LQTS Registry

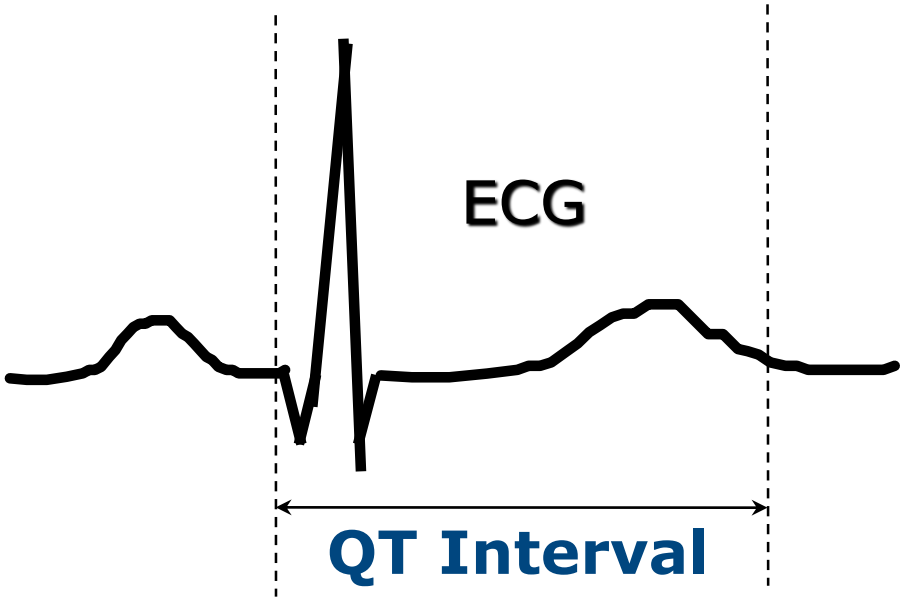
How does it work?

