

# Supplementary Material

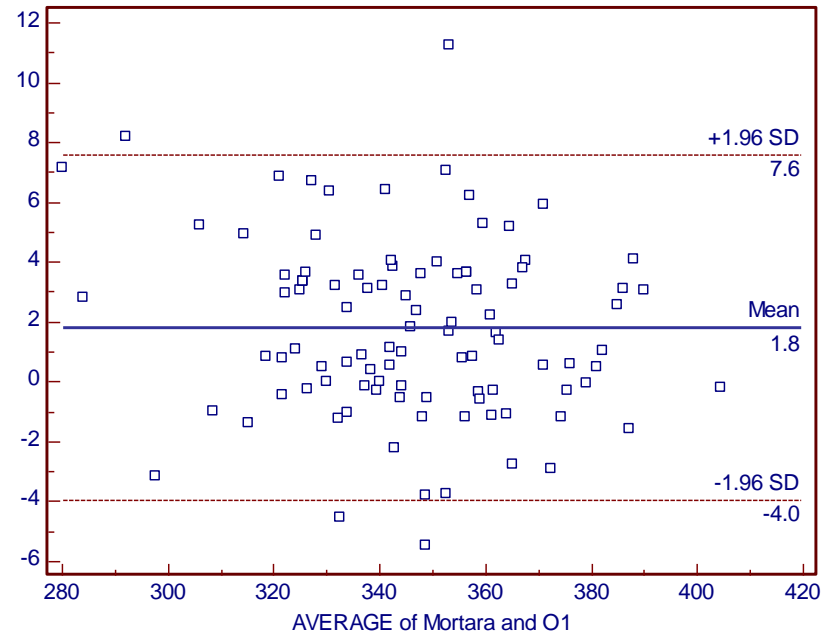
## Annex A: Data on inter-observer variability

Accuracy of the algorithm was assessed through comparison of the algorithm performance with 2 investigators (NK and NS) in 100 randomly chosen ECGs of SQTS patients (mean differences obtained through paired-sample T-test, and correlation). Interobserver variability was assessed through the Bland-Altman method. All 3 investigators were experienced in electrophysiology (mean 3.3 years training).

### 1. Mortara VERITAS™ ECG algorithm vs. Operator1

Correlation:  $r=0.91$ ,  $P<0.001$ ,

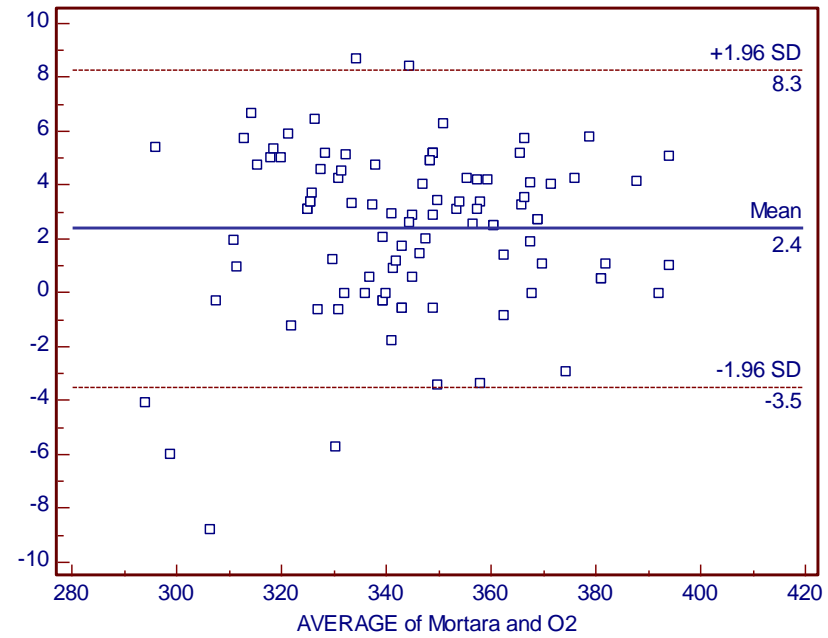
Mean difference (ms):  $6.0 \pm 10.0$ ,  $P<0.001$



