or participants who were taking medications but did not report having taken an antihypertensive within the last two weeks/did not know if they were taking an antihypertensive medication within the last two weeks and none of their listed medications could be classified as an antihypertensive then HYPTMDCODE41=0.

Classify all other participants who meet neither the criteria for 1 or 0 as missing.

Algorithm

I Create variable ALLMISS: ALLMISS= 1 if all the CODE1-17 are blank. Otherwise, ALLMISS=0.

II Create variables HBPMED

a. HBPMED=1 if ALLMISS=0 AND at least one of the CODE1-17= 330000-339999 or 340000-349999 or 360000-369999 or 370000-379999

b. HBPMED=0 if ALLMISS=1 or [ALLMISS=0 AND none of the CODE1-17=330000-339999 or 340000-349999 or 360000-369999 or 370000-379999]

III. Create HYPTMDCODE41

HYPTMDCODE41=1

If (MSRD2 ^T & Msrd24a = Y) or (MSRD2^T & HBPMED=1)

HYPTMDCODE41 = 0

If MSRD2 = T & Msrd24a=N

Or

If MSRD2=T & Msrd24a=Blank & ALLMISS=1

Or

If MSRD2^=T & Msrd24a^=Y & HBPMED= 0

HYPTMDCODE41= Missing otherwise

Table of Assignment

	MSRD2	MSRD24A	HBPMED	ALLMISS
Hyptmdcode41 = 1	Not T	Y	Any	Any
		Any	1	Any
Hyptmdcode41 = 0	T	N	Any	Any
		Blank	Any	1
	Not T	N, U, Blank	0	Any
Hyptmdcode41 = Missing	Any other combinations			

MSRD2: Reason why did not bring all medications.
 T (Took no medications),
 F (Forgot or was unable to bring medications).

CODE1--17: Updated Medication Code number.

MSRD24A: High blood pressure medications in past two weeks.
 Y, N, U (Unknown)

9.Nutrition Derived Variables

Nutrition Derived Variables are NOT available at Visit 4.

10.Plaque Derived Variables

10.1.BIFSHD41 (Shadowing in either carotid bifurcation)

BIFSHD41	Frequency	Percent
.	4774	40.96
T	35	0.30
0	6326	54.27
1	521	4.47

<u>Value</u>	<u>Description</u>
1	Shadow
0	No Shadow

Algorithm

1. If [LBIFSHAD = >y=] or [RBIFSHAD = >y=]
then set BIFSHD41 to 1.
2. Else if [LBIFSHAD = >n=] or [RBIFSHAD = >n=]
then set BIFSHD41 to 0.
3. Else set BIFSHD41 to missing (.T).

LBIFSHAD: Shadowing in the left carotid bifurcation.

RBIFSHAD: Shadowing in the right carotid bifurcation.

10.2.INTSHD41 (Shadowing in either internal carotid artery)

INTSHD41	Frequency	Percent
.	4774	40.96
T	136	1.17
0	6524	55.97
1	222	1.90

<u>Value</u>	<u>Description</u>
--------------	--------------------

1 Shadow
 0 No Shadow

INTSHD41 is derived in a similar manner to BIFSHD41 using the following variables:

LINTSHAD: Shadowing in the left internal carotid artery.

RINTSHAD: Shadowing in the right internal carotid artery.

10.3.COMSHD41 (Shadowing in either common carotid artery)

COMSHD41	Frequency	Percent
.	4774	40.96
T	2	0.02
0	6834	58.63
1	46	0.39

This variable is a numeric variable which takes on the following values:

Value Description
 1 Shadow
 0 No Shadow

Algorithm

1. If [LOPTSHAD = >y=] or [ROPTSHAD = >y=]
 then set COMSHD41 to 1.

2. Else if [LOPTSHAD = >n=] or [ROPTSHAD = >n=]
 then set COMSHD41 to 0.

3. Else set COMSHD41 to missing (.T)

LOPTSHAD: Shadowing in the left common carotid artery measured from the optimal angle.

ROPTSHAD: Shadowing in the right common carotid artery measured from the optimal angle.

10.4.BIFPLQ41 (Plaque in either carotid bifurcation)

BIFPLQ41	Frequency	Percent
.	4774	40.96

BIFPLQ41	Frequency	Percent
T	35	0.30
0	4491	38.53
1	2356	20.21

<u>Value</u>	<u>Description</u>
1	Plaque
0	No Plaque

Algorithm

1. If [LBIFPLAQ = >y=] or [RBIFPLAQ = >y=]
then set BIFPLQ41 to 1.
2. Else if [LBIFPLAQ = >n=] or [RBIFPLAQ = >n=]
then set BIFPLQ41 to 0.
3. Else set BIFPLQ41 to missing (.T).

LBIFPLAQ: Plaque in the left carotid bifurcation.

RBIFPLAQ: Plaque in the right carotid bifurcation.

10.5.INTPLQ41 (Plaque in either internal carotid artery)

INTPLQ41	Frequency	Percent
.	4774	40.96
T	136	1.17
0	5538	47.51
1	1208	10.36

<u>Value</u>	<u>Description</u>
1	Plaque
0	No plaque

INTPLQ41 is derived in a similar manner to BIFPLQ41 using the following variables:

LINTPLAQ: Plaque in the left internal carotid artery.

RINTPLAQ: Plaque in the right internal carotid artery.

10.6.COMPLQ41 (Plaque in either common carotid artery)

COMPLQ41	Frequency	Percent
.	4774	40.96
T	2	0.02
0	6296	54.02
1	584	5.01

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque
0	No Plaque

Algorithm

1. If [LOPTPLAQ = >y=] or [ROPTPLAQ = >y=]
then set COMPLQ41 to 1.
2. Else if [LOPTPLAQ = >n=] or [ROPTPLAQ = >n=]
then set COMPLQ41 TO 0.
3. Else set COMPLQ41 to missing (.T).

LOPTPLAQ: Plaque in the left common carotid artery measured from the optimal angle.
ROPTPLAQ: Plaque in the right common carotid artery measured from the optimal angle.

10.7.LCOMPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the left common carotid)

LCOMPS41	Frequency	Percent
.	4774	40.96
T	159	1.36
1	18	0.15
2	277	2.38

LCOMPS41	Frequency	Percent
3	3	0.03
4	6425	55.12

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing
2	Plaque only
3	Shadowing only
4	No plaque or shadow

Algorithm

1. If [LOPTSHAD = A≅] or [LOPTPLAQ = A≅]
then set LCOMPS41 to missing (.T).
2. Else if [[LOPTSHAD = >y=] and [LOPTPLAQ = >y=]]
then set LCOMPS41 to 1.
3. Else if [LOPTPLAQ = >y=]
then set LCOMPS41 to 2.
4. Else if [LOPTSHAD = >y=]
then set LCOMPS41 to 3.
5. Else if [LOPTSHAD = >n=] and [LOPTPLAQ = >n=]
then set LCOMPS41 to 4.

LOPTSHAD: Shadowing in the left common carotid artery measured from the optimal angle.

LOPTPLAQ: Plaque in the left common carotid artery measured from the optimal angle.

The following are derived in a similar manner using the variables indicated:

10.8.RCOMPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the right common carotid)

RCOMPS41	Frequency	Percent
.	4774	40.96
T	104	0.89
1	30	0.26
2	335	2.87
3	1	0.01
4	6412	55.01

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing
2	Plaque only
3	Shadowing only
4	No plaque or shadow

ROPTSHAD: Shadowing in the right common carotid artery measured from the optimal angle.
ROPTPLAQ: Plaque in the right common carotid artery measured from the optimal angle.

10.9.LBIFPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the left carotid bifurcation)

LBIFPS41	Frequency	Percent
.	4774	40.96
T	330	2.83
1	288	2.47
2	1185	10.17
3	15	0.13
4	5064	43.45

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing
2	Plaque only
3	Shadowing only
4	No plaque or shadow

LBIFSHAD: Shadowing in the left carotid bifurcation.

LBIFPLAQ: Plaque in the left carotid bifurcation.

10.10.RBIFPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the right carotid bifurcation)

RBIFPS41	Frequency	Percent
.	4774	40.96
T	206	1.77
1	288	2.47
2	1286	11.03
3	12	0.10
4	5090	43.67

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing
2	Plaque only
3	Shadowing only
4	No plaque or shadow

RBIFSHAD: Shadowing in the right carotid bifurcation.

RBIFPLAQ: Plaque in the right carotid bifurcation.

10.11.LINTPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the left internal carotid

LINTPS41	Frequency	Percent
.	4774	40.96
T	447	3.83
1	93	0.80
2	595	5.10
3	5	0.04
4	5742	49.26

<u>Value</u>	<u>Description</u>
--------------	--------------------

- 1 Plaque and shadowing
- 2 Plaque only
- 3 Shadowing only
- 4 No plaque or shadow

LINTSHAD: Shadowing in the left internal carotid.

LINTPLAQ: Plaque in the left internal carotid.

10.12.RINTPS41

(Plaque/shadowing (both, 1 w/o other, neither) in the right internal carotid)

RINTPS41	Frequency	Percent
.	4774	40.96
T	529	4.54
1	133	1.14
2	604	5.18
3	12	0.10
4	5604	48.08

- | <u>Value</u> | <u>Description</u> |
|--------------|----------------------|
| 1 | Plaque and shadowing |
| 2 | Plaque only |
| 3 | Shadowing only |
| 4 | No plaque or shadow |

RINTSHAD: Shadowing in the right internal carotid.

RINTPLAQ: Plaque in the right internal carotid.

10.13.COMPS41

(Plaque/shadowing (both, 1 w/o other, neither) in either common carotid)

COMPS41	Frequency	Percent
.	4774	40.96
T	2	0.02
1	42	0.36
2	542	4.65

COMPS41	Frequency	Percent
3	4	0.03
4	6292	53.98

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (same side)
2	Plaque only
3	Shadowing only
4	No plaque or shadow (on either side)

Algorithm

1. If [LCOMPS41 = 1] or [RCOMPS41 = 1]
then set COMPS41 to 1.
2. Else if [LCOMPS41 = 2] or [RCOMPS41 =2]
then set COMPS41 to 2.
3. Else if [LCOMPS41 = 3] or [RCOMPS41 = 3]
then set COMPS41 to 3.
4. Else if [LCOMPS41 = 4] or [RCOMPS41 = 4]
then set COMPS41 to 4.
5. Else set COMPS41 to missing (.T).

LCOMPS41: Plaque/shadowing in the left common carotid.

RCOMPS41: Plaque/shadowing in the right common carotid.

The following are derived in a similar manner using the variables indicated:

10.14.BIFPS41

(Plaque/shadowing (both, 1 w/o other, neither) in either carotid bifurcation)

BIFPS41	Frequency	Percent
.	4774	40.96

BIFPS41	Frequency	Percent
T	35	0.30
1	497	4.26
2	1859	15.95
3	15	0.13
4	4476	38.40

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (same side)
2	Plaque only
3	Shadowing only
4	No plaque or shadow (on either side)

LBIFPS: Plaque/shadowing in the left carotid bifurcation.

