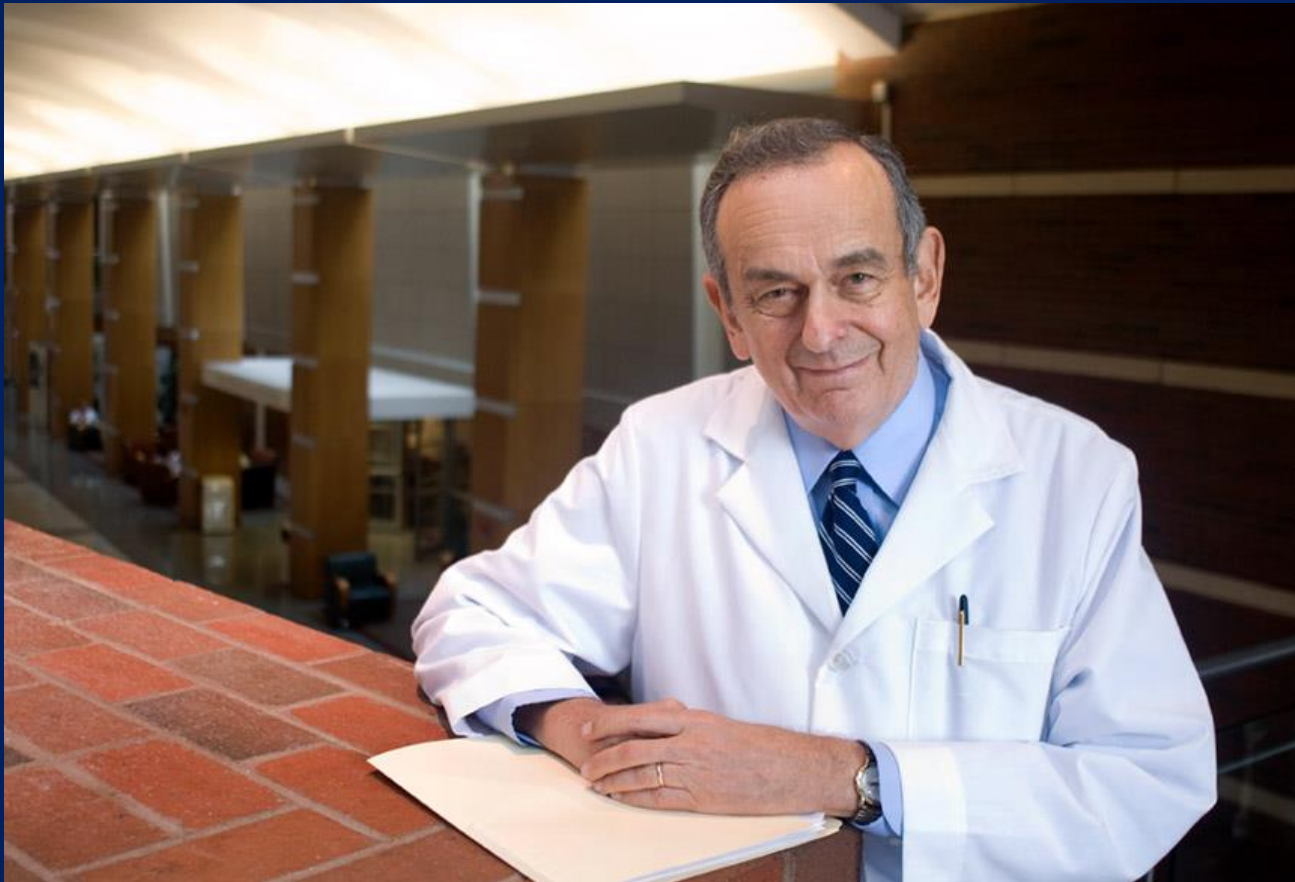


**Arthur J. Moss, MD
(1931 – 2018)**



1962

The New England
Journal of Medicine

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Volume 267

OCTOBER 4, 1962

Number 14

CLOSED-CHEST CARDIAC MASSAGE IN THE TREATMENT OF VENTRICULAR
FIBRILLATION COMPLICATING ACUTE MYOCARDIAL INFARCTION*

Report of Three Cases with Survival

ARTHUR J. MOSS, M.D.,† ROBERT K. OSBORNE, M.D.,‡ ARTHUR E. BAUE, M.D.,§
ROBERT S. LEES, M.D.,¶ REX L. JAMISON, M.D.,¶ AND JAMES SPANN, M.D.¶

1962

Journal

Volume 267

CLOSED-CHEST CARDIAC
FIBRILLATION COMPLICATING
MYOCARDIAL INFARCTION

ARTHUR J. MOSS, M.D.,
ROBERT S. LEES, M.D.