## 2. Mortara VERITAS™ ECG algorithm vs. Operator2

Correlation:  $r=0.90$ ,  $P<0.001$

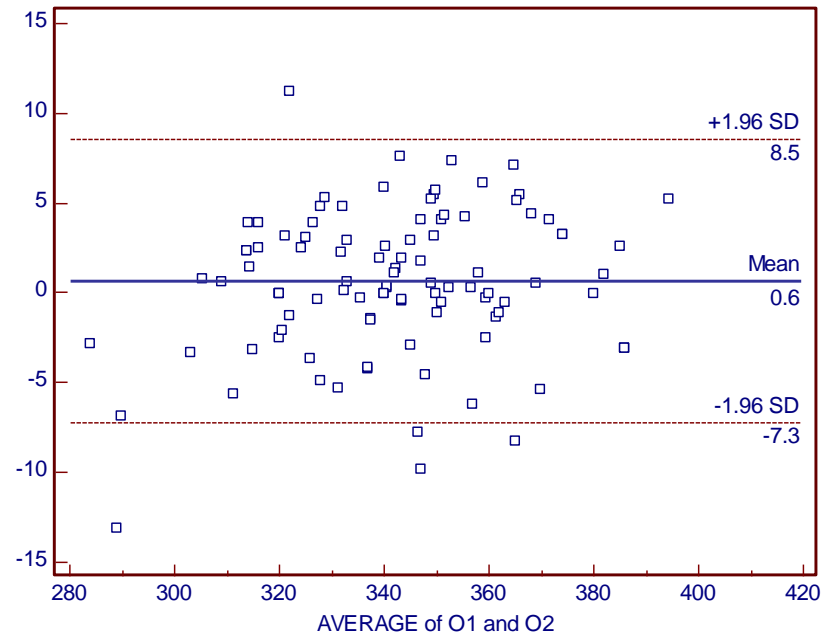
Mean difference (ms):  $8.2 \pm 10.1$   $P<0.001$



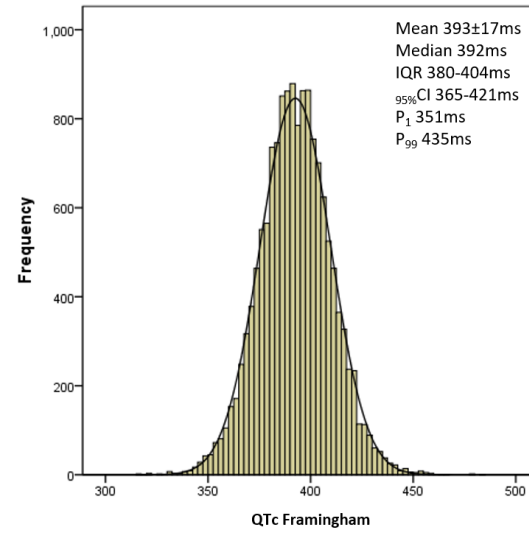
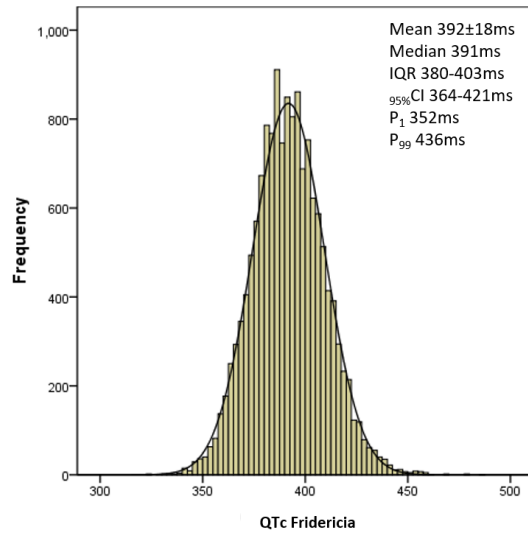
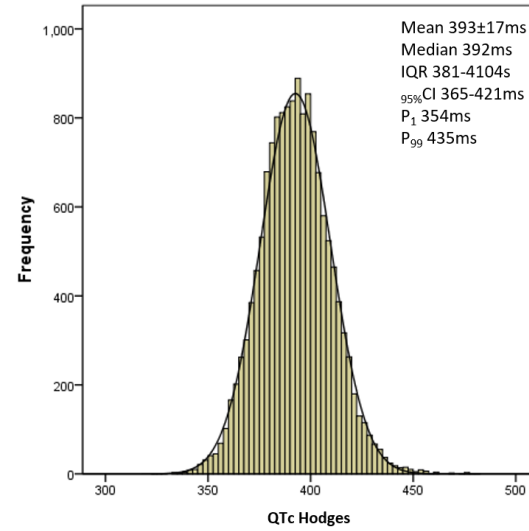
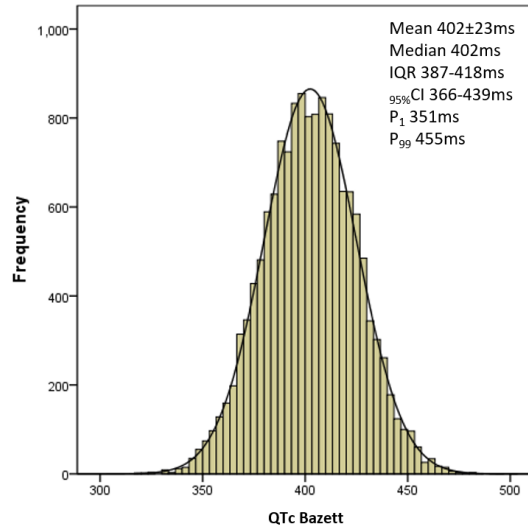
### 3. Operator1 vs Operator2