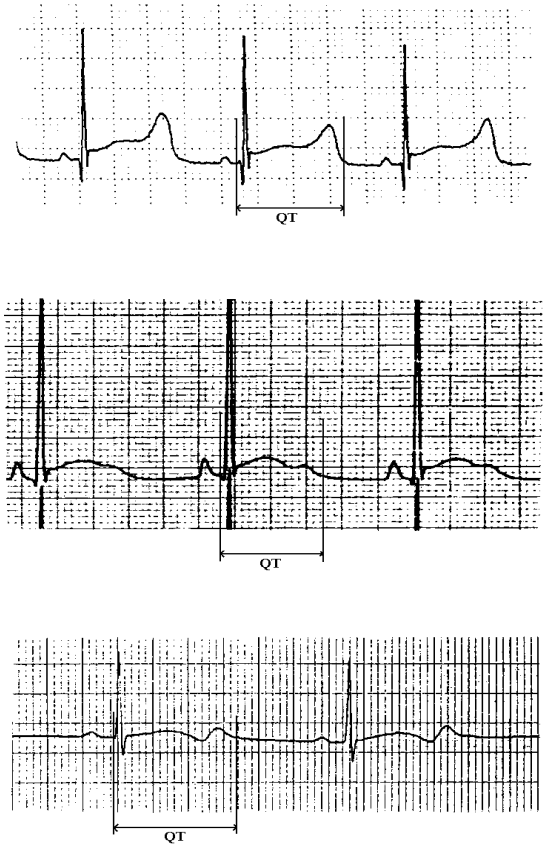
Kris Cutter, MS

Manager of the International LQTS Registry

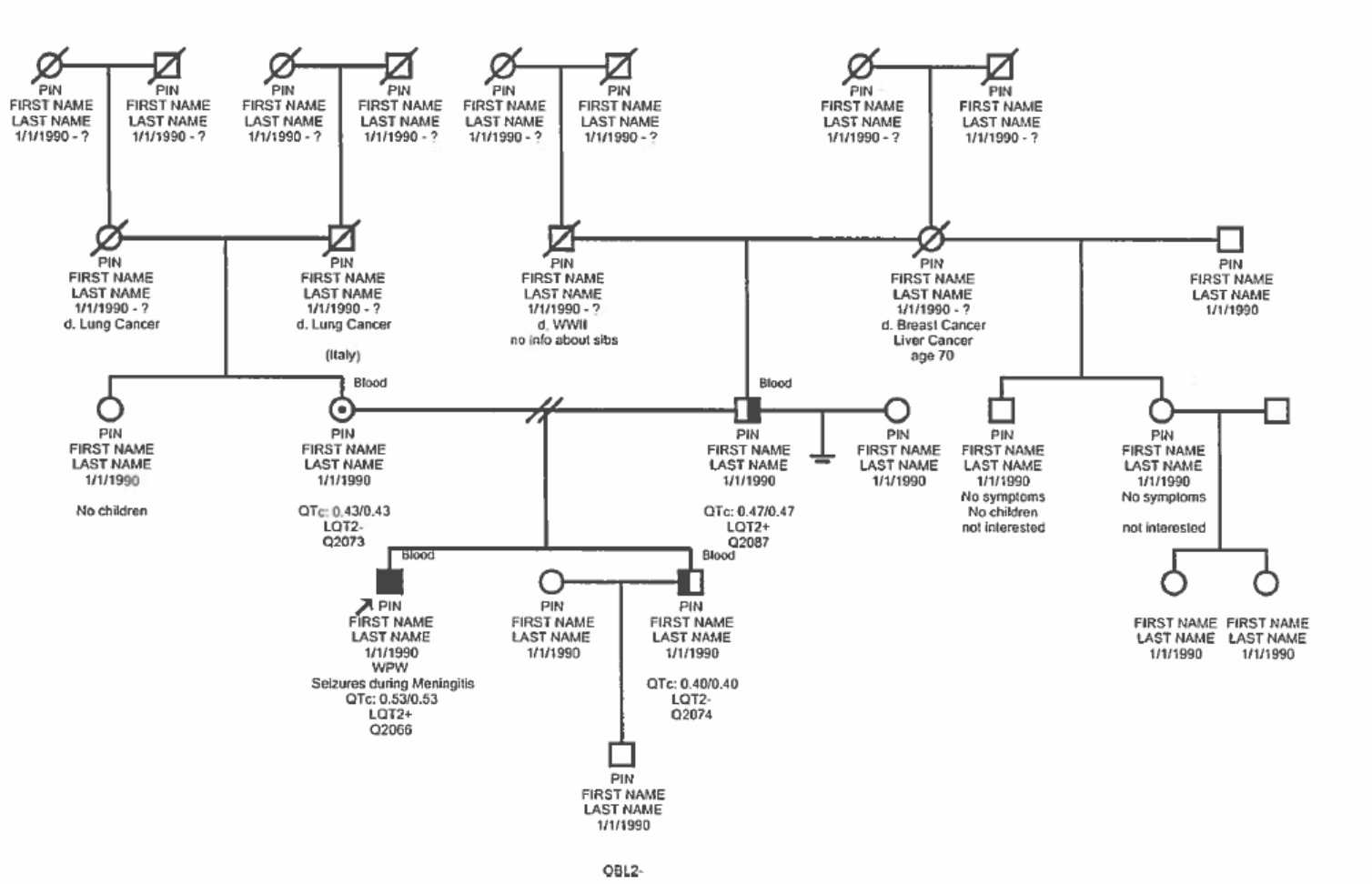
How the LQTS Registry works?

