Cohort, Exam 1

ECG Data

Machine coded from Canada

The ECGMA03 data set is the final study ECG data set for Visit 1. There is 1 ECG Machine coded data set from Canada in Visit 1, ECGX02. The Visual Coded record from the ECG Reading Center in Minnesota is the ETLA record. Roughly 1 in every 5 ECG records were sent to be visually coded at Minnesota in Visit 1. 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 3600 visual coded (ETLA) 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 ECAA records.

The ECGMA03 data set utilizes all of the different ECG data sets to some extent. First, if there is only an ECGX02 record for a particular ID, the ECGX02 record for that ID is duplicated in the ECGMA03 data set. Second, if there is a Visual Coded record for an ID but there was no need for adjudication, the ECGX02 record for that ID is duplicated in the ECGMA03 data set. Lastly, when there is an ECAA adjudicated record, the ECGX02 record is written to the ECGMA03 data set with the exception that the adjudicated values overwrite the original ECGX02 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 ECAA adjudicated values are the only records that are potentially different from the original ECGX02 records in the ECGMA03 data set.

Attached is a listing of variables contained in the ECGMA03 data set. Unless specifically requested otherwise, these variables should be used in official ARIC analyses, although the ECGX02 (Machine Coding) and ETLA (Visual Coding) records are also distributed.

ECGB01		ECG Tech Code
N	*Value*	*Description*
15697	Present	Text suppressed
4		Missing

ECGB04		Filter Setting
N	*Value*	*Description*
8	02	
15554	16	
139		Missing

ECGB05		Cart Code
N	*Value*	*Description*
233	01	
3996	05	
858	06	
3832	07	
3684	08	
3098	09	

ECGB06		Recording Date
N	*Value*	*Description*
15701	Range	01/02/1984 - 03/29/1990

Cohort, Exam 1

ECGB07		Recording Time
N	*Value*	*Description*
15701	Range	0:03 - 23:06

ECGB07H		Recording Time - Hour
N	*Value*	*Description*
15701	Range	0 - 23 (median=10 mean=10.6 std=1.5)

ECGB07M		Recording Time - Minute
N	*Value*	*Description*
15701	Range	0 - 59 (median=29 mean=29.4 std=17.3)

ECGB08		Quality Grade (Noise/mm, Overall drift/mm, Beat to beat drift/mm)
N	*Value*	*Description*
6319	1	
6262	2	
1783	3	
578	4	
759	5	

ECGB09		Minnesota Code L1 (Q-Q.S. Pattern I, aVL, V6)
N	*Value*	*Description*
15513	0	No Minnesota Code Equivalent
10	11	Q/R amplitude ratio = 1/3, plus Q duration = 0.03 sec in lead I or V6
4	13	Q duration = 0.04 sec, plus R amplitude = 3 mm in lead a VL
14	21	Q/R amplitude ratio = 1/3, plus Q duration = 0.02 and < 0.03 sec in lead I or V6
3	22	Q duration = 0.03 sec and < 0.04 sec lead I or V6
78	31	Q/R amplitude ratio = 1/5 and < 1/3, plus Q duration = 0.02 sec and < 0.03 sec in lead I or V6.
20	33	Q duration = 0.03 sec and < 0.04 sec, plus R amplitude = 3 mm in lead aVL.
59		Missing