Correlation:  $r=0.83$ ,  $P<0.001$

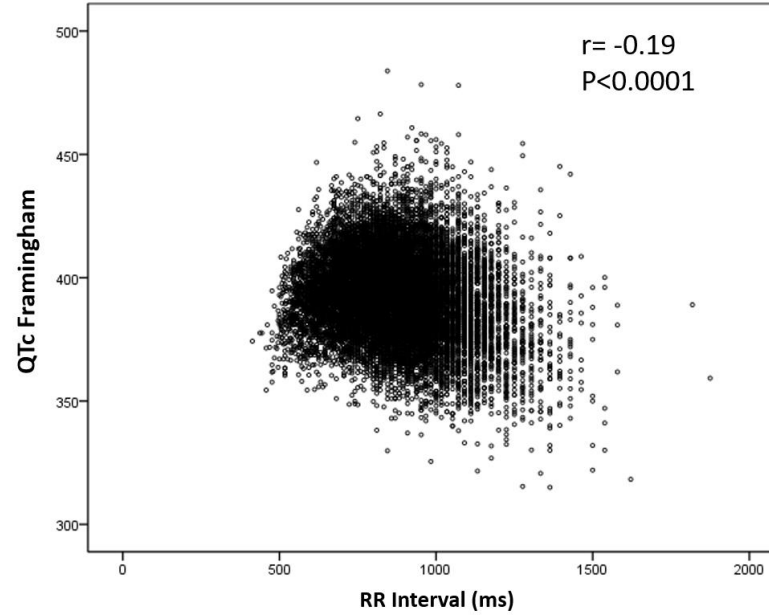
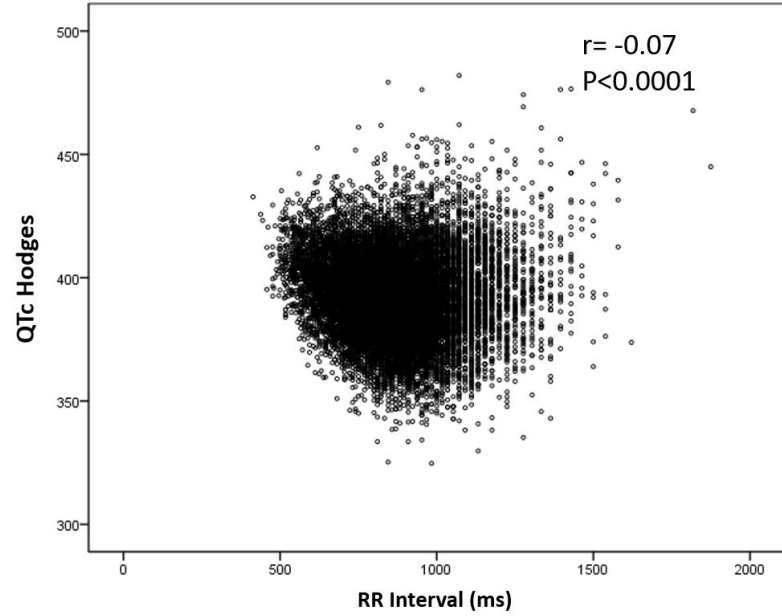
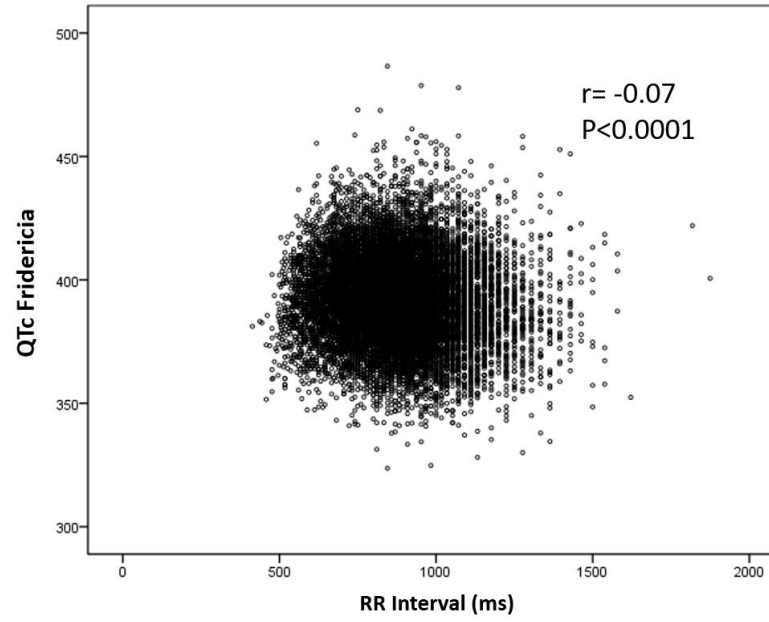
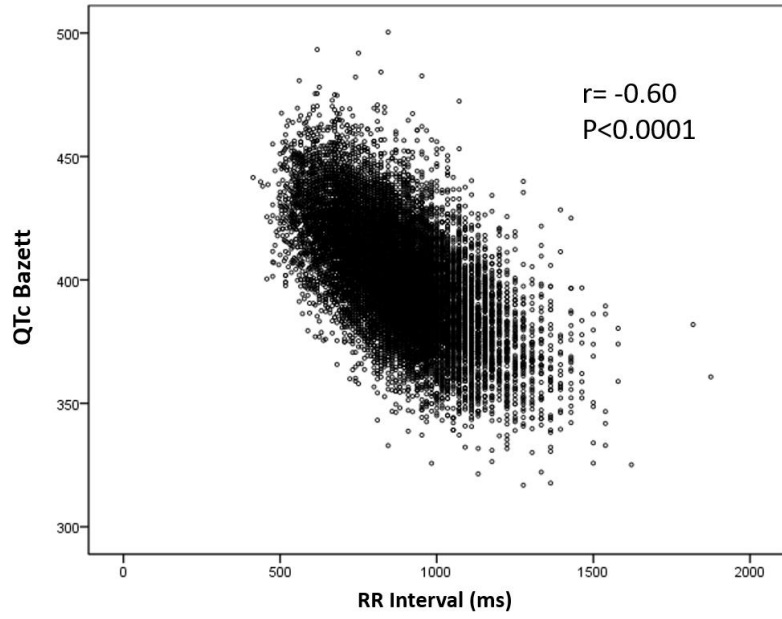
Mean difference (ms):  $2.2 \pm 13.6$ ,  $P=0.116$



## Annex B – Histograms for QTc (ms) with different correction formulae

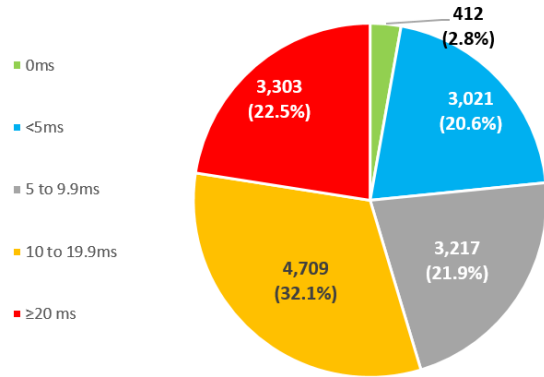


Annex C – Scatterplots illustrating the association of QTc with RR for each correction formulae.