Proband with QTc prolongation> 440 ms

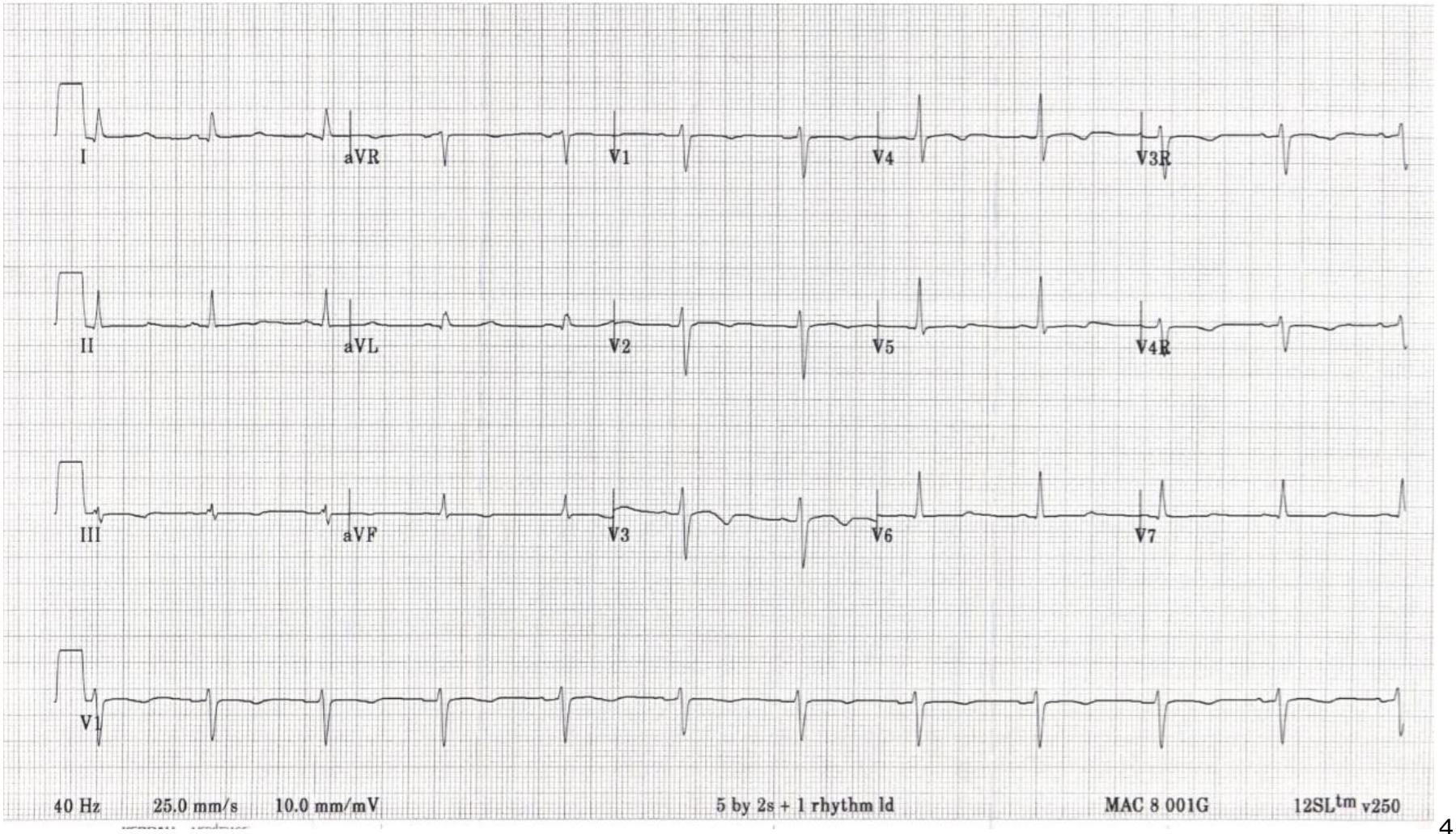




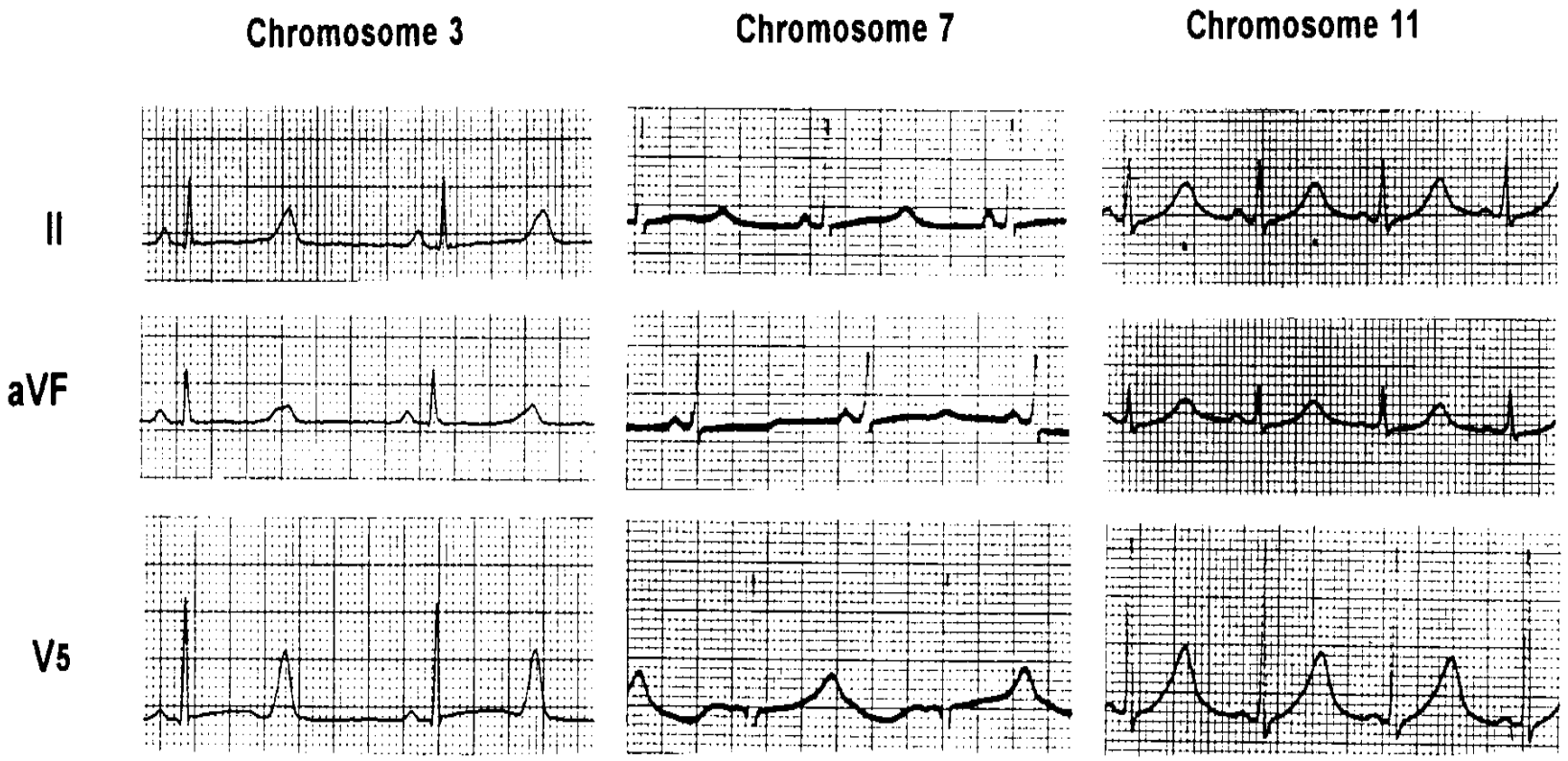
LQTS Pedigrees



ECG to be obtained in all Family members



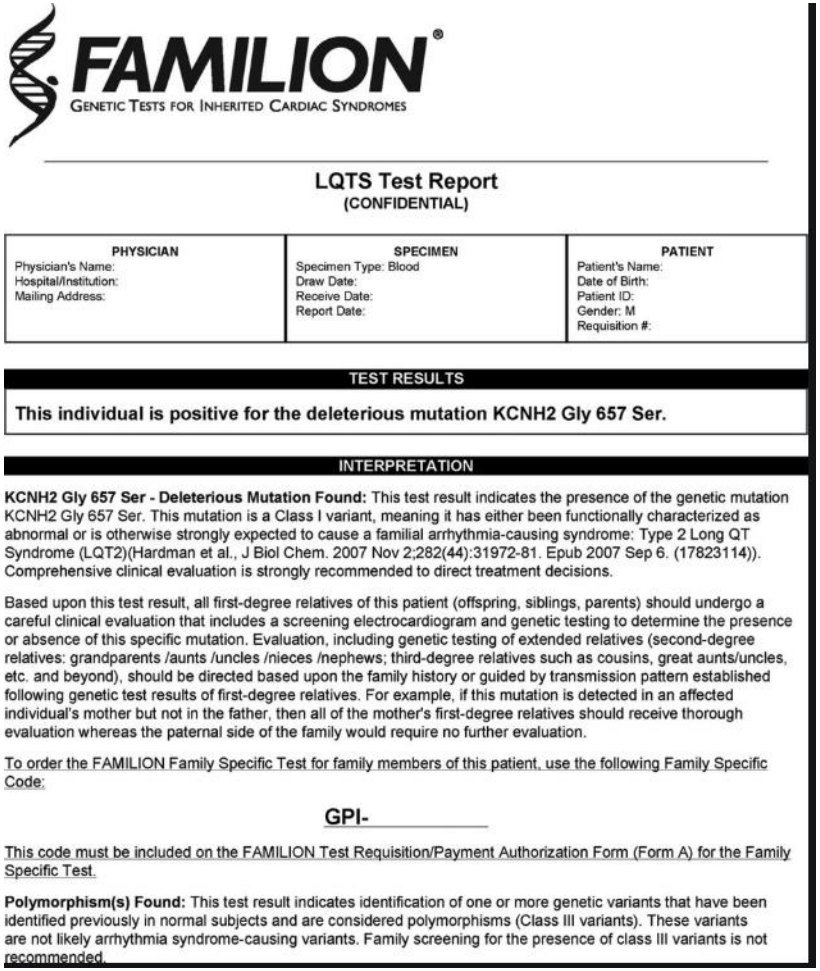
T Wave Morphology in LQTS by Genotype



LQT3 LQT2 LQT1

Moss AJ, Zareba W, Benhorin J, et al. Circulation 1995;92:2929-2934

Example of Genetic Testing Report



FAMILION®
GENETIC TESTS FOR INHERITED CARDIAC SYNDROMES

LQTS Test Report
(CONFIDENTIAL)

PHYSICIAN	SPECIMEN	PATIENT
Physician's Name:	Specimen Type: Blood	Patient's Name:
Hospital/Institution:	Draw Date:	Date of Birth:
Mailing Address:	Receive Date:	Patient ID:
	Report Date:	Gender: M
		Requisition #:

TEST RESULTS

This individual is positive for the deleterious mutation KCNH2 Gly 657 Ser.