RBIFPS: Plaque/shadowing in the right carotid bifurcation.

10.15.INTPS41

(Plaque/shadowing (both, 1 w/o other, neither) in either internal carotid)

INTPS41	Frequency	Percent
.	4774	40.96
T	136	1.17
1	206	1.77
2	1002	8.60
3	12	0.10
4	5526	47.41

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (same side)
2	Plaque only
3	Shadowing only
4	No plaque or shadow (on either side)

LINTPS41: Plaque/shadowing in the left internal carotid.

RINTPS41: Plaque/shadowing in the right internal carotid.

10.16.LPLQSD41

(Plaque/shadowing (both, 1 w/o other, neither) in any left carotid site)

LPLQSD41	Frequency	Percent
.	4774	40.96
T	570	4.89
1	325	2.79
2	1399	12.00
3	15	0.13
4	4573	39.23

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (any site)
2	Plaque only
3	Shadowing only
4	No plaque or shadow (at both sites)

Algorithm

1. If [LCOMPS41 = .T] or [LBIFPS41 = .T] or [LINTPS41 = .T]
then set LPLQSD41 to missing (.T).
2. Else if [LCOMPS41 = 1] or [LBIFPS41 = 1] or [LINTPS41 = 1]
then set LPLQSD41 to 1.
3. Else if [[LCOMPS41 = 2] or [LBIFPS41 = 2] or [LINTPS41 = 2]
then set LPLQSD41 to 2.
4. Else if [LCOMPS41 = 3] or [LBIFPS41 = 3] or [LINTPS41 = 3]
then set LPLQSD41 to 3.
5. Else if [LCOMPS41 = 4] and [LBIFPS41 = 4] and [LINTPS41 = 4]

then set LPLQSD41 to 4.

LCOMPS41: Plaque/shadowing in the left common carotid.
LBIFPS41: Plaque/shadowing in the left bifurcation carotid.
LINTPS41: Plaque/shadowing in the left internal carotid.

10.17.RPLQSD41

(Plaque/shadowing (both, 1 w/o other, neither) in any right carotid site)

RPLQSD41	Frequency	Percent
.	4774	40.96
T	585	5.02
1	348	2.99
2	1497	12.84
3	21	0.18
4	4431	38.01

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (any site)
2	Plaque only (any site)
3	Shadowing only (any site)
4	No plaque or shadow (at both sites)

RPLQSD41 is created in a similar manner to LPLQSD41 using the following variables:

RCOMPS41: Plaque/shadowing in the right common carotid.
RBIFPS41: Plaque/shadowing in the right bifurcation carotid.
RINTPS41: Plaque/shadowing in the right internal carotid.

10.18.PLQSHD41

(Plaque/shadowing (both, 1 w/o other, neither) in any carotid site)

PLQSHD41	Frequency	Percent
.	4774	40.96
T	980	8.41
1	531	4.56
2	1918	16.46

PLQSHD41	Frequency	Percent
3	22	0.19
4	3431	29.44

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque and shadowing (any site)
2	Plaque only (any site)
3	Shadowing only (any site)
4	No plaque or shadow (at both sites)

Algorithm

1. If [LPLQSD41 = .T] or [RPLQSD41 = .T]
then set PLQSHD41 to missing (.T).
2. Else if [LPLQSD41 = 1] or [RPLQSD41 = 1]
then set PLQSHD41 to 1.
3. Else if [LPLQSD41 = 2] or [RPLQSD41 = 2]
then set PLQSHD41 to 2.
4. Else if [LPLQSD41 = 3] or [RPLQSD41 = 3]
then set PLQSHD41 to 3.
5. Else if [LPLQSD41 = 4] and [RPLQSD41 = 4]
then set PLQSHD41 to 4.

LPLQSD41: Plaque/shadowing (both, 1 w/o other, neither) in any left carotid site.

RPLQSD41: Plaque/shadowing (both, 1 w/o other, neither) in any right carotid site.

10.19.PLAQUE41

(Plaque (with or without shadowing) in any carotid site)

PLAQUE41	Frequency	Percent
.	4774	40.96

PLAQUE41	Frequency	Percent
T	980	8.41
0	3453	29.62
1	2449	21.01

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque
0	No plaque

Algorithm

1. If [PLQSHD41 = .T]
then set PLAQUE41 to missing (.T).
2. Else if [PLQSHD41 = 1] or [PLQSHD41 = 2]
then set PLAQUE41 to 1.
3. Else set PLAQUE41 to 0.

PLQSHD41: Plaque/shadowing (both, 1 w/o other, neither) in any carotid site.

10.20.PLAQUE42

(Plaque in any carotid site - alternative definition)

PLAQUE42	Frequency	Percent
.	4774	40.96
0	4157	35.66
1	2725	23.38

This variable is a numeric variable which takes on the following values:

<u>Value</u>	<u>Description</u>
1	Plaque
0	No plaque

Algorithm

1. If [LOPTPLAQ = >y=] or [LBIFPLAQ = >y=] or [LINTPLAQ = >y=] or
[ROPTPLAQ = >y=] or [RBIFPLAQ = >y=] or [RINTPLAQ = >y=]
then set PLAQUE42 =1.
2. Else if [LOPTPLAQ = >n=] or [LBIFPLAQ = >n=] or [LINTPLAQ = >n=] or
[ROPTPLAQ = >n=] or [RBIFPLAQ = >n=] or [RINTPLAQ = >n=]
then set PLAQUE42 =0.
3. Else set PLAQUE42 = .T.

11.SI Unit Change

11.1.TCHSIU41 (V4 Total Cholesterol in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
TCHSIU41	11560	5.2	5.1	0.96	2.0	15.8

This variable expresses total cholesterol in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.02586	mmol/L

$$\text{TCHSIU41} = \text{LIPD1A} \times \text{CF}$$

LIPD1A : Total Cholesterol in mg/dL.

11.2.HDLSIU41 (V4 HDL Cholesterol in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
HDLSIU41	11560	1.3	1.2	0.43	0.3	4.5

This variable expresses HDL cholesterol level in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.02586	mmol/L

$$\text{HDLSIU41} = \text{LIPD3A} \times \text{CF}$$

LIPD3A: HDL Cholesterol in mg/dL

11.3.LDLSIU41 (V4 LDL Cholesterol in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
----------	---	------	--------	---------	---------	---------

| LDLSIU41 | 11374 | 3.2 | 3.1 | 0.87 | 0.2 | 11.2 |

This variable expresses LDL cholesterol level in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.02586	mmol/L

$$\text{LDLSIU41} = \text{LDL41} \times \text{CF}$$

LDL41: LDL re-calculated Cholesterol in mg/dL

11.4. TRGSIU41 (V4 Triglycerides in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
TRGSIU41	11560	1.6	1.4	0.99	0.2	24.8

This variable expresses Total Triglycerides in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.01129	mmol/L

$$\text{TRGSIU41} = \text{LIPD2A} \times \text{CF}$$

LIPD2A : Total Triglycerides in mg/dL

11.5. GLUSIU41 (V4 Fasting Glucose in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
GLUSIU41	11560	6.2	5.6	2.13	2.0	39.5

This variable expresses blood glucose level in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.05551	mmol/L

$$GLUSIU41 = LIPD4a \times CF$$

LIPD4a: Blood Glucose Level in mg/dL

11.6.GL2SIU41 (V4 Two Hour Glucose in SI Units)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
GL2SIU41	9042	7.7	7.1	3.03	1.7	35.4

This variable expresses blood glucose level in the System International (SI) unit system.

Present System	Conversion factor (CF)	SI Unit System
mg/dL	0.05551	mmol/L

$$GLUSIU41 = LIPD5a \times CF$$

LIPD5a: Blood Glucose Level in mg/dL

12.Smoking

12.1.CIGT41 (V4 Cigarette smoking status)

CIGT41	Frequency	Percent
.	109	0.94
1	1716	14.72
2	5034	43.19
3	4792	41.11
4	5	0.04

This is a numeric variable which assumes the following values according to the table below:

Value	Description
1	Current smoker
2	Former smoker
3	Never smoker
4	Unknown, but one of the above three categories may be ruled out.
Missing	No responses or contradictory answers.

Note: This variable includes a historical component, but no use of Visit 1 & 2 data has been made.

Table of assignment of values to CIGT41

PHXB7: HAVE YOU EVER SMOKED CIGARETTES?	PHXB8: DO YOU NOW SMOKE CIGARETTES?		
	Y	N	Missing
Y	1	2	4 (d)
N	Missing (a)	3	3
Missing	1 (b)	4 (c)	Missing

Footnotes to the table:

- (a) Bad data (contradictory answers)
- (b) Even though Q44 is not answered, Q45 defines the person as a current smoker
- (c) Could be either former or never smoker
- (d) Could be either former or current smoker

12.2.CURSMK41 (Current cigarette smoker)

CURSMK41	Frequency	Percent
T	113	0.97
0	9827	84.31
1	1716	14.72

CURSMK41 is a categorical variable that takes values according to the definition table below:

CURSMK41	PHXB7	PHXB8

1	Y OR MISSING	Y
0	N	Not Y
	Y or Missing	N
.T	N	Y
	not N	Missing

PHXB7: Have you ever smoked cigarettes? Yes, No

PHXB8: Do you now smoke cigarettes? Yes, No

12.3.FORSMK41 (Former cigarette smoker)

FORSMK41	Frequency	Percent
T	114	0.98
0	6508	55.83
1	5034	43.19

FORSMK41 is a categorical variable that takes values according to the definition table below:

FORSMK41	PHXB7	PHXB8
1	Y	N
0	N	N or Missing

	Y or Missing	Y
.T	N	Y
	Y	Missing
	Missing	Missing or N

PHXB7: Have you ever smoked cigarettes? Yes, No

PHXB8: Do you now smoke cigarettes? Yes, No

12.4.EVRSMK41 (Ever smoked cigarettes)

EVRSK41	Frequency	Percent
T	110	0.94
0	4792	41.11
1	6754	57.94

EVRSK41 is a categorical variable that takes values according to the definition table below:

EVRSK41	PHXB7	PHXB8
1	Y	any
	Missing	Y
0	N	not Y

	N	Y
.T	Missing	not Y

PHXB7: Have you ever smoked cigarettes? Yes, No

PHXB8: Do you now smoke cigarettes? Yes, No

13.TIA/Stroke

(In files STROKE41)

13.1.Description of the TIA/Stroke Variables

The diagnostic computer algorithm creates variables for each of six symptoms:

Symptom	Variable Name
speech	SPCDIA41
vision	VISDIA41
double vision	DBLDIA41
numbness	NUMDIA41
paralysis	PARDIA41
dizziness	DIZDIA41

For simplicity, this group of variables will be referred to in this document as *DIA41.

The values of the *DIA41 variables indicate whether a TIA or stroke occurred in what arterial distribution. The arterial distributions include left carotid artery (LC), right carotid artery (RC), and vertebrobasilar system (VBI or VB). Thus, the possible values for the *DIA41 variables are: TIALC, TIARC, TIAVBI, STROKELC, STROKERC, STROKEVB, UNKNOWN, MISSING.