Journal

Number 14

OF VENTRICULAR
INFARCTION*

BAUE, M.D.,§
ANN, M.D.||

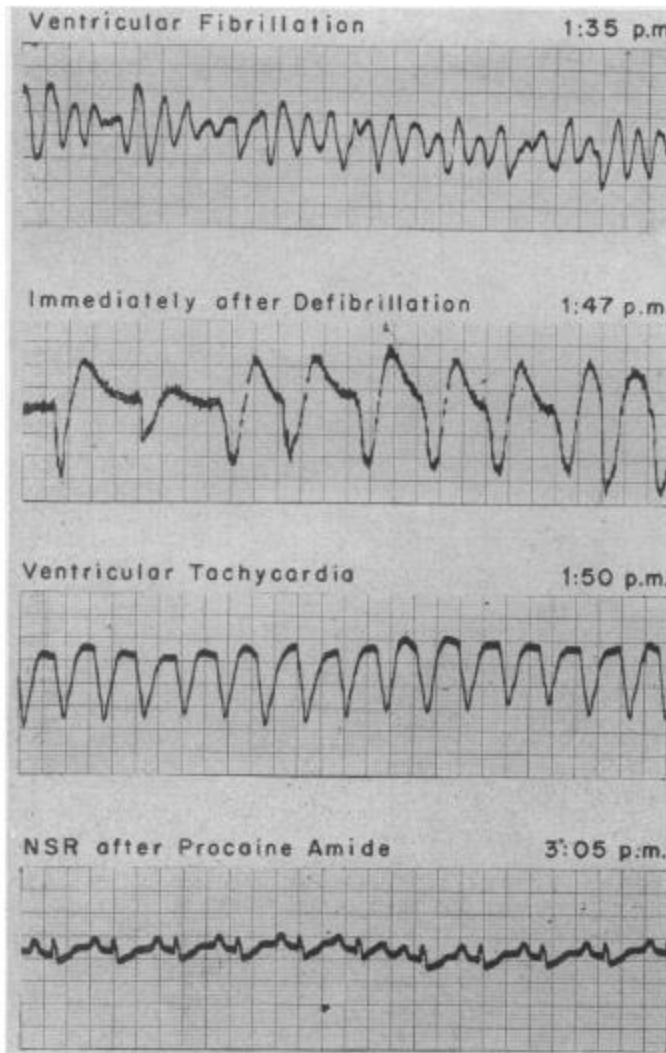
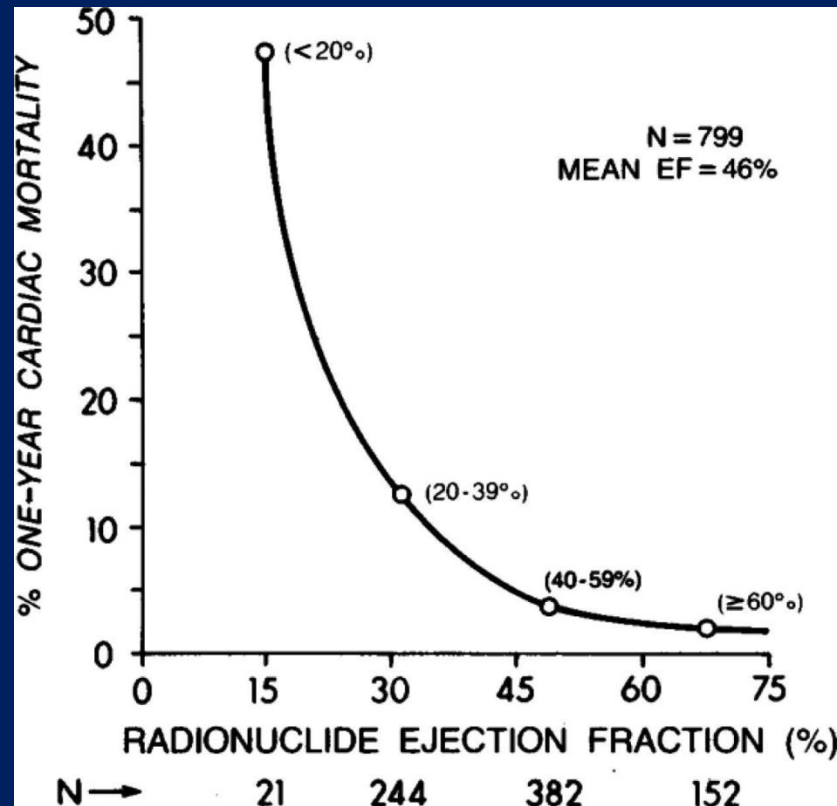


FIGURE 1. Ventricular Fibrillation in Case 1, with Conversion to Normal Sinus Rhythm (NSR) after External Defibrillation and Procaine Amide Therapy.

1970 – 1990 Risk Stratification Studies

Multicenter Postinfarction Program (MPIP)