INTERPRETATION

KCNH2 Gly 657 Ser - Deleterious Mutation Found: This test result indicates the presence of the genetic mutation KCNH2 Gly 657 Ser. This mutation is a Class I variant, meaning it has either been functionally characterized as abnormal or is otherwise strongly expected to cause a familial arrhythmia-causing syndrome: Type 2 Long QT Syndrome (LQT2)(Hardman et al., J Biol Chem. 2007 Nov 2;282(44):31972-81. Epub 2007 Sep 6. (17823114)). Comprehensive clinical evaluation is strongly recommended to direct treatment decisions.

Based upon this test result, all first-degree relatives of this patient (offspring, siblings, parents) should undergo a careful clinical evaluation that includes a screening electrocardiogram and genetic testing to determine the presence or absence of this specific mutation. Evaluation, including genetic testing of extended relatives (second-degree relatives: grandparents /aunts /uncles /nieces /nephews; third-degree relatives such as cousins, great aunts/uncles, etc. and beyond), should be directed based upon the family history or guided by transmission pattern established following genetic test results of first-degree relatives. For example, if this mutation is detected in an affected individual's mother but not in the father, then all of the mother's first-degree relatives should receive thorough evaluation whereas the paternal side of the family would require no further evaluation.

To order the FAMILION Family Specific Test for family members of this patient, use the following Family Specific Code:

GPI-_____

This code must be included on the FAMILION Test Requisition/Payment Authorization Form (Form A) for the Family Specific Test.

Polymorphism(s) Found: This test result indicates identification of one or more genetic variants that have been identified previously in normal subjects and are considered polymorphisms (Class III variants). These variants are not likely arrhythmia syndrome-causing variants. Family screening for the presence of class III variants is not recommended.

LQTS Genetic Report

01:20 Wednesday, August 1, 2018 1

LQTS STUDY

Current Status of Genotypes in LQTS Database By Enrolling Center

(Individuals with mutations on more than 1 gene will be listed under each applicable gene)

Gene	Genotype	Center 1/5	Non-US Centers
LQT1	+	833	116
	++	49	2
	OBL+	94	4
	-	964	96
LQT2	+	746	43
	++	16	0
	LNK+	27	0
	OBL+	73	2
	-	880	51
	LNK-	40	0
LQT3	+	257	33
	OBL+	25	3
	-	481	39

LQTS Probands Report

LQTS STUDY - NEW DATABASE

MONTHLY CUMULATIVE REPORT - PROBANDS

As Of August 1, 2018

	CENTER 1 Rochester		CENTER 3 Pavia		CENTER 4 Jerusalem		CENTER 5 Salt Lake C.		Total	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
NUMBER ENROLLED:	1053	-	273	-	12	-	5	-	1343	-
AGE AT ENROLLMENT:	(91)		(52)		(1)		(0)		(144)	
0 - 10 Years	21	23	16	31	1	100	-	-	38	26
11 - 20 Years	20	22	19	37	0	0	-	-	39	27
21 - 30 Years	20	22	8	15	0	0	-	-	28	19
31 + Years	30	33	9	17	0	0	-	-	39	27
GENDER:	(1052)		(273)		(12)		(5)		(1342)	
Female	707	67	198	73	7	58	2	40	914	68
CONGENITAL DEAFNESS:	(1052)		(273)		(12)		(5)		(1342)	
Deaf	31	3	16	6	1	8	0	0	48	4
PRE ENROLLMENT HISTORY:	(1052)		(273)		(12)		(5)		(1342)	
Seizures	107	10	25	9	0	0	1	20	133	10
Syncope/Cardiac Arrest	717	68	226	83	6	50	3	60	952	71
Beta Blockers Initiated	874	83	212	78	8	67	1	20	1095	82
Pacemaker Implanted	136	13	26	10	2	17	0	0	164	12
Sympathectomy Performed	34	3	32	12	1	8	0	0	67	5
Defibrillator Implanted	190	18	6	2	1	8	0	0	197	15
LQTS-Related Deaths	20	2	0	0	1	8	0	0	21	2
All Other Deaths	3	0	1	0	0	0	0	0	4	0