13.2.Creation of TIA Intermediate Variables

If one or more of the *DIA41 variables are equal to TIALC, then the intermediate categorical variable TIALC41 is set to Y. If no *DIA41 variable has a value of TIALC and one or more of the *DIA41 variables have the value UNKNOWN, then TIALC41 is set to U. If no *DIA41 variable has a value of TIALC or UNKNOWN and one or more of the *DIA41 variables are MISSING or blank, then TIALC41 is set to M. If none of the preceding conditions is satisfied then TIALC41 is set to N.

Similar logic is used to create intermediate variables for the other two arterial distributions: right carotid artery (TIARC41) and vertebrobasilar system (TIAVB41).

13.3. Creation of STROKE Intermediate Variables

Three intermediate variables for stroke (STKLC41, STKRC41, and STKVB41) are created in much the same manner as the variables for TIA described in Section 2 above; that is, the STROKE variables are defined by replacing TIA with STROKE in the description above.

13.4. Creation of TIA/STROKE Intermediate Variables

Three intermediate variables STIAC41, STIARC41, and STIAVB41, are created based on the values of the TIA and STROKE intermediate variables defined above.

	TIALC41	STKLC41
STIALC41 = Y	Y	ANY
	ANY	Y
STIALC41 = N	N	N
STIALC41 = M	N	MISSING
	MISSING	N
	MISSING	MISSING

	TIARC41	STKRC41
STIARC41 = Y	Y	ANY
	ANY	Y
STIARC41 = N	N	N
	N	MISSING

STIARC41 = M	MISSING	N
	MISSING	MISSING

	TIAVB41	STKVB41
STIAVB41 = Y	Y	ANY
	ANY	N
STIAVB41 = N	N	N
STIAVB41 = M	N	MISSING
	MISSING	N
	MISSING	MISSING

13.5.Creation of Variable TIA41

	TIALC41	TIARC41	TIAVB41
TIA41 = Y	Y	ANY	ANY
	ANY	Y	ANY
	ANY	ANY	Y
TIA41 = N	N	N	N
TIA41 = U	U	Not Y	Not Y
	Not Y	U	Not Y
	Not Y	Not Y	U

TIA41 = M if other combinations

13.6.Creation of Variable STROKE41

	STKLC41	STKRC41	STKVB41
STROKE41 = Y	Y	ANY	ANY
	ANY	Y	ANY
	ANY	ANY	Y
STROKE41 = N	N	N	N
STROKE41 = U	U	Not Y	Not Y
	Not Y	U	Not Y
	Not Y	Not Y	U

STROKE41 = M if other combinations

13.7.Creation of Variable STIA41

	TIA41	STROKE41
STIA41 = Y	Y	Any
	Any	Y
STIA41 = N	N	N
STIA41 = U	U	Not Y
	Not Y	U

STIA41 = M if other combinations

14.Other Variables

14.1.GENDER(Sex)

GENDER	Frequency	Percent
F	6508	55.83
M	5148	44.17

During the closure of the AFU Medical History Data, it comes to our attention that there are two ARIC Ids with gender incorrectly identified in our consolidated database. Both Ids(J252435 & J327948) involve female participants who were incorrectly identified as male in our database. The uncorrected gender variable(GENDER) stays in DERIVE42 and the corrected gender variable(CORGEND1) stays in UNOFF23. Since many analyses were already done using the UNCORRECTED gender variable, the Executive Committee has recommended to use the uncorrected gender variable (GENDER) for Visit1 and longitudinal analyses. The corrected version could be used for cross-sectional analyses other than Visit1.

14.2.RACEGRP(Race)

RACEGRP	Frequency	Percent
A	24	0.21
B	2664	22.86
I	7	0.06
W	8961	76.88

While we have been tracking all known errors,we found there are two Ids with race group incorrectly identified in our consolidated database. Both Ids(F134145 & F158363) were incorrectly identified as Whites in our database. Now F134145 is Asian and F158363 is Black. The uncorrected race variable (RACEGRP) stays in DERIVE42 and the corrected race variable (CORRACE1) stays in UNOFF23. Since many analyses were already done using the uncorrected

race variable, the Executive Committee has recommended to use the uncorrected race variable(RACEGRP) for Visit 1 and longitudinal analyses. The corrected version could be used for cross-sectional analyses other than Visit 1.

14.3.BIRTHDAT (Date of Birth)

While we have been tracking all known errors, we found that 49 Ids had birth date incorrectly specified in our consolidated database. The uncorrected birth-date variable(BIRTHDAT) stays in DERIVE42 and the corrected birth-date variable(CORBIRT2) stays in UNOFF23. Since many analyses were already done using the uncorrected variable, the Executive Committee has recommended to use the uncorrected variable, the Executive Committee has recommended to use the uncorrected bith-date variable(BIRTHDAT) for Visit1 and longitudinal analyses. The corrected version could be used for cross-sectional analyses other than Visit 1.

14.4.V4DATE41 (Visit 4 Date)

Search the Visit 4 dates on Visit 4 forms in the following order:

FTRD1, SBPD21, ANTD9

V4DATE41 is the first non-missing date that is found.

Notes:

- a. V4DATE41 = FTRD1
=SBPD21
- b. Consistency checks among the dates are not performed.

14.5.V4AGE41 (Age at Visit 4)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
V4AGE41	11656	62.8	62.0	5.68	52.0	75.0

V4AGE41 is calculated as the difference in years between IDNA11 (Birth date) and V4DATE41 (Derived Visit 4 date).

- i. Birthday is prior to the visit 4 day:
 - a. (birth month) < (month of visit)
 - b. (birth month) = (month of visit) and (birth day) ≤ (day of visit)

V4AGE41 = (year of visit) - (birth year)
- ii. Birthday is on or after the visit 4 day:
 - a. (birth month) > (month of visit)
 - b. (birth month) = (month of visit) and (birth day) > (day of visit)
- iii. Any of the following cannot be determined:
 - a. Relationship between birthday and visit 4 day.
 - b. Year of visit.
 - c. Birth year.

V4AGE41 = missing.

Notes:

- a. Birth month, day, and year are determined from IDNA11M, IDNA11D, and IDNA11Y, respectively.
- b. Visit month, day, and year are determined from the derived variable, V4DATE41, for visit date.

14.6.FAST0841 (8 Hours or More of Fasting Time)

FAST0841	Frequency	Percent
T	109	0.94
0	495	4.25
1	11052	94.82

This is a categorical variable that takes on the values of:

- 0 Not fasting 8 hours or more
- 1 Fasting 8 hours or more
- .T Missing (fasting status cannot be determined)

Definition of FAST084A based on LABA form:

If either the FTRD or LABA form (or both) is missing or either form has a missing date (FTRD2 or LABA3 = missing), then

- A. Set FAST084A to missing.

If both dates are present and equal (FTRD2 = LABA3), then

- A. Compute CLINTIME, the time between the FTRD interview time (FTRD3A) and venipuncture time (LABA4A). Convert FTRD interview time and/or venipuncture time to a 24-hour clock value if the hour value (FTRD3AH, LABA4AH) falls in the range 1-11 and the time of day (FTRD3B, LABA4B) is PM. Do this by adding 12 to the hour value.
- B. If time of consumption of last meal is >before yesterday= (FTRD4A = B) or the total time between consumption of last meal and blood draw is ≥ 8 hours, then set FAST084A to 1 if blood draw is before consumption of the snack (LABA5 = Y or blank).
- C. If the snack was consumed before blood draw (LABA5 = N) or the total time between consumption of last meal and blood draw is not missing and < 8 hours, then set FAST084A to 0.
- D. If neither B nor C above is met, set FAST084A to missing if either FTRD5 or CLINTIME is missing.

If both dates are present and FTRD visit occurred before LABA visit (FTRD2 < LABA3) then

- A. In this case, the clinic is assumed to have changed the fasting information, so that FTRD4A and FTRD5 refer to the LABA visit day. If time of consumption of last meal is >before yesterday= (FTRD4A = B) or FTRD5 ≥ 8 , then set FAST084A to 1 if blood draw is before consumption of the snack (LABA5 = Y or blank).
- B. If the snack was consumed before blood draw (LABA5 = N) or FTRD5 is nonmissing and < 8 , then set FAST084A to 0.

If both dates are present and FTRD visit occurred after LABA visit (FTRD2 > LABA3) then

- A. Set FAST084A to missing.

Definition of FAST084B based on LABB form:

Definition of FAST084B is the same as FAST084A except using LABB instead of LABA for

venifuncture data.

Definition of FAST0841:

If FAST084A >= 0 then FAST0841=FAST084A;
 Else if FAST084B >=0 then FAST0841=FAST084B;
 Else if FTRDFLAG=1 then FAST0841=.T;
 Else FAST0841=.;

- CLINTIME : A temporary variable to determine the total elapsed times since the participant provided their fasting information and when venipuncture was performed.
- FTRD1 : Date of visit in mmddyy.
- FTRD2 : Date of fasting determination.
- FTRD3AH : Time of fasting determination hour component.
- FTRD3AM : Time of fasting determination minute component.
- FTRD3B : Time of visit: AM or PM.
- FTRD4A : Day last consumed.
T (Today), Y (Yesterday), B (Before yesterday)
- FTRD5 : Computed fasting time in hours.
- FTRDFLAG : Indicator of presence of FTRD form.
- LABA3, LABB3 : Date of blood drawing in mmddyy.
- LABA4B, LABB4B : Time of blood drawing: AM or PM.
- LABA 4AH, LABB 4AH : Time of blood drawing hour component.
- LABA4AM, LABB4AM : Time of blood drawing minute component.
- LABA5, LABB5 : Was blood drawn before the snack? Y, N

14.7.FAST1241 (12 Hours or more of Fasting Time)

FAST1241	Frequency	Percent
T	109	0.94
0	943	8.09
1	10604	90.97

This is a categorical variable that takes on the values of:

0 Not fasting 12 hours or more

- 1 Fasting 12 hours or more
- .T Missing (fasting status cannot be determined)

Definition of FAST124A based on LABA form:

If either the FTRD or LABA form (or both) is missing or either form has a missing date (FTRD2 or LABA3 = missing), then

- A. Set FAST124A to missing.

If both dates are present and equal (FTRD2 = LABA3), then

- A. Compute CLINTIME, the time between the FTRD interview time (FTRD3A) and venipuncture time (LABA4A). Convert FTRD interview time and/or venipuncture time to a 24-hour clock value if the hour value (FTRD3AH, LABA4AH) falls in the range 1-11 and the time of day (FTRD3B, LABA4B) is PM. Do this by adding 12 to the hour value.
- B. If time of consumption of last meal is >before yesterday= (FTRD4A = B) or the total time between consumption of last meal and blood draw is \geq 12 hours, then set FAST124A to 1 if blood draw is before consumption of the snack (LABA5 = Y or blank).
- C. If the snack was consumed before blood draw (LABA5 = N) or the total time between consumption of last meal and blood draw is not missing and $<$ 12 hours, then set FAST124A to 0.
- D. If neither B nor C above is met, set FAST124A to missing if either FTRD5 or CLINTIME is missing.