Cohort, Exam 1

ECGB10		Minnesota Code F1 (Q-Q.S. Pattern II, III, aVF)
N	*Value*	*Description*
15113	0	No Minnesota Code Equivalent
13	11	Q/R amplitude ratio = 1/3, plus Q duration = 0.03 sec in lead II.
2	12	Q duration = 0.04 sec in lead II.
10	14	Q duration = 0.05 sec in lead III, plus a Q-wave amplitude = 1.0 mm in the majority of beats in lead aVF.
2	15	Q duration = 0.05 sec in lead aVF.
61	21	Q/R amplitude ratio = 1/3, plus Q duration = 0.02 sec and < 0.03 sec in lead II.
4	22	Q duration = 0.03 sec and < 0.04 sec in lead II.
24	23	QS pattern in lead II. Do not code in the presence of 7-1-1.
50	24	Q duration = 0.04 sec and < 0.05 sec in lead III, plus a Q-wave ≥ 1.0 mm amplitude in the majority of beats in aVF.
4	25	Q duration = 0.04 sec and < 0.05 sec in lead aVF.
133	26	Q amplitude = 5.0 mm in leads III or aVF.
45	31	Q/R amplitude ratio = 1/5 and < 1/3, plus Q duration = 0.02 sec and < 0.03 sec in lead II.
87	34	Q duration = 0.03 sec and < 0.04 sec in lead III, plus a Q-wave = 1.0 mm amplitude in the majority of beats in lead aVF.
10	35	Q duration = 0.03 sec and < 0.04 sec in lead aVF.
108	36	QS pattern in each of leads III and aVF. (Do not code in the presence of 7-1-1.)
35		Missing

ECGB11		Minnesota Code V1 (Q-Q.S. Pattern V1-V5)
N	*Value*	*Description*
15276	0	No Minnesota Code Equivalent
23	11	Q/R amplitude ratio = 1/3 plus Q duration = 0.03 sec in any of leads V2-V5
19	12	Q duration = 0.04 sec in any of leads V1-V5
46	16	QS pattern when initial R-wave is present in adj lead to the right on the chest, in any leads V2-V6
13	17	QS pattern in all of leads V1-V4 or V1-V5
10	21	Q/R amplitude ratio = 1/3, plus Q duration = 0.02 sec and < 0.03 sec, in any of leads V2-V5
2	22	Q duration = 0.03 sec and < 0.04 sec in any of leads V2-V5
27	27	QS pattern in all of leads V1-V3 (do not code in the presence of 7-1-1
68	28	Initial R amplitude decreasing to 2.0mm or less in every beat
12	31	Q/R amplitude ratio = 1/5 and < 1/3 plus Q duration = 0.02 and < 0.03 sec in any of leads V2, V3, V4, V5.
132	32	QS pattern in lead V1 and V2. (Do not code in the presence of 3-1 or 7-1-1.)
73		Missing

Cohort, Exam 1

ECGB12		Minnesota Code L4 (ST Junction & Segment Depression I, aVL, V6)
N	*Value*	*Description*
15317	0	No Minnesota Code Equivalent
18	12	STJ depression = 1.0 mm but < 2.0 mm, and ST segment horizontal or downward sloping in any of leads I, aVL, or V6.
125	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in any of leads I, aVL, or V6.
180	3	No STJ depression as much as 0.5 mm but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline, in any of leads I, aVL, or V6.
2	4	STJ depression = 1.0 mm and ST segment upward sloping or U-shaped, in any of leads I, aVL, or V6.
59		Missing

ECGB13		Minnesota Code F4 (ST Junction & Segment Depression II, III, aVF)
N	*Value*	*Description*
15478	0	No Minnesota Code Equivalent
7	12	STJ depression = 1.0 mm but < 2.0 mm, and ST segment horizontal or downward sloping in any of leads I, aVL, or V6
99	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in any of leads I, aVL, or V6
77	3	No STJ depression as much as 0.5 mm but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline, in any of leads I, aVL, or V6
5	4	STJ depression = 1.0 mm and ST segment upward sloping or U-shaped, in any of leads I, aVL, or V6
35		Missing

ECGB14		Minnesota Code V4 (ST Junction & Segment Depression V1-V5)
N	*Value*	*Description*
15382	0	No Minnesota Code Equivalent
4	11	STJ depression = 2.0 and ST segment horizontal or downward sloping in any of leads V1-V5
21	12	STJ depression = 2.0 and ST segment horizontal or downward sloping in any of leads V1 - V5
116	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in any of leads V1 - V5
100	3	No STJ depression as much as 0.5 mm, but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline in any of leads V2 - V5
7	4	STJ depression = 1.0 mm and ST segment upward sloping or U-shaped in any of leads V1 - V5
71		Missing