LQTS Affected Family Members Report

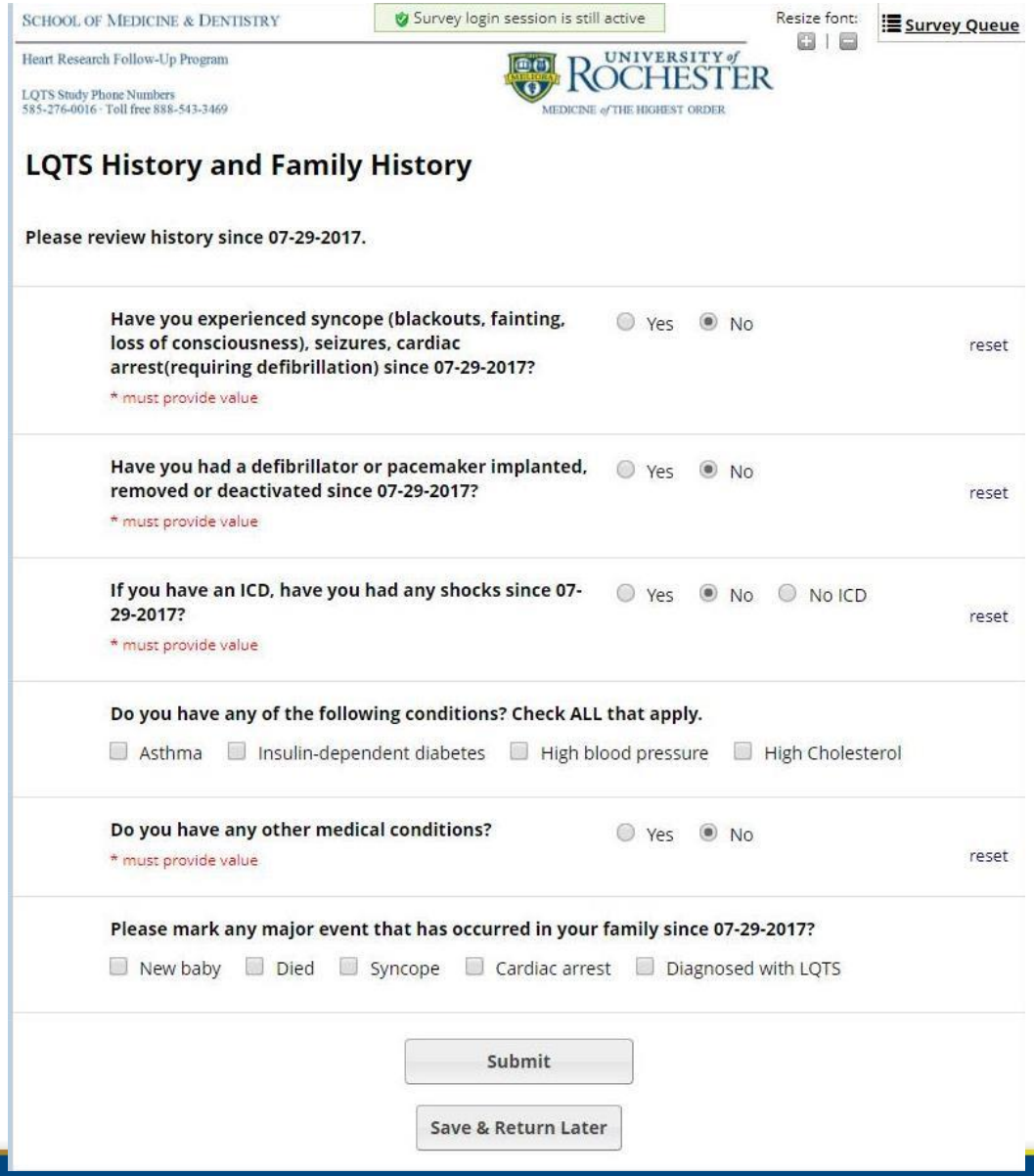
LQTS STUDY - NEW DATABASE

MONTHLY CUMULATIVE REPORT - AFFECTED FAMILY MEMBERS

As Of August 1, 2018

	CENTER 1 Rochester		CENTER 3 Pavia		CENTER 4 Jerusalem		CENTER 5 Salt Lake C.		Total	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
NUMBER ENROLLED:	1835	-	202	-	82	-	49	-	2168	-
AGE AT ENROLLMENT:	(33)		(29)		(0)		(0)		(62)	
0 - 10 Years	13	39	10	34	-	-	-	-	23	37
11 - 20 Years	7	21	6	21	-	-	-	-	13	21
21 - 30 Years	2	6	5	17	-	-	-	-	7	11
31 + Years	11	33	8	28	-	-	-	-	19	31
GENDER:	(1775)		(186)		(75)		(49)		(2085)	
Female	922	52	101	54	35	47	21	43	1079	52
CONGENITAL DEAFNESS:	(1775)		(186)		(75)		(49)		(2085)	
Deaf	11	1	0	0	0	0	0	0	11	1
PRE ENROLLMENT HISTORY:	(1775)		(186)		(75)		(49)		(2085)	
Seizures	62	3	7	4	0	0	1	2	70	3
Syncope/Cardiac Arrest	373	21	54	29	11	15	22	45	460	22
Beta Blockers Initiated	595	34	50	27	13	17	18	37	676	32
Pacemaker Implanted	46	3	1	1	2	3	0	0	49	2
Sympathectomy Performed	6	0	6	3	0	0	0	0	12	1
Defibrillator Implanted	75	4	0	0	1	1	0	0	76	4
LQTS-Related Deaths	49	3	10	5	4	5	2	4	65	3
All Other Deaths	61	3	4	2	2	3	1	2	68	3

Web-based data collection



SCHOOL OF MEDICINE & DENTISTRY

Survey login session is still active

Resize font:

Survey Queue

Heart Research Follow-Up Program

LQTS Study Phone Numbers
585-276-0016 · Toll free 888-543-3469

UNIVERSITY of ROCHESTER
MEDICINE of THE HIGHEST ORDER

LQTS History and Family History

Please review history since 07-29-2017.

Have you experienced syncope (blackouts, fainting, loss of consciousness), seizures, cardiac arrest(requiring defibrillation) since 07-29-2017? ○ Yes ◉ No reset

* must provide value

Have you had a defibrillator or pacemaker implanted, removed or deactivated since 07-29-2017? ○ Yes ◉ No reset

* must provide value

If you have an ICD, have you had any shocks since 07-29-2017? ○ Yes ◉ No ○ No ICD reset

* must provide value

Do you have any of the following conditions? Check ALL that apply.

☐ Asthma ☐ Insulin-dependent diabetes ☐ High blood pressure ☐ High Cholesterol

Do you have any other medical conditions? ○ Yes ◉ No reset

* must provide value

Please mark any major event that has occurred in your family since 07-29-2017?