If both dates are present and FTRD visit occurred before LABA visit (FTRD2 < LABA3) then

- A. In this case, the clinic is assumed to have changed the fasting information, so that FTRD4A and FTRD5 refer to the LABA visit day. If time of consumption of last meal is >before yesterday= (FTRD4A = B) or FTRD5 \geq 12, then set FAST124A to 1 if blood draw is before consumption of the snack (LABA5 = Y or blank).
- B. If the snack was consumed before blood draw (LABA5 = N) or FTRD5 is nonmissing and $<$ 12, then set FAST124A to 0.

If both dates are present and FTRD visit occurred after LABA visit (FTRD2 > LABA3) then

- A. Set FAST124A to missing.

Definition of FAST124B based on LABB form:

Definition of FAST124B is the same as FAST124A except using LABB instead of LABA for venifuncture data.

Definition of FAST1241:

If FAST124A >= 0 then FAST1241=FAST124A;
 Else if FAST124B >=0 then FAST1241=FAST124B;
 Else if FTRDFLAG=1 then FAST1241=.T;
 Else FAST1241=.;

CLINTIME : A temporary variable to determine the total elapsed times since the participant provided their fasting information and when venipuncture was performed.

FTRD1 : Date of visit in mmddyy.

FTRD2 : Date of fasting determination.

FTRD3AH : Time of fasting determination hour component.

FTRD3AM : Time of fasting determination minute component.

FTRD3B : Time of visit: AM or PM.

FTRD4A : Day last consumed.
 T (Today), Y (Yesterday), B (Before yesterday)

FTRD5 : Computed fasting time in hours.

FTRDFLAG : Indicator of presence of FTRD form.

LABA3, LABB3 : Date of blood drawing in mmddyy.

LABA4B, LABB4B : Time of blood drawing: AM or PM.

LABA 4AH, LABB 4AH : Time of blood drawing hour component.

LABA4AM, LABB4AM : Time of blood drawing minute component.

LABA5, LABB5 : Was blood drawn before the snack? Y, N

14.8.TGLEFH41 (Triglycerides less than or equal to 400 mg/dL)

TGLEFH41	Frequency	Percent
.	96	0.82
0	186	1.60
1	11374	97.58

This is a numeric Visit 4 variable which assumes the following values according to the table below.

<u>Value</u>	<u>Description</u>
1	Triglycerides under 400 mg/dL = Yes.
0	Triglycerides under 400 mg/dL = No.

Table of assignment of values to TGLEFH41

	LIPD2A (MG/DL)
TGLEFH41 = 1	Not missing and Less than or equal to 400
TGLEFH41 = 0	More than 400
TGLEFH41 = missing	Missing

LIPD2A: Total Triglycerides (mg/dL).

14.9.MENOPS41 (Menopausal Status)

MENOPS41	Frequency	Percent
.	5602	48.06
T	3	0.03
2	183	1.57
3	221	1.90
4	4405	37.79
5	1134	9.73
6	70	0.60
7	9	0.08
8	29	0.25

MENOPS41 is a categorical variable that takes on the values 1 through 8 as follows:

- 1=Primary Amenorrhea
- 2=Premenopause
- 3=Perimenopause
- 4=Post Natural
- 5=Post Surgical
- 6=Unknown Ovarian
- 7=Post Radiation
- 8=Post Unknown
- .T=Special Missing
- .=missing

Values are assigned according to the conditions defined below:

[Note: MENOPS02, MENOPS21, MENOPS31 are menopausal status variables at Visit 1-3, respectively.]

1. If {MENOPS02=1 or MENOPS21=1 or MENOPS31=1} and RHXC2=No then set MENOPS41=1 (Primary Amenorrhea)
2. If the above condition is not met and the following condition is met then set MENOPS41=2 (Premenopause)

if rhxc2 = Yes & rhxc40 ≠ Both & (rhxc6=No or (rhxc5=0 & rhxc6 = missing))
3. If none of the above conditions are met and at least one of the following conditions is met then set MENOPS41=5 (Post Surgical)

If { MENOPS02 or MENOPS21 or MENOPS31 = Post:surgery } or
{ RHXC2=No and (RHXC8=Surgery or missing) and RHXC40=Both } or
{ MENOPS31=Pre, Peri, Unknown & RHXC40=Both &
RHXC2 ≠Yes & RHXC8 ≠Natural }
4. If none of the above conditions are met and the following condition is met then set MENOPS41=3 (Perimenopause)

If { (MENOPS31= Pre, Peri) &
(RHXC2=Yes & RHXC6=Yes & RHXC40 ≠ Both) or
(RHXC2=Yes & (RHXC6=U or (RHXC6=missing & RHXC40 ≠ Both))) }
5. If none of the above conditions are met and the following condition is met then set MENOPS41=.T (Special Missing)

If {RHXC2=Yes & RHXC40=Both &
(RHXC6=No or (RHXC6=missing & RHXC5=0)) }
6. If none of the above conditions are met and at least one of the following conditions is met then set MENOPS41=4 (Post Natural)

If { (MENOPS02 or MENOPS21 or MENOPS31=Post:natural & RHXC40 ≠ Both) or
(MENOPS02 or MENOPS21 or MENOPS31=Post:natural & RHXC40 = Both &
age when ovaries removed > age at menopause) or
(RHXC2=No & (RHXC8=Natural or Unknown)) or
(RHXC2=No & RHXC37=No) or
(RHXC2=No & RHXC40 ≠ Both & V3AGE31 ≥ 55) or
(RHXC6=Y & RHXC8=Natural & RHXC40 ≠ Both) or
(RHXC2=No & RHXC6=Y & RHXC8 ≠ Surgery or radiation & RHXC40 = No) }
7. If none of the above conditions are met and at least one of the following conditions is

met then set MENOPS41=6 (Unknown Ovarian)

If (MENOPS31=6 & RHXC1=No & V4AGE < 55) or
(RHXC2=No & RHXC6=Yes & RHXC8=Surgery & RHXC37=Yes &
RHXC38=No & RHXC40=One) or
(RHXC2=No & (RHXC8=Surgery or missing) & RHXC40=Unknown) or
(RHXC2=No & RHXC6=Yes & RHXC8=Surgery &
(RHXC37=Yes or Unknown) &
(RHXC8=missing or Both or Surgery)) or
(RHXC2=No & RHXC6=Unknown and RHXC8=missing & RHXC37=Yes &
RHXC38=Yes & RHXC40=missing) or
(RHXC38=Yes & RHXC04 ≠ Both & (RHXC7 ≥ RHXC39) & RHXC8 ≠ Natural) or
(RHXC2=No & (RHXC8=Surgery, missing) & (RHXC40=No, One) &
V4AGE < 55) or
(MENOPS31=6 & RHXC37=Unknown and V4AGE ≥ 55) }

8. If none of the above conditions are met and the following condition is met then set MENOPS41=7 (Post Radiation)

If MENOPS31 = 7 or (RHXC6=No & RHXC8=Radiation)

9. If none of the above conditions are met and at least one of the following conditions is met then set MENOPS41=8 (Post Unknown)

If {(MENOPS31=2 or 3) &
(RHXC6=Yes & RHXC8=Natural & RHXC40=Both & RHXC38=Yes) or
(RHXC6=Yes & RHXC8=Surgery & RHXC40 ≠ Both) or
(RHXC6=Yes & RHXC2=No & V3AGE < 55) }

10. If none of the above conditions are met then set MENOPS41=missing

RHXC1: Any menstrual periods 2 years prior to last visit? Y, N, U

RHXC2: Have you had any menstrual periods during the past two years? Y, N, U

RHXC5: In the past 2 years how many periods did you miss?

RHXC6: Have you reached menopause? Y, N, U

RHXC7: Age when menopause began

RHXC8: Was your menopause natural or the result of surgery or radiation?

N(Natural), S (Surgery), R (Radiation), U (Unknown)

RHXC37: Have you had surgery to have your uterus or ovaries removed? Y, N, U (Unknown)

RHXC38: Has your uterus (womb) been removed? Y, N, U

RHXC40: Have you had either one or both ovaries removed?

O (Yes, One), B (Yes, Both), N (No), U (Unknown)

RHXC41: Age when ovary(ies) removed

14.10.HORMON41 (V4 Use of Hormones, Female Participants)

HORMON41	Frequency	Percent
.	7373	63.25
1	1267	10.87
2	440	3.77
3	2388	20.49
4	188	1.61

This is a numeric, categorical variable that can take the values 1 through 4 as follows:

- 1 = Current Estrogen User
- 2 = Current Estrogen and Progestin User
- 3 = Never Used Hormones
- 4 = Former Hormone User or Current User of other medications reported by participants as hormones *
- . = Missing

* This group reported having taken hormone pills since the last exam on the RHX (Reproductive History) form, but some of the hormone codes reported failed to be classified into one of the following categories: estrogen, progestin, combined (estrogen+progestin - V4 only), oral contraceptive, vaginal estrogen, androgen, estrogen+androgen, and unknown gonadal hormone. Note that this group is defined as former hormone users who possibly mistook non-hormones as hormones. We don't highly recommend use of this group.

Table of assignment of values to HORMON41

1	if CURR4 = 1 then HORMON41 = 1;
2	else if CURR4 = 2 then HORMON41 = 2;
3	else if HORMTIM4 = 3 then HORMON41 = 3;
4	else if HORMTIM4 = 4 & ((ESTROGE4 = 'Y' or PROGEST4 = 'Y' or ORALCON4 = 'Y' OR ESTRCRM4 = 'Y' OR ANDROG4 = 'Y' or ESTRAND4 = 'Y' or UNKGONA4 = 'Y' or OTHER4='Y')) then HORMON41 = 4;
.	else HORMON41 = . ;

Values of HORMON41 are assigned according to the values of the intermediate variables which indicate the use of different types of hormones at Visit 4 ('Y' = yes; 'N'= no) using data from RHXC form. Equivalent variables were defined for V2 & V3. For each hormone type, two variables are created designating Aever≅ and Acurrent≅ use.

Variable	Description
-----------------	--------------------

Variables to designate "ever used":

ANDROG4	>Androg at v4'
COMB4	>Est+Prog at v4'
ESTRAND4	>Estrandr at v4'
ESTRCRM4	>Estrcrm at v4'
ESTROGE4	>Estrogen at v4'
ORALCON1	>Oral Cont at v1'
ORALCON2	>Oral Cont at v2'
ORALCON3	>Oral Cont at v3'
ORALCON4	>Oral Cont at v4'
OTHER4	>Other at v4'
PROGEST4	>Progest at v4'
UNKGONA4	>Unkgonad at v4'

Variables to designate "current use":

CANDROG4	'Current Androg Use at v4'
CCOMB4	'Current Est+Prog Use at v4'
CESTRAN4	'Current Estrand Use at v4'
CESTRCR4	'Current Estrcrm Use at v4'
CESTROG4	'Current Estrogen Use at v4'
CORALCO1	'Current Oral Cont Use at v1'
CORALCO2	>Current Oral Cont Use at v2'
CORALCO3	'Current Oral Cont Use at v3'
CORALCO4	'Current Oral Cont Use at v4'
COTHER4	'Current Other Use at v4'
CPROGES4	'Current Progest Use at v4'
CUNKGON4	'Current Unkgonad Use at v4'

The following table shows the MTC codes and labels for the preceding intermediate variables. The MTC code is equivalent to the first six digits of the GPI code. MTC labels are from the Medispan Master Drug Data Base, Appendix E, Therapeutic Classification System.