Cohort, Exam 1

ECGB15		Minnesota Code L5 (T Wave I, aVL, V6)
N	*Value*	*Description*
14071	0	No Minnesota Code Equivalent
12	1	T amplitude negative 5.0 mm or more in either of leads I, V6, or in lead aVL when R amplitude is = 5.0 mm
355	2	T amplitude negative or diphasic (positive-negative or negative-positive type) with negative phase at least 1.0 mm but not as deep as 5.0 mm in lead I or V6, or in lead aVL when R amplitude is = 5.0 mm
755	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase in lead I or V6, or in lead aVL when R amplitude is = 5.0 mm
454	4	T amplitude positive and T/R amplitude ratio < 1/20 in any of leads I, aVL, V6; R wave amplitude must be = 10.0 mm.
54		Missing

ECGB16		Minnesota Code F5 (T Wave II, III, aVF)
N	*Value*	*Description*
15062	0	No Minnesota Code Equivalent
1	1	T amplitude negative 5.0 mm or more in lead II, or in lead aVF when QRS is mainly upright
196	2	T amplitude negative or diphasic with negative phase (negative-positive or positive-negative type) at least 1.0 mm but not as deep as 5.0 mm in lead II, or in lead aVF when QRS is mainly upright
288	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase in lead II; not Coded in lead aVF
120	4	T amplitude positive and T/R amplitude ratio < 1/20 in lead II; R wave amplitude must be = 10.0 mm.
34		Missing

ECGB17		Minnesota Code V5 (T Wave V1-V5)
N	*Value*	*Description*
14277	0	No Minnesota Code Equivalent
29	1	T amplitude negative 5.0 mm or more in any of leads V2 - V5
566	2	T amplitude negative (flat), or diphasic (negative-positive or positive-negative type) with negative phase at least 1.0 mm but not as deep as 5.0 mm, in any of leads V2 - V5
380	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase, in any of leads V3 - V5
381	4	T amplitude positive and T/R amplitude ratio < 1/20 in any of leads V3, V4, V5; R wave amplitude must be = 10.0 mm
68		Missing

ECGB18		Minnesota Code L92 (ST Segment Elevation Anterolateral Site (Leads I, aVL, V6))
N	*Value*	*Description*
15635	0	No Minnesota Code Equivalent
7	2	ST segment elevation = 1.0 mm in any of leads I, aVL, V6
59		Missing

Cohort, Exam 1

ECGB19	Minnesota Code F92 (ST Segment Elevation Posterior (Inferior) Site (Leads II, III, aVF))
N	*Value*	*Description*
15647	0	No Minnesota Code Equivalent
18	2	ST segment elevation = 1.0 mm in any of leads II, III, aVF
36		Missing

ECGB20	Minnesota Code V92 ((ST Segment Elevation Anterior Site (Leads V1, V2, V3, V4, V5))
N	*Value*	*Description*
15386	0	No Minnesota Code Equivalent
242	2	ST segment elevation = 1.0 mm in lead V5 or ST segment elevation = 2.0 mm in any of leads V1 - V4
73		Missing

ECGB21	Minnesota Code C2 (QRS Axis Deviation Codes)
N	*Value*	*Description*
12689	0	No Minnesota Code Equivalent
1614	11	
566	12	
667	21	Left. QRS axis from -30° through -90° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be zero or positive in I, negative in III, and zero or negative in II.)
79	22	Right. QRS axis from +120° through -150° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be negative in I, and zero or positive in III, and in I must be one-half or more of that in III.)
36	3	Right (optional code when 2-2 is not present). QRS axis from +90° through +119° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be zero or negative in I and positive in II and III.)
50		Missing

ECGB22	Minnesota Code C3 (High Amplitude R Wave Codes)
N	*Value*	*Description*
14254	0	No Minnesota Code Equivalent
307	12	
47	13	
358	14	
13	2	Right: R amplitude = 5.0 mm and R amplitude = S amplitude in the majority of beats in lead V1, when S amplitude is > R amplitude somewhere to the left on the chest of V1
117	31	Left: R amplitude > 26 mm in either V5 or V6, or R amplitude > 20.0 mm in any of leads I, II, III, aVF, or R amplitude > 12.0 mm in lead aVL. (All criteria measured only on second to last complete normal beat.)
492	32	Right: R amplitude = 5.0 mm and R amplitude = S amplitude in the majority of beats in lead V1, when S amplitude is > R amplitude somewhere to the left on the chest of V1 (codes 7-3 and 3-2, if criteria for both are present).
113		Missing