☐ New baby ☐ Died ☐ Syncope ☐ Cardiac arrest ☐ Diagnosed with LQTS

Submit

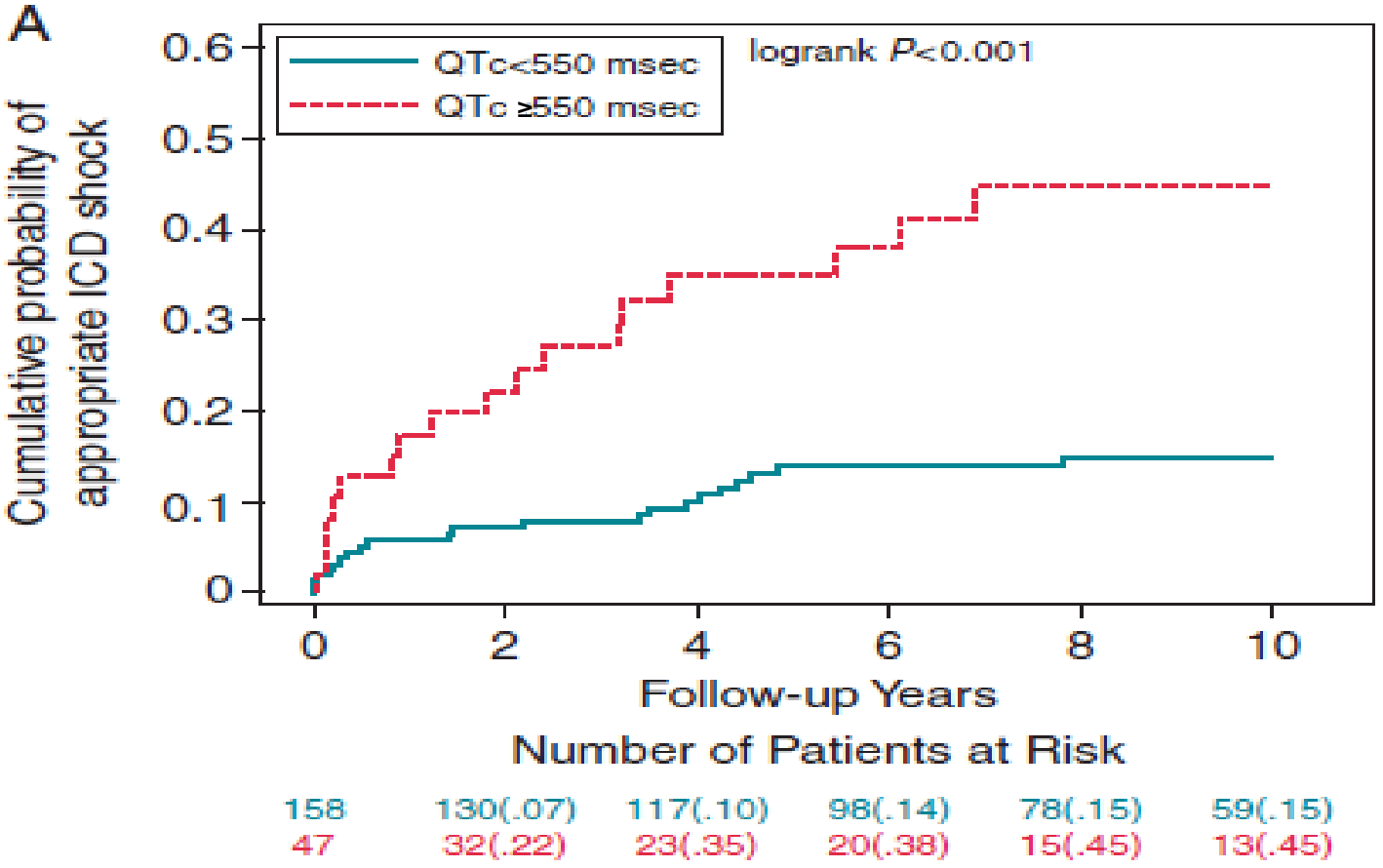
Save & Return Later

Example of Table Showing Clinical Characteristics of Studied Patients

Table 1 Patient baseline clinical characteristics and post-ICD implantation treatment and outcomes categorized by genotype

	All ($n = 212$)	LQT1 ($n = 45$)	LQT2 ($n = 68$)	LQT3 ($n = 15$)	Multiple ($n = 10$)	Other ($n = 74$)
Age at first cardiac event (years)	16 ± 11	16 ± 11	15 ± 10	18 ± 11	7 ± 8	17 ± 13
Age at ICD implantation (years)	26 ± 14	24 ± 13	28 ± 13	28 ± 14	14 ± 13[a]	28 ± 13
Female	(70)	(71)	(68)	(67)	(80)	(72)
QTc (ms)	504 ± 61	514 ± 57	511 ± 67	515 ± 60	552 ± 73	481 ± 47
QTc ≥550 ms	(23)	(25)	(26)	(33)	(50)	(12)
Follow-up (years)	9.2 ± 4.9	9.0 ± 4.7	9.8 ± 5.3	8.1 ± 4.1	11.6 ± 3.2	8.6 ± 5.0
M-FACT score	1.2 ± 1.1	1.5 ± 1.3	1.2 ± 1.2	1.2 ± 1.2	2.2 ± 0.8	1 ± 0.9
Probands	(50)	(62)	(43)	(13)	(60)[a]	(54)
Congenital deafness	(3)	(2)	(0)	(0)	(20)[a]	(4)