INTERVENING VARIABLE	VARIABLE LABEL	MTC CODE	MTC LABEL
ESTROGE4	'Estrogen at v4'	240000	Estrogens
		249920	Estrogen-Antianxiety
COMB4	'Comb at v4'	249930	Estrogen-Progestin
PROGEST4	'>Progest at v4'	260000	Progestins
ORALCON4	'Oral Cont at v4'	250000	Contraceptives, Oral
		259900	Combinations, OC's
		259920	Triphasic OC's
ESTRCRM4	'Estrcrm at v4'	553500	Vaginal Estrogens
ANDROG4	'Androg at v4'	231000	Androgens
ESTRAND4	'Estrandr at v4'	249910	Estrogen-Androgen
UNKGONA4	'Unkgonad at v4'	300000	Miscellaneous Endocrine
OTHER4	'Other at v4'	other	

Of course, the MTC values for the current use of hormones variables are identical to these. Current hormone usage is summarized by the following created variable, which can take values 1-4.

CURR4 Checks for current use of specific hormones:
1 = Current estrogen user only.
2 = Current estrogen and progestin user.
3 = User of other hormones or other medications reported by participants as hormones (oral contraceptives, estrogen creams, androgens).
4 = All other participants.

Logic for CURR4 parallels that used to create CURR2 (Visit 2) and CURR3 (Visit 3) with the exception that a new code has been added for combination estrogen-progestin drugs (MTC code 249930)

Table of assignment of values to CURR4

1	if (ESTROGE4 = 'Y' & CESTROG4 = 'Y') & (CPROGES4 = 'N' & CORALCO3 = 'N' & CESTRCR4 = 'N' & CANDROG4 = 'N' & CESTRAN4 = 'N' & CUNKGON4 = 'N' & COTHER4 = 'N') then CURR4 = 1;
2	else if ((ESTROGE4 = 'Y' & CESTROG4 = 'Y' & PROGEST4 = 'Y' & CPROGES4 = 'Y') or (COMB4==Y= & CCOMB4==Y=)) & (CORALCO4 = 'N' & CESTRCR4 = 'N' & CANDROG4 = 'N' & CESTRAN4 = 'N' & CUNKGON4 = 'N' & COTHER4 = 'N') then CURR4 = 2;
3	else if (ESTROGE4 = >N= or CESTROG4 = >N=) & (ORALCON4 = 'Y' & CORALCO4 = 'Y') or (ESTRCRM4 = 'Y' & CESTRCR4 = 'Y') or (PROGEST4 = 'Y' & CPROGES4 = 'Y') or (ANDROG4 = 'Y' & CANDROG4 = 'Y') or (ESTRAND4='Y' & CESTRAN4 = 'Y') or (UNKGONA4 = 'Y' & CUNKGON4 = 'Y') or (OTHER4='Y' & COTHER4='Y') then CURR4 = 3;
4	else CURR4=4;

HORMTIM4 is a created variable that summarizes hormone use over time. It uses same logic as its Visit 2 and 3 equivalents (HORMTIM2, HORMTIM3).

HORMTIM4

Checks for current, past, never use of hormones.
This is a numeric variable which assumes values according to the table below.

- 1 = Unknown
- 2 = Currently taking hormones.
- 3 = Never took hormones.
- 4 = Former hormone user or former use of other medications reported by participants as hormones
- . = Missing value.

ORALTIM4 is a created variable that checks for use of oral birth control hormones. It is derived using the same logic as its Visit 2 and 3 equivalents (ORALTIM2, ORALTIM3).

ORALTIM4

Checks for current, past, never use of oral birth control. This is a numeric variable which assumes values according to the table below. It uses datasets from Visit 1, Visit 2 and Visit 3.

- 1 = Never took oral contraceptives
- 2 = Currently taking oral contraceptives
- 3 = Past user of oral contraceptives
- 4 = Unknown

14.11.CENTER (Field Center)

CENTER	Frequency	Percent
F	2851	24.46
J	2368	20.32
M	3252	27.90
W	3185	27.32

The ARIC Study collects data in four diverse communities. This design was chosen so that data could be obtained for groups which differ by geography, race, and socio-economic status. The ARIC study was not designed to select a random or representative sample of the entire U.S. population.

This is a character variable that takes on the values of:

- F: Forsyth County, North Carolina
- J: The city of Jackson, Mississippi
- W: Selected northwestern suburbs of Minneapolis, Minnesota
- M: Washington County, Maryland

14.12.V4CENTER (Visit 4 Field Center)

V4CENTER	Frequency	Percent
F	2848	24.43
J	2367	20.31
M	3253	27.91
W	3188	27.35

If ARIC study participants move into another field center at visit 4, V4CENTER value is assigned to that field center. If not, V4CENTER is the same as CENTER.

15.Informed Consent

In File ICTA04

ICTDER01 is a derived informed consent file containing variables RES_DNA and RES_OTH (described below). Variable RES_DNA indicates the type of restriction on DNA use, and RES_OTH indicates the type of restriction on other procedures. We request that the investigators exclude appropriate records with partial restrictions prior to data analysis.

15.1.RES DNA (Restrictions on DNA)

RES_DNA is a character variable which might be updated if participants call in to change the consent. For participants who didn't attend visit 4 exam, we assumed full consent on use of DNA.

RES_DNA

RES_DNA	# of Obs	Description
Full Consent	15655	Type of Consent is full.
CVD Research	80	DNA use is restricted to CVD research.
ARIC Only	13	DNA use is restricted to ARIC only.
ICTA2B: Anot to Houston≡	1	Taken from notelog (meaning unknown)
No use/storage DNA	43	No use of DNA

Assignment of Values to RES_DNA

RES_DNA	ICTA1	ICTA2A	ICTA2B	ICTA9A	ICTA10A	ICTA10B
Full Consent	F	Any	Any	N	ANY	ANY
	P	N	Any			
	NOT F	MISSING	MISSING	MISSING	MISSING	MISSING
	ANY	ANY	ANY	Y	N	ANY
CVD Research	P	Y	C	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	C
ARIC Only	P	Y	A	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	A
No use/storage DNA	P	Y	N	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	N
*Take Notelogs	P	Y	O	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	O

ICTA1: Type of Consent (F:Full, P: Partial)

ICTA2A: Restrictions on Use of DNA

ICTA2B: Type of Restrictions on Use of DNA

(C: CVD Research, A:ARIC Only, N: No use/storage of

DNA, O:Other)

ICTA9A: Consent Changed

ICTA10A: Post-Visit Restrictions on Use of DNA

ICTA10B: Post-Visit Type of Restrictions on Use of DNA

(C: CVD Research, A:ARIC Only, N: No use/storage of

DNA, O:Other)

Note: * means that if v4 participant wants to apply a different type of DNA restriction (ICTB2B=O or ICTB10B=O) other than CVD Research, ARIC Only, or No use/storage of DNA, we get the specific restriction from visit 4 notelog file.

15.2.RES_OTH (Restrictions on Other Procedures)

RES_OTH is a character variable which might be updated if participants call in to change the consent. For participants who didn't attend visit 4 exam, we assumed full consent on other procedures.

RES_OTH

RES_OTH	# OF OBS	DESCRIPTION
Full Consent	15732	Type of Consent is full.
CVD Research	50	DNA use is restricted to CVD research.
ARIC Only	9	DNA use is restricted to ARIC only.
ICTA3B: ≅ no echo-no gtt≅	1	Taken from notelog (meaning unknown)

Assignment of Values to RES_OTH

RES_OTH	ICTA1	ICTA3A	ICTA3B	ICTA9A	ICTA11A	ICTA11B
Full Consent	F	Any	Any	N	ANY	ANY
	P	N	Any			
	NOT F	MISSING	MISSING	MISSING	MISSING	MISSING
	ANY	ANY	ANY	Y	N	ANY
CVD Research	P	Y	C	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	C
ARIC Only	P	Y	A	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	A
No use/storage DNA	P	Y	N	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	N
*Take Notelogs	P	Y	O	N	ANY	ANY
	ANY	ANY	ANY	Y	Y	O

- ICTA1: Type of Consent (F:Full, P: Partial)
- ICTA3A: Restrictions on Other Procedures
- ICTA3B: Type of Restrictions on Other Procedures

(C: CVD Research, A:ARIC Only, O:Other)

ICTA9A: Consent Changed
ICTA11A: Post-Visit Restrictions on Other Procedures
ICTA11B: Post-Visit Type of Restrictions on Other Procedures
(C: CVD Research, A:ARIC Only, O:Other)

Note: * means that if v4 participant wants to apply a different type of restriction on other procedures (ICTB3B=O or ICTB11B=O) other than CVD Research or ARIC Only, we get the specific restriction from visit 4 notelog file.

16. Ankle Brachial Index

16.1. ABI43 (Ankle Brachial Index) Discontinued

ABI43 = BPUB02/ARMSBP43.

BPUB02: Ankle Systolic Blood Pressure

ARMSBP43: Redefined Brachial Systolic Blood Pressure

ARMSBP43 (Redefined Brachial Systolic Blood Pressure)

ARMSBP43 is a continuous Visit 4 variable defined to be the first arm SBP or the second SBP if the first systolic blood pressure readings are missing. The algorithm for computation of ARMSBP43 is given in the table below.

Table assignment of values to ARMSBP43

BPUB05	BPUB08	BPUB11	ARMSBP43
Non-missing	Any	Any	BPUB05
Missing	Non-missing	Any	BPUB08
Missing	Missing	Non-missing	Missing (.T)
Missing	Missing	Missing	

BPUB05: Resting supine first brachial systolic blood pressure readings

BPUB08: Resting supine second brachial systolic blood pressure readings

BPUB11: Resting supine third brachial systolic blood pressure readings

16.2. ABI44 (Ankle Brachial Index V4, Definition 4)

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
ABI44	6404	1.2	1.2	0.17	0.4	2.0

If BPUB02 and ARMSBP43 are '.' (missing), then ABI44= '.' (missing)

If ARMSBP43=.R or BPUB02=.R, then ABI44=.R (missing due to out of range value)

If BPUB02 minus ARMSBP43 is <75, then ABI44 = BPUB02/ARMSBP43.