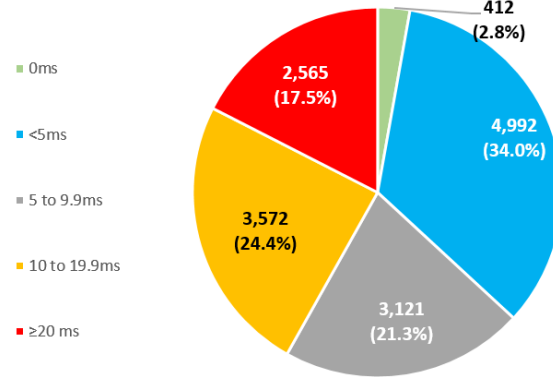


**Annex D – Differences of QTc comparing *Bazett* with the 3 other QT correction formulae: number and % of individuals for different cut-offs.**

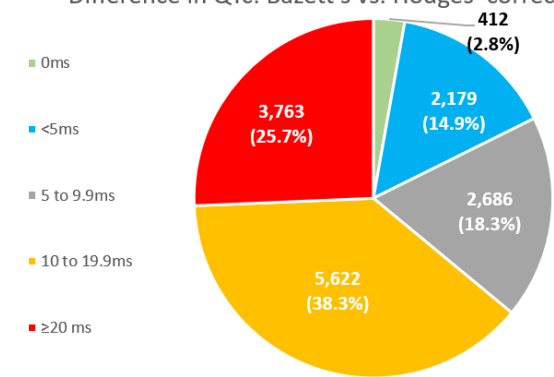
Difference in QTc: Bazett's vs. Fridericia's correction



Difference in QTc: Bazett's vs. Framingham's correction



Difference in QTc: Bazett's vs. Hodges' correction



**Table S-1** – Assessment of the impact of using different QTc Formulae in the diagnosing short QT syndrome based on the Expert Consensus recommendations [4] in the SCD-SOS cohort.

SCD-SOS PARTIC.#	Gender	Age	Race	QT (ms)	QTc Bazzet	RR (ms)	Sports	FH history SCD <40	Syncope	QTc Friedericia	QTc Hodges	QTc Framingham	Gollob Bazzet	Gollob Fridericia	Gollob Hodges	Gollob Framingham	Cons. Bazzet	Cons. Fridericia	Cons. Hodges	Cons. Framingham
637	M	20	Cauc.	351	363	938	-	Yes	-	359	358	361	2	2	2	2	-	Possible	Possible	-
1354	M	26	Cauc.	376	357	1,111	Recr.	Yes	-	363	365	359	2	2	2	2	Possible	-	-	Possible
1854	W	23	Cauc.	326	369	779	Comp.	Yes	-	354	356	360	2	2	2	2	-	Possible	Possible	-
1953	W	19	Cauc.	354	326	1,176	Recr.	-	-	335	338	327	3	2	2	3	Possible	-	-	Possible
2282	M	24	Cauc.	323	326	984	Comp.	-	-	325	325	326	3	3	3	3	Possible	Possible	Possible	Possible
3363	M	29	Afro.	306	333	845	Comp.	-	-	324	325	330	2	3	3	3	-	Possible	Possible	Possible
4713	M	21	Cauc.	358	317	1,277	Comp.	-	-	330	335	315	3	2	2	3	Possible	Possible	-	Possible
7582	M	17	Cauc.	377	330	1,304	Comp.	-	-	345	352	330	2	2	1	2	Possible	-	-	Possible
7917	M	15	Cauc.	353	359	968	Recr.	Yes	-	359	357	358	2	2	2	2	Possible	Possible	Possible	Possible
7924	M	15	Cauc.	346	366	896	Comp.	Yes	-	359	359	362	2	2	2	2	-	Possible	Possible	-
8802	W	22	Cauc.	362	343	1,111	Comp.	Yes	-	350	352	345	2	2	1	2	Possible	Possible	Possible	Possible
9258	M	26	Cauc.	342	321	1,132	-	-	-	328	330	322	3	3	3	3	Possible	Possible	Possible	Possible
10060	M	17	Cauc.	414	325	1,622	Recr.	-	-	352	374	318	3	1	0	3	Possible	-	-	Possible
10438	W	20	Afro.	319	366	759	-	Yes	-	350	352	356	2	3	2	2	-	Possible	Possible	Possible
10579	M	18	Cauc.	413	333	1,538	Comp.	-	-	358	376	330	2	1	0	2	-	-	-	Possible
11828	M	19	Cauc.	399	326	1,500	-	-	-	349	364	322	3	2	1	3	Possible	-	-	Possible
14380	M	17	Cauc.	298	389	594	-	Yes	-	354	370	361	0	3	3	3	-	Possible	-	-
14384	M	17	Cauc.	372	322	1,333	-	-	-	338	346	321	3	2	2	3	Possible	-	-	Possible
14857	M	16	Cauc.	371	317	1,364	Comp.	-	-	335	343	315	3	2	2	3	Possible	-	-	Possible
15119	M	17	Cauc.	386	331	1,364	-	-	-	348	358	330	2	2	1	2	-	-	-	Possible