Family history for probands						
LQTS	(48)	(50)	(48)	(100)	(83)	(44)
Syncope/aborted cardiac arrest	(46)	(39)	(45)	(100)	(50)	(49)
Sudden cardiac death	(41)	(36)	(38)	(50)	(17)	(50)
Treatment prior to ICD implantation						
β-Blockers	(79)	(82)	(81)	(87)	(90)	(73)
Sodium channel blockers	(4)	(0)	(0)	(27)	(0)[a]	(7)
Pacemaker	(14)	(9)	(15)	(0)	(0)	(22)
LCSD	(1)	(0)	(1)	(0)	(0)	(1)
Indications for ICD						
Syncope off β-blockers/sodium channel blockers	(49)	(53)	(51)	(27)	(60)	(46)
Syncope while on β-blockers	(30)	(31)	(28)	(13)	(30)	(34)
Syncope while on sodium channel blockers	(2)	(0)	(0)	(7)	(0)	(5)
Torsades de pointes	(11)	(2)	(16)	(0)	(0)[a]	(16)
Treatment after ICD implantation						
β-Blockers	(89)	(84)	(90)	(87)	(100)	(91)
Sodium channel blockers	(9)	(2)	(4)	(40)	(20)[a]	(9)

Example of Figure Illustrating Risk of ICD Shocks over Time by QTc duration



UNIVERSITY of ROCHESTER
MEDICAL CENTER

MEDICINE of THE HIGHEST ORDER