If BPUB02 minus ARMSBP43 is ≥75, then ABI44 = .S (missing due to out of range interval between Ankle and Arm BP)

Ankle BP (BPUB02)					
Arm BP (ARMSBP43)		Missing (not measured)	.R (out of range value)	Valid value 30-245,inclusive	
	Missing (not measured)	ABI44= ‘.’	ABI44= ‘.’	ABI44= ‘.’	
	.R (out of range value)	ABI44= ‘.’	ABI44= ‘.R’	ABI44= ‘.R’	
	Valid value 30-245,inclusive	ABI44= ‘.’	ABI44= ‘.R’	If (BPUB02 minus ARMSBP43) <75, then ABI44 = BPUB02/ARMSBP43. If (BPUB02 minus ARMSBP43) ≥ 75, then ABI44 = .S (missing due to out of range interval between Ankle and Arm BP)	

16.3.ABIV4 (ABI measurement status at V4)

ABIV4	Frequency	Percent
N	5237	44.93
R	2	0.02
S	13	0.11
Y	6404	54.94

If ABI44= > 0, then ABIV4=Y (ABI measured at V4 and has a valid value)

If ABI44 = ‘.S’, then ABIV4= S (ABI measured at V4, but value is invalid)

If ABI44= ‘.R’, then ABIV4=R (ABI measured at V4, but one or both BP values out of range, so no valid value)

If ABI44= ‘.’, then ABIV4=N (ABI not measured at V4)

16.4.PAD41 (Peripheral Artery Disease at V4, definition 1)

PAD41	Frequency	Percent
.	5252	45.06
0	6011	51.57
1	393	3.37

If GENDER=M and ABI44<.90, and not missing (not =., .R, or .S) then PAD41=1 (present)
 If GENDER=M and ABI44≥.90, then PAD41=0 (absent).

If GENDER=F and ABI44<.85, and not missing (not =., .R, or .S) then PAD41=1 (present)
 If GENDER=F and ABI44≥.85, then PAD41=0 (absent).

Otherwise, PAD41=missing

16.5.PAD42 (Peripheral Artery Disease at V4, def'n 2, same for both genders)

PAD42	Frequency	Percent
.	5252	45.06
0	5932	50.89
1	472	4.05

If ABI44<.90 and not missing (not = ., .R, or .S), then PAD42=1 (present)

And if ABI44≥.90, then PAD42=0 (absent).

Otherwise, PAD42=missing

16.6.LEGANK41 Leg used at V4 for ankle BP)

LEGANK41	Frequency	Percent
.	5237	44.93
LSCAN	3165	27.15
LVISIT	22	0.19
RSCAN	3200	27.45
RVISIT	32	0.27

If ABIV4=yes or .R or .S, then

LEGANK41=RSCAN if UBAB02D (Scan date,day)= an odd #

LEGANK41=LSCAN if UBAB02D (Scan date, day)= an even #

LEGANK41=RVISIT if UBAB02D (Scan date, day) is missing and V4DATE41= an odd # for the day part

LEGANK41=LVISIT if UBAB02D (Scan date, day) is missing and V4DATE41= an even # for

the day part

16.7.LEGSAM14 (Same leg used for ankle BP at V1 and 4)

LEGSAM14	Frequency	Percent
.	5482	47.03
N	3044	26.12
Y	3130	26.85

LEGSAM14=Y (yes) if {(LEGANK01=RPOP OR RID) & (LEGANK41=RSCAN OR RVISIT)} or if

{(LEGANK01=LPOP OR LID) & (LEGANK41=LSCAN OR LVISIT)}

LEGSAM14=N (no) otherwise

LEGSAM14 (Same leg used at visits 1 and 4)

Leg of ankle measurement at Visit 1 LEGANK01					
Leg of ankle measurement at Visit 4 LEGANK41		RPOP	LPOP	RID	LID
	RSCAN	Y	N	Y	N
	LSCAN	N	Y	N	Y
	RVISIT	Y	N	Y	N
	LVISIT	N	Y	N	Y

16.8.LEGSAM34 (Same leg used for ankle BP at V3 and 4)

LEGSAM34	Frequency	Percent
.	10532	90.36
N	566	4.86
Y	558	4.79

LEGSAM34=Y (yes) if {(LEGANK31= RSCAN OR RVISIT) & (LEGANK41=RSCAN OR RVISIT)} or if

{(LEGANK31= RSCAN OR RVISIT) & (LEGANK41=LSCAN OR LVISIT)}

LEGSAM34=N (no) otherwise

LEGSAM34 (Same leg used at visits 3 and 4)

Leg of ankle measurement at Visit 3 LEGANK31					
Leg of ankle		RSCAN	LSCAN	RVISIT	LVISIT

measurement at Visit 4 LEGANK41	RSCAN	Y	N	Y	N
	LSCAN	N	Y	N	Y
	RVISIT	Y	N	Y	N
	LVISIT	N	Y	N	Y

16.9.INCPAD4 (Incident PAD at Visit 4)

INCPAD4	Frequency	Percent
.	5606	48.10
0	5722	49.09
1	328	2.81

INCPAD4=1 if (PAD01=0 and (PAD31=0 or ‘.’) and PAD41=1) or if (PAD01=‘.’ and PAD31=0 and PAD41=1);
 INCPAD4=0 if (PAD01=0 and (PAD31=0 or ‘.’) and PAD41=0) or if (PAD01= ‘.’ And PAD03=0 and PAD04=0);
 INCPAD4=missing , otherwise.

INCPAD4 (Incident PAD at Visit 4)

PAD01= ‘.’		PAD41		
		. (Missing)	0	1
PAD31	. (Missing)	.	.	.
	0	.	0	1
	1	.	.	.

INCPAD4 (Incident PAD at Visit 4)

PAD01=0		PAD41		
		. (Missing)	0	1
PAD31	. (Missing)	.	0	1
	0	.	0	1
	1	.	.	.

INCPAD4 (Incident PAD at Visit 4)

PAD01=1		PAD41		
		. (Missing)	0	1
PAD31	. (Missing)	.	.	.
	0	.	.	.
	1	.	.	.

16.10.INCPAD (Incident PAD at Visit 3 or 4)

INCPAD	Frequency	Percent
.	7832	67.19
S	2360	20.25
0	986	8.46
1	478	4.10

INCPAD=1 if INCPAD3=1 or INCPAD4=1;

INCPAD=0 if INCPAD3=0 and INCPAD4=0;

INCPAD=.S (special missing) if ABIV1=Y and ABIV3=N and ABIV4=N;

INCPAD= '.' (missing) otherwise.

INCPAD (Incident PAD at Visits 3 or 4)

INCPAD3				
<u>INCPAD4</u>		. (Missing)	0	1
	. (Missing)	.S if ABIV1= Y and ABIV3=N and ABIV4=N	.	1
	0	'.' otherwise	0	1
	1	.	1	1
	1	1	1	1

17.Cornell Voltage LVH

17.1.LVHSCR41

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
LVHSCR41	8296	1334.1	1265.5	563.8	105.0	5376.0

LVHSCR41 is a continuous Visit 4 variable defined to be the absolute value of ECGRA198 plus ECGRA170.

$$\begin{aligned} \text{LVHSCR41} &= |\text{ECGRA198}| + \text{ECGRA170} \\ &= \text{Missing if } |\text{ECGRA198}| + \text{ECGRA170} < 100 \text{ uV} \end{aligned}$$

ECGRA198: S amplitude in V3.

ECGRA170: R amplitude in AVL.

17.2.NLVHSC41

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
NLVHSC41	8296	13.3	12.7	5.64	1.1	53.8

NLVHSC41 is a continuous Visit 4 variable defined to be LVHSCR41 divided by 100.

$$\text{NLVHSC41} = \text{LVHSCR41} / 100.$$

17.3.CLVH41

CLVH41	Frequency	Percent
	3360	28.83
0	8005	68.68
1	291	2.50

CLVH41 is a dichotomous Visit 4 LVH variable. The algorithm for computation of CLVH41 is given in the table below.

CLVH41	GENDER	NLVHSC41
1	Male	Greater than 28
	Female	Greater than 22
0	Male	Less than or Equal to 28
	Female	Less than or Equal to 22

18.RISK FACTORS:

18.1.CHDRISK10yr 41: (% Predicted 10 year Risk of Incident CHD at Visit 4)

(UC4677)

CHDRISK10yr_41 is the predicted 10 year risk of incident coronary heart disease (CHD). It is a percentage variable thus can take values from 0 to 100 or missing. The beta-coefficients used for the prediction are given below. The beta coefficients were obtained from an output found in uc467701 and were published in ARIC manuscript 661(for those without diabetes)¹ and ARIC manuscript 781 (for those with diabetes)². If a participant had prevalent CHD or had a missing value for at least one of the variables used, then predicted risk was not calculated and a missing value was assigned.

Participants were separated based on gender, race, and diabetes status. The predicted 10 year risk of incident CHD was then calculated using the following Cox regression equation:

$$CHDRISK\ 10\ yr\ _41 = 100 * \left[1 - (1 - P_0)^{\exp(RS - RS_0)} \right]$$

Where P₀ is a constant

RS₀ is a constant

RS is a linear combination of B-coefficients times the risk factor variables (see table below).

CHDRISK10yr_41 = Missing

if any risk factor variable is missing

or

if PREVCHD43 ^>=0

Table1: CHD Risk for those **without Diabetes:** 10 year CHD Risk Score
Beta coefficients, RS0, and 1-P0 values for participants without diabetes
(diabts43=0)

Risk Factor Variables	Beta Coefficients			
	Black Females	White Females	Black Males	White Males
newage	0.31989	0.39378	0.63186	0.36528
newage_2	-0.090856	-0.22346	-0.15692	-0.27146
tccat2	0.1173	0.64727	0.33314	0.44555
tccat3	0.1173*	0.80937	0.37726	0.77279
tccat4	0.81459	0.9329	0.69569	0.77279
hdlcat1	1.07081	1.20919	0.79192	1.27295
hdlcat2	0.39727	0.91366	0.43293	0.9178
hdlcat3	0.3927	0.91366	0.43293	0.65401
hdlcat4	0.23253	0.56967	0.28026	0.61373
sbpd19	0.024899	0.015023	0.002253654	0.013634
hyptmdcode41	0.8091	0.58733	0.6937	0.12
cursmk41	1.01048	1.10297	0.63094	0.37602

1-P ₀	0.99126	0.99391	0.97262	0.97262
RS ₀	2.93014	1.74618	0.20343	0.20343

* In this and other cases the repeating of a coefficient from the row above is not an error. The adjacent categories were collapsed for the particular population, for sample size reasons.

[1] Chambless LE, Folsom AR, Sharrett AR, Sorlie P, Couper D, Szklo M, Neito FJ. Coronary heart disease risk prediction in the ARIC Study. J Clin Epidemiol 2003;56:880-90.

[2] Folsom AR, Chambless LE, Duncan BB, Gilbert AC, Pankow JS. Prediction of coronary heart disease in middle-aged adults with diabetes. Diabetes Care 2003;10:2777-84.