Cohort, Exam 1

ECGB23		Minnesota Code C6 (A-V Conduction Defect Codes)
N	*Value*	*Description*
14890	0	No Minnesota Code Equivalent
439	3	P-R (P-Q) interval = 0.22 sec in the majority of beats in any of leads I, II, III, aVL, aVF
5	4	
267	5	Short P-R interval. P-R interval < 0.12 sec in all beats of any two of leads I, II, III, aVL, aVF
100		Missing

ECGB24		Minnesota Code C7 (Ventricular Conduction Defect)
N	*Value*	*Description*
13677	0	No Minnesota Code Equivalent
78	1	
199	2	
299	3	Incomplete right bundle branch block. QRS duration < 0.12 sec in each of leads I, II, III, aVL, aVF, and R' > R in either of leads V1, V2
268	4	Intraventricular block. QRS duration = 0.12 sec in a majority of beats in any of leads I, II, III, aVL, aVF. (7-4 suppresses all 2, 3, 4, 5, 9-2, 9-4, 9-5 codes.)
369	5	R-R' pattern in either of leads V1, V2 with R' amplitude = R.
715	6	Incomplete left bundle branch block. (Do not code in the presence of any codable Q- or QS-wave.) QRS duration = 0.10 sec and < 0.12 in the majority of beats of each of leads I, aVL, and V5 or V6.
96		Missing

ECGB25		Minnesota Code C91 (Low QRS Amplitude)
N	*Value*	*Description*
15367	0	No Minnesota Code Equivalent
242	1	Low QRS amplitude. QRS peak-to-peak amplitude < 5 mm in all beats in each of leads I, II, III, or < 10 mm in all beats in each of leads V1 - V6. (Check calibration before coding.)
92		Missing

ECGB26		Minnesota Code C93 (P-Wave Amplitude > 2.5 MM In Any of Leads II, III, aVF in Majority of Beats)
N	*Value*	*Description*
15600	0	No Minnesota Code Equivalent
31	3	P-wave amplitude = 2.5 mm in any of leads II, III, aVF, in a majority of beats.
70		Missing

Cohort, Exam 1

ECGB27		*Minnesota Code C94 (QRS Transition Zone)*
N	*Value*	*Description*
5918	0	No Minnesota Code Equivalent
8642	1	QRS transition zone at V3 or to the right of V3 on the chest. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)
1141	2	QRS transition zone at V4 or to the left of V4 on the chest. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)

ECGB28		*Minnesota Code C95 (T-Wave Amplitude)*
N	*Value*	*Description*
15477	0	No Minnesota Code Equivalent
109	5	T-wave amplitude > 12 mm in any of leads I, II, III, aVL, aVF, V1, V2, V3, V4, V5, V6. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)
115		Missing

ECGB29		*Minnesota Code E7 (Duration Criteria for R-E Score for LVH)*
N	*Value*	*Description*
8977	0	No Minnesota Code Equivalent
6724	7	QRS Duration > 90 MS OR Intrinscord Deflection V5 OR V6 > 50 MS

ECGB30		*CIIS Value*
N	*Value*	*Description*
15582	Range	-20.75 - 46.5 (median=2.98 mean=4.189 std=9.699)
119		Missing

ECGB31		*Heart Rate*
N	*Value*	*Description*
15680	Range	34 - 161 (median=66 mean=66.7 std=10.4)
21		Missing

ECGB32		*Q Or Qs Amplitude:I*
N	*Value*	*Description*
15672	Range	0 - 482 (median=28 mean=37.1 std=43.7)
29		Missing

Cohort, Exam 1

ECGB33		*Q Or Qs Amplitude:III*
N	*Value*	*Description*
15669	Range	0 - 2307 (median=0 mean=74.3 std=146.4)
32		Missing