Legend: PARTIC. – Participant; M – man; W – woman; Cauc – Caucasian; Afro. – Afro-American; Recr. – Recreational sports; Comp. – Competitive sports; FH – family history; Cons. – Consensus.

**Table S-2** – Assessment of the impact of using different QTc Formulae in the pooled Cohort published by *Gollob* and Colleagues [3].

SQTS CASE #	Gender	QT	QTc_Bazzet	RR	HR	J-to-T peak	Gene	SCD	ACA	Syncope	AF	Family history	Different QTc Formulae			Gollob's Score			
													QTc Friedericia	QTc Hodges	QTc Frammingham	Bazzet	Fridericia	Hodges	Framingham
1	woman	225	300	0.56	106.67	100	KCNH2				yes	SQTS	272.57	225.08	225.07	9	9	9	9
2	woman	230	289	0.63	94.73	110	KCNH2				yes	SQTS	267.82	230.07	230.06	9	9	9	9
3	man	240	267	0.81	74.26	90	KCNH2				yes	SQTS	257.68	240.03	240.03	9	9	9	9
4	woman	266	248	1.15	52.15	85		yes				0	253.86	265.99	265.98	4	4	4	4
5	woman	270	295	0.84	71.63	120	KCNH2				yes	SQTS	286.42	270.02	270.03	9	9	9	9
6	man	260	300	0.75	79.88	70	KCNH2			yes		SQTS	286.03	260.03	260.04	9	9	9	9
7	woman	240	268	0.80	74.82	100	KCNH2					SQTS	258.32	240.03	240.03	8	8	8	8
8	woman	210	250	0.71	85.03	110	KCNH2	yes			yes	SQTS	235.88	210.04	210.05	10	10	10	10
9	man	240	280	0.73	81.67	90	KCNH2				yes	SQTS	265.98	240.04	240.04	9	9	9	9
10	woman	220	299	0.54	110.83	100	KCNH2					SQTS	269.93	220.09	220.07	8	8	8	8
11	man	240	290	0.68	87.60	120	KCNH2		yes			SQTS	272.27	240.05	240.05	9	9	9	9
12	man	294	288	1.04	57.58	95	0		yes			SQTS	289.99	294.00	293.99	7	7	7	7
13	man	N.A.	293	N.A.	N.A.	N.A.	0					SQTS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
14	man	290	302	0.92	65.07	110	KCNQ1		yes			0	297.95	290.01	290.01	7	7	7	7
15	woman	N.A.	315	N.A.	N.A.	N.A.	KCNJ2					SQTS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
16	man	N.A.	320	N.A.	N.A.	N.A.	KCNJ2					SQTS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
17	man	275	303	0.82	72.84	N.A.	0					SQTS	293.36	275.02	275.03	5	5	5	5
18	man	290	311	0.87	69.00	110	0			yes		SQTS	303.84	290.02	290.02	6	6	6	6
19	man	280	313	0.80	74.98	120	0			yes	yes	SQTS	301.59	280.03	280.03	8	8	8	8
20	man	300	310	0.94	64.07	N.A.	0					SQTS	306.63	300.01	300.01	5	5	5	5
21	man	280	302	0.86	69.80	N.A.	0				yes	SQTS	294.48	280.02	280.022	6	6	6	6
22	man	300	315	0.91	66.15	N.A.	0					SQTS	309.92	300.01	300.014	5	5	5	5
23	man	270	308	0.77	78.08	110	0		yes			SQTS	294.77	270.03	270.036	7	7	7	7
24	woman	320	317	1.02	58.88	N.A.	0					SQTS	318.00	319.99	319.99	5	5	5	5
25	man	240	282	0.72	82.84	N.A.	0			yes		SQTS	267.24	240.04	240.04	6	6	6	6
26	woman	300	333	0.81	73.93	N.A.	0					SQTS	321.62	300.02	300.03	4	5	5	5
27	man	290	338	0.74	81.51	N.A.	0					SQTS	321.18	290.04	290.04	5	5	5	5
28	man	210	291	0.52	115.21	N.A.	0		yes			SQTS	261.02	210.10	210.07	4	4	4	4
29	man	280	317	0.78	76.90	N.A.	0		yes			SQTS	304.15	280.03	280.03	6	6	6	6
30	man	294	324	0.82	72.87	N.A.	0					SQTS	313.67	294.02	294.03	5	5	5	5
31	man	320	333	0.92	64.97	N.A.	0					SQTS	328.61	320.01	320.01	4	5	5	5
32	woman	310	327	0.90	66.76	N.A.						SQTS	321.23	310.012	310.02	5	5	5	5
33	man	315	302	1.09	55.15	N.A.		yes				SQTS	306.27	314.99	314.99	6	6	6	6



34	man	315	323	0.95	63.09	N.A.				SQTS	320.31	315.01	315.01	5	5	5	5
35	man	300	317	0.90	66.99	N.A.	0	yes		SCD	311.23	300.012	300.02	5	5	5	5
36	woman	210	307	0.47	128.23	80			yes	SCD	270.50	210.12	210.08	6	6	6	6
37	man	240	294	0.67	90.04	80	0		yes	SCD	274.77	240.05	240.05	6	6	6	6
38	man	300	312	0.92	64.90	N.A.		yes	yes		307.95	300.01	300.01	5	5	5	5
39	man	280	310	0.82	73.55	110	0	yes		SQTS	299.66	280.02	280.03	7	7	7	7
40	man	320	328	0.95	63.04	160	0			SQTS	325.31	320.01	320.01	5	5	5	5
41	man	280	298	0.88	67.96	120	0			SQTS	291.87	280.01	280.02	6	6	6	6
42	man	290	326	0.79	75.82	120	0			SQTS	313.53	290.03	290.03	6	6	6	6
43	man	308	257	1.44	41.77	110			yes	0	272.99	307.97	307.93	5	5	5	5
44	woman	270	292	0.85	70.18	110		yes		0	284.47	270.018	270.02	5	5	5	5
45	man	313	308	1.03	58.10	170	0		Inducible*	SCD	309.66	313.00	312.99	4	4	4	4
46	man	334	349	0.92	65.51	140	KCNH2	yes		0	343.93	334.01	334.01	5	5	5	5
47	man	300	283	1.12	53.39	80	0	yes		0	288.56	299.99	299.98	5	5	5	5
48	man	248	252	0.97	61.95	N.A.		yes		SQTS	250.66	248.00	248.00	6	6	6	6
49	man	280	313	0.80	74.98	N.A.		yes		SQTS	301.59	280.03	280.03	6	6	6	6
50	man	320	320	1.00	60.00	N.A.				0	320.00	320.00	320.00	3	3	3	3
51	man	300	312	0.92	64.896	N.A.			Inducible*	0	307.95	300.01	300.01	3	3	3	3
52	man	245	315	0.60	99.18	N.A.		yes	Inducible*	SQTS	289.69	245.07	245.06	6	6	6	6
53	man	295	310	0.91	66.26	N.A.				SQTS	304.92	295.01	295.01	5	5	5	5
54	man	280	262	1.14	52.53	N.A.				SQTS	267.87	279.99	279.98	5	5	5	5
55	man	295	335	0.78	77.37	N.A.			Inducible*	SQTS	321.10	295.03	295.03	4	5	5	5
56	man	300	355	0.71	84.02	N.A.			Inducible*	SQTS	335.63	300.04	300.04	3	4	5	5
57	woman	280	315	0.79	75.94	90		yes		0	302.87	280.03	280.03	5	5	5	5
58	man	276	298	0.86	69.95	110				SCD	290.48	276.02	276.02	5	5	5	5
59	man	322	329	0.96	62.64	N.A.	KCNH2			SQTS	326.65	322.00	322.01	7	7	7	7
60	man	345	377	0.84	71.65	N.A.	KCNH2			SQTS	366.02	345.02	345.03	0	5	6	6
61	woman	401	379	1.12	53.60	N.A.	KCNH2			SQTS	386.20	400.99	400.98	0	0	0	0

Legend: QTc – corrected QT interval; ACA – aborted cardiac arrest; SCD – sudden cardiac death; AF – atrial fibrillation.

Note: \* - inducible during EP study.