Table 2: CHD Risk for those with Diabetes:) 10-year CHD risk score beta coefficients, RS ₀ , and 1-P ₀ values for participants with diabetes (diabts43=1)		
Risk Factor Variables	Beta Coefficients	
	Females	Males
racegrp	0.51819	0.49764
newage	0.11855	0.41088
newage_2	0.008189254	-0.26545
tccat23	0.66224	0.49266
tccat4	1.0978	1.04681
hdlcat12	0.38941	0.67931
hdlcat3	0.33487	-0.14568
Sbpd19	0.15579	0.004552397
Hyptmdcode41	0.38741	-0.019692
curismk41	0.091353	0.18137
1-P ₀	0.97643	0.9291
RS ₀	1.84209	0.49799

Continuous Variables used:

NEWAGE= (V4AGE41-55)/10

NEWAGE_2= (NEWAGE)²

Categorical Variables used:

Total Cholesterol (all measured in mg/dl)

TCCAT1= 1 if TOTCAL<200

TCCAT2= 1 if 200 <= TOTCAL < 240

TCCAT3= 1 if 240 <= TOTCAL < 280

TCCAT4=1 if TOTCAL>=280

TCCAT23= 1 if 200<=TOTCAL<280 (combine tccat2 & tccat3)

High Density Lipids (all measured in mg/dl)

HDLCAT1=1 if HDL< 35

HDLCAT2=1 if 35<=LIPD3A<45

HDLCAT3=1 if 45<=LIPD3A<50

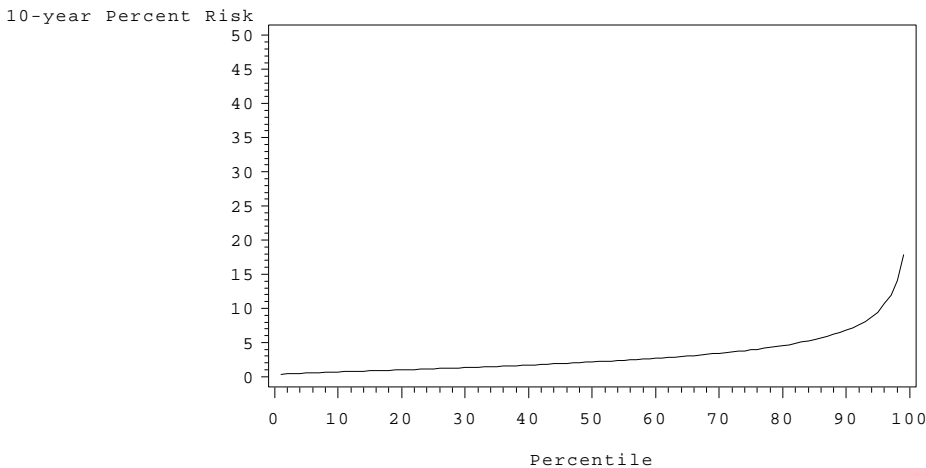
HDLCAT4=1 if 50<=LIPD3A<60
 HDLCAT5=1 if LIPD3A>=60
 HDLCAT12=1 if LIPD3A<45 (combine hdlcat1 & hdlcat2)

General Term	Description
PRVCHD43	Prevalent Coronary Heart Disease
RACE	Race
GENDER	Gender
CURSMK41	Current Smoker
DIABTS42	Diabetic
V4AGE41	Age a Visit 'n'
LIPD3a	HDL-High Density Lipids (mg/dL)
HYPTMDCODE41	Took Medication for hypertension w/in 2wks using 2004 medication coding
SBPD19	SBP (2nd & 3rd Average) (mmHg)
LIPD1a	Total Cholesterol (mg-dL)

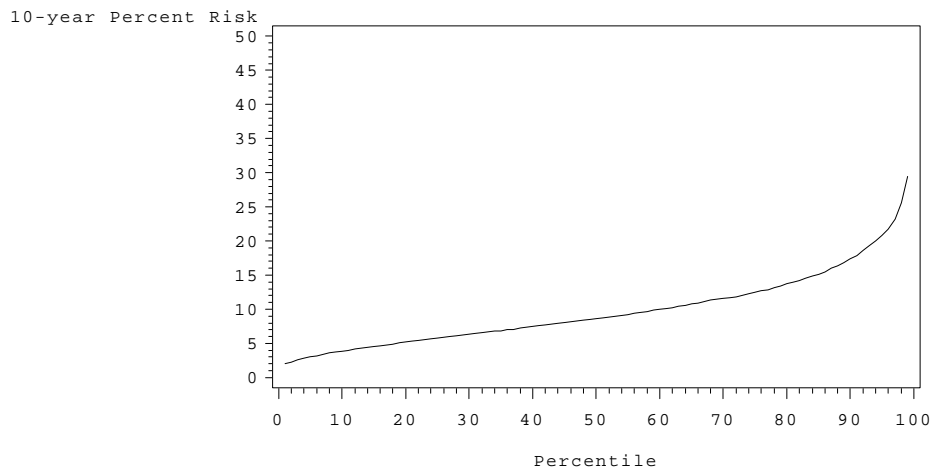
***Percentile Statistics for 10 Year CHD Risk at Visit 4
(Without Diabetes)***

Gender	N	Min	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Max
All	8629	0.19	0.37	0.65	0.90	1.76	4.10	8.47	13.37	17.04	25.63	87.35
Females	5093	0.19	0.32	0.52	0.70	1.15	2.16	3.91	6.83	9.47	17.87	87.35
Males	3536	1.16	2.00	3.02	3.87	5.73	8.66	12.50	17.37	20.85	29.41	48.08

10-year CHD Risk for Females at Visit 4
 (without Diabetes)



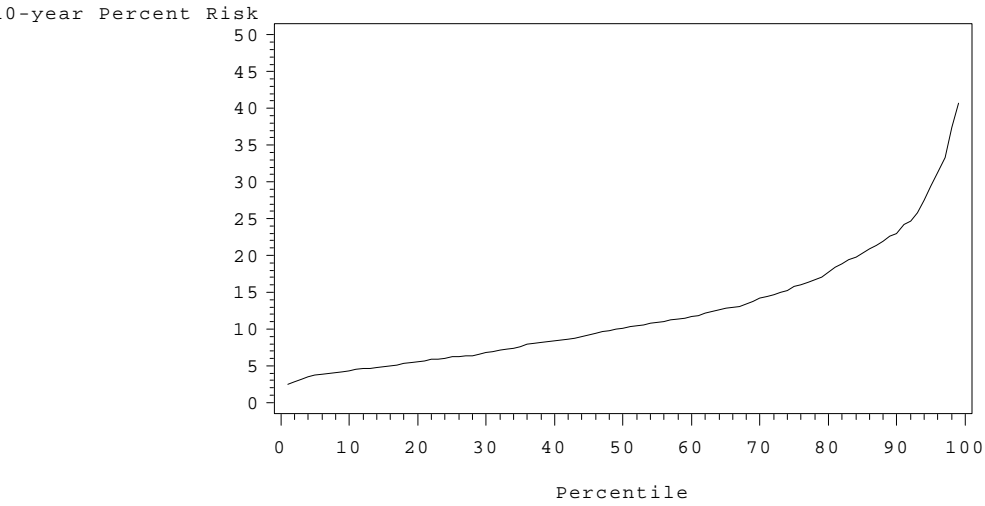
10-year CHD Risk for Males at Visit 4
(without Diabetes)



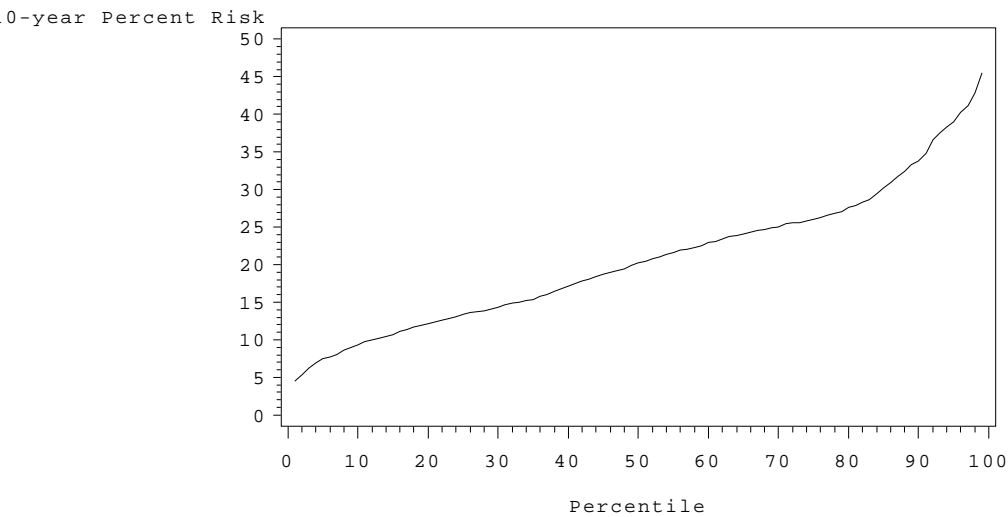
***Percentile Statistics for 10 Year CHD Risk at Visit 4
(With Diabetes)***

Gender	N	Min	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Max
All	1592	1.83	2.72	4.18	5.06	8.26	13.65	22.24	29.18	35.68	43.75	68.45
Females	893	1.83	2.48	3.75	4.30	6.19	10.13	15.77	23.00	29.46	40.76	68.45
Males	699	3.62	4.53	7.44	9.35	13.36	20.23	26.08	33.80	39.05	45.52	59.76

10-year CHD Risk for Females at Visit 4
(with Diabetes)



10-year CHD Risk for Males at Visit 4
(with Diabetes)



18.2.STROKERISK10YR_41: (% Predicted 10 year Risk of Incident Stroke at Visit 4)

(UC4678)

STROKERISK10YR_41 is the predicted 10 year risk of incident Ischemic Stroke. It is a percentage variable thus can take values from 0 to 100 or missing. The beta-coefficients used for the prediction are given below. The beta coefficients were obtained from an output found in UC4077_3b¹ and were published in ARIC manuscript #824². If a participant had prevalent stroke or had a missing value for at least one of the variables used, then the predicted risk was not calculated and a missing value was assigned.

Participants were separated based on gender. The 10 year predicted risk of incident Ischemic

Stroke was then calculated using the following Cox regression equation:

$$STROKERISK\ 10YR_41 = 100 * \left[1 - (1 - P_0)^{\exp(RS - RS_0)} \right]$$

Where P₀ is a constant

RS₀ is a constant

RS is a linear combination of B-coefficients times the risk factor variables (see table below).

STROKERISK10YR_41= Missing

if any risk factor variables are missing
or

if PRVSTR41 ^=0

Table2: Calculating Risk: Categorical and continuous variables w/ Beta -coefficients used to calculate 10-year stroke risk.