ECGB34		*Q Or Qs Amplitude:V5*
N	*Value*	*Description*
15677	Range	0 - 1134 (median=20 mean=36.2 std=52.0)
24		Missing

ECGB35		*Q Or Qs Amplitude:V6*
N	*Value*	*Description*
15665	Range	0 - 771 (median=36 mean=46.5 std=50.0)
36		Missing

ECGB36		*R Amplitude:I*
N	*Value*	*Description*
15672	Range	0 - 2721 (median=749 mean=786.4 std=334.2)
29		Missing

ECGB37		*R Amplitude:III*
N	*Value*	*Description*
15669	Range	0 - 2287 (median=207 mean=319.2 std=306.6)
32		Missing

ECGB38		*R Amplitude:aVL*
N	*Value*	*Description*
15657	Range	0 - 2676 (median=413 mean=468.9 std=335.3)
44		Missing

ECGB39		*R Amplitude:V2*
N	*Value*	*Description*
15651	Range	0 - 3378 (median=415 mean=473.6 std=307.3)
50		Missing

Cohort, Exam 1

ECGB40		R Amplitude:V5
N	*Value*	*Description*
15677	Range	0 - 5620 (median=1320 mean=1373.7 std=497.0)
24		Missing

ECGB41		R Amplitude:V6
N	*Value*	*Description*
15665	Range	0 - 4834 (median=1051 mean=1091.8 std=380.6)
36		Missing

ECGB42		S Amplitude:I
N	*Value*	*Description*
15672	Range	-871 - 0 (median=-33 mean=-69.2 std=92.9)
29		Missing

ECGB43		S Amplitude:III
N	*Value*	*Description*
15669	Range	-2916 - 0 (median=-110 mean=-257.6 std=342.3)
32		Missing

ECGB44		S Amplitude:V1
N	*Value*	*Description*
15654	Range	-4882 - 0 (median=-799 mean=-835.5 std=464.1)
47		Missing

ECGB45		S Amplitude:V2
N	*Value*	*Description*
15651	Range	-5254 - 0 (median=-1032 mean=-1091.9 std=546.1)
50		Missing

ECGB46		S Amplitude:V5
N	*Value*	*Description*
15677	Range	-1996 - 0 (median=-175 mean=-210.6 std=192.9)
24		Missing

Cohort, Exam 1

ECGB47		S Amplitude:V6
N	*Value*	*Description*
15665	Range	-978 - 0 (median=-29 mean=-69.7 std=100.9)
36		Missing

ECGB48		T negative Amplitude:aVL
N	*Value*	*Description*
15657	Range	-763 - 0 (median=0 mean=-8.9 std=33.4)
44		Missing

ECGB49		T negative Amplitude:aVF
N	*Value*	*Description*
15669	Range	-461 - 0 (median=0 mean=-4.6 std=22.0)
32		Missing

ECGB50		T negative Amplitude:V6
N	*Value*	*Description*
15665	Range	-852 - 0 (median=0 mean=-6.4 std=36.0)
36		Missing

ECGB51		T positive Amplitude:aVR
N	*Value*	*Description*
15671	Range	0 - 588 (median=0 mean=2.1 std=18.4)
30		Missing

ECGB52		T positive Amplitude:V1
N	*Value*	*Description*
15654	Range	0 - 1165 (median=20 mean=96.5 std=130.1)
47		Missing

ECGB53		T positive Amplitude:V6
N	*Value*	*Description*
15665	Range	0 - 1018 (median=203 mean=208.9 std=121.4)
36		Missing

Cohort, Exam 1

ECGB54		QRS Interval
N	*Value*	*Description*
15701	Range	61 - 264 (median=96 mean=97.6 std=12.9)

ECGBCY		Contact Year
N	*Value*	*Description*
15701	1	

ECGBFLAG		ECGBFLAG
N	*Value*	*Description*
15701	1	

EXCX02		Visual Coding Flag
N	*Value*	*Description*
10654	0	
1246	N	
1377	S	
2424		Missing

ID		ARIC Subject ID (Cir)
N	*Value*	*Description*
15701	Present	Text suppressed