	Female	Male
racegrp	0.4155701	0.3514973
cursmk41	0.8002466	0.6931732
v4age41	0.0689097	0.0807621
prvchd43	0.6298822	0.7332341
hyptmdcode41	0.4072694	0.4544168
clvh41	0.808223	0.386121
diabts42	1.1371047	0.8892109
sbpd19	0.0174648	0.0184501
RS ₀	5.79944	6.55671
1-P ₀	0.99390574	0.989928

Variables used	Description
V4DATE31	Date of Visit X
GENDER	Gender
RACE	Race
CURSMK41	Current Smoker
V4AGE41	Age at Visit X
PRVCHD43	Prevalent CHD definition 3
HYPTMDCODE41	Took Medication for hypertension w/in 2wks using 2004 medication coding
CLVH41	Left Ventricle hypertrophy
DIABTS42	Diabetes
SBP19	Systolic BP (Ave)
PREVSTR41	Prevalent Stroke

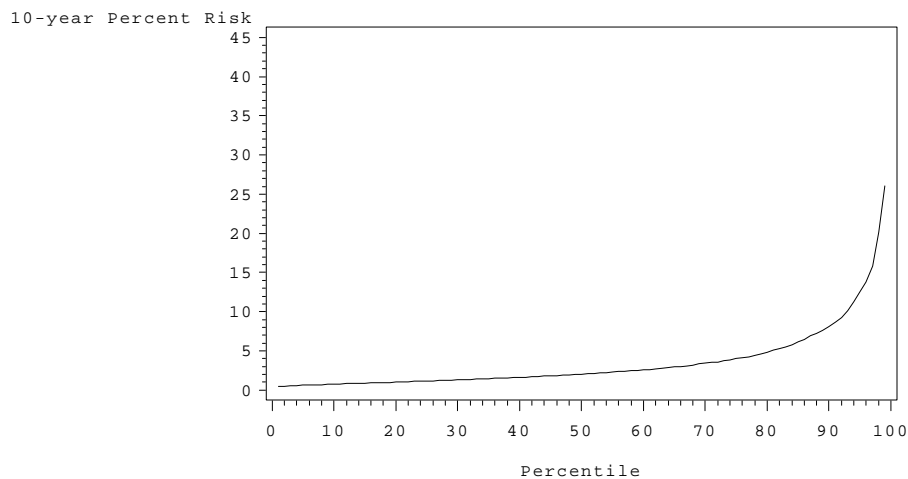
[1] J:\aric\sc\source\archive\zip\uc4077.zip

[2] Chambless LE, Heiss G, Shahar E, Earp MJ, Toole J. Ischemic stroke risk prediction in the Atherosclerosis Risk in Communities study. Am J Epidemiol 2004;160:259-269.

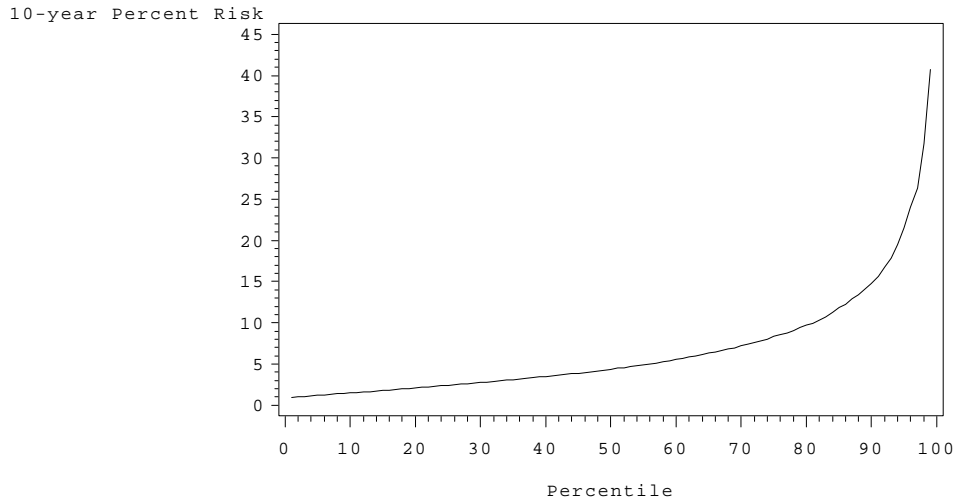
Percentile Statistics for 10 Year Stroke Risk at Visit 4

Gender	N	Min	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Max
All	7779	0.31	0.50	0.72	0.94	1.52	2.89	5.98	11.63	16.93	33.73	87.04
Females	4337	0.31	0.46	0.62	0.75	1.15	2.03	3.99	8.09	12.53	26.06	69.52
Males	3442	0.61	0.92	1.20	1.49	2.42	4.38	8.36	14.74	21.54	40.72	87.04

10-year Stroke Risk for Females at Visit 4



10-year Stroke Risk for Males at Visit 4



18.3.DIABETESRISK9YR_41: (% Predicted 9 year Risk of Incident Diabetes at Visit 4) (uc4679)

DIABETESRISK9YR_41 is the predicted 9 year risk of incident type two diabetes. It is a percentage variable thus can take values from 0 to 100 or missing. The beta-coefficients used for the prediction are given below. The beta coefficients were obtained from an output found in uc439216¹ and were published in ARIC manuscript 808b². If a participant had prevalent diabetes or had a missing value for at least one of the variables used, then the predicted risk was not calculated and a missing value was assigned.

$$DIABETES_{9yr_41} = \frac{1}{1 + e^{-RS}}$$

DIABETES9yr_41= Missing
If DIABTS42^=0
Or if any risk factor variables are missing

RS is a linear combination of B-coefficients times the risk factor variables.
 $RS = -9.98078 + 0.017254*(V4AGE41) + 0.44330*(BLACK) + 0.49810*(FAMDIABETES) + 0.0880*(LIPD4a_{[mg/dl]}) + 0.011097*(SBPD19_{[mmHg]}) - 0.032616*(ANTA01_{[cm]}) + 0.027316*(ANTA07a_{[cm]}) - 0.012227*(LIPD3a_{[mg/dL]}) + 0.002710939*(LIPD2d_{[mg/dL]})$

BLACK= 1 if RACEGRP="B"

BLACK=0 if RACEGRP="W"
 BLACK=missing otherwise.

FAMDIABETES- if either participants mother or father had diabetes then FAMDIABETES=1
 Neither mother nor father had diabetes then FAMDIABETES=0
 FAMDIABETES=1 if HOM15B='Y' or HOM18B='Y' or HOM23B='Y' or HOM26B='Y'
 FAMDIABETES =0 if (HOM15B='N' or HOM18B='N') and if (HOM23B='N' or
 HOM26B='N') FAMDIABETES = . Otherwise

Visit 4 Variable	Description
V1AGE41	Age at Visit X
RACEGRP	Race
LIPD3a	High density lipids (mg/dl)
LIPD4a	Fasting Glucose Value (mg/dl) [recalibrated]
DIABTS42	Prevalent Diabetes?
SBPD19	SBP- Systolic BP 2nd & 3rd average (mmHg)
LIPD2a	Triglycerides (mg/dl)
ANTA01	Height (cm)
ANTA07a	Waist size (cm)
HOM15B	Natural Mother ever have Diabetes?
HOM18B	Natural Mother ever have Diabetes?
HOM23B	Natural Father ever have Diabetes
HOM26B	Natural Father ever have Diabetes

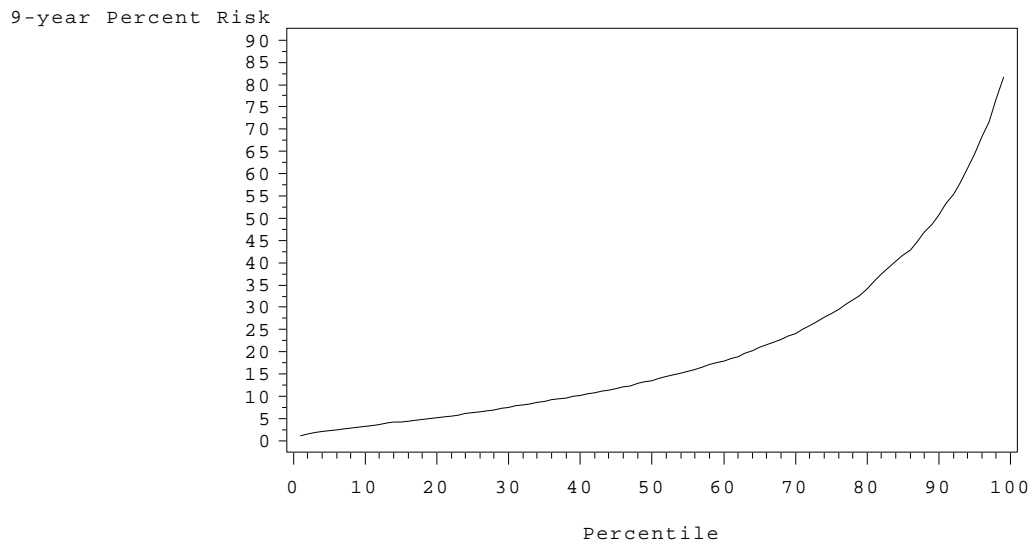
[1] j:\aric\sc\source\archive\zip\uc4392.zip

[2] Schmidt MI, Duncan BB, Bang H, Pankow J, Ballantyne CM, Golden S, Folsom AR, Chambless LE. Identifying individuals at high risk for diabetes: The Atherosclerosis Risk in Communities Study Diabetes Care 2005;28:2013-18.

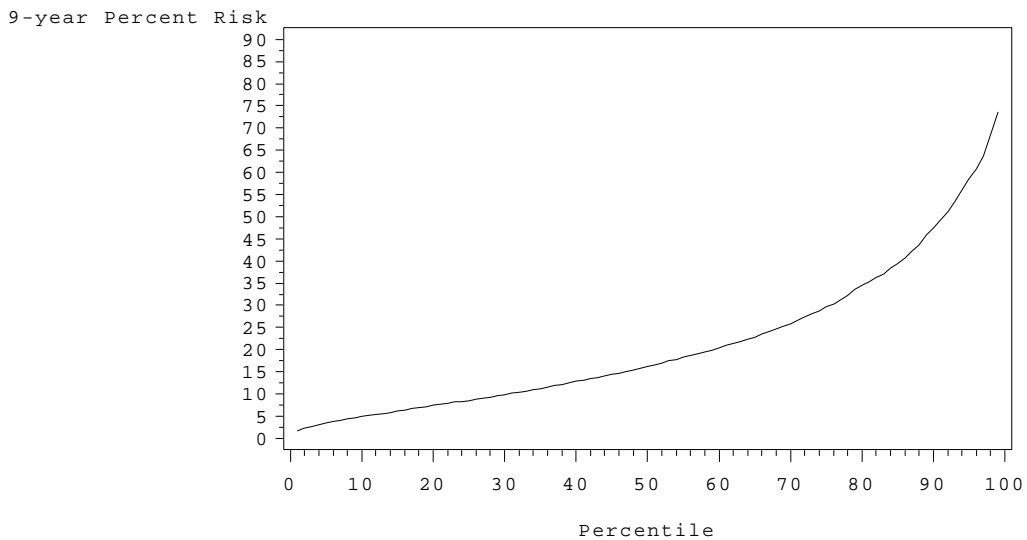
Quintile Statistics for 9 Year Diabetes Risk at Visit 4

Gender	N	Min	1st Pctl	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl	99th Pctl	Max
All	8734	0.08	0.95	1.84	2.70	5.06	10.41	21.23	38.58	50.41	70.75	91.14
Females	4977	0.10	0.86	1.66	2.34	4.42	9.57	20.99	40.18	53.63	73.77	91.14
Males	3757	0.08	1.15	2.32	3.32	5.83	11.25	21.52	36.76	47.68	64.00	86.79

9-year Diabetes Risk for Females at Visit 4



9-year Stroke Risk for Males at Visit 4



NOTE: The above title says “9-year STROKE...” But is ment to say “9-year Diabetes Risk for Males at Visit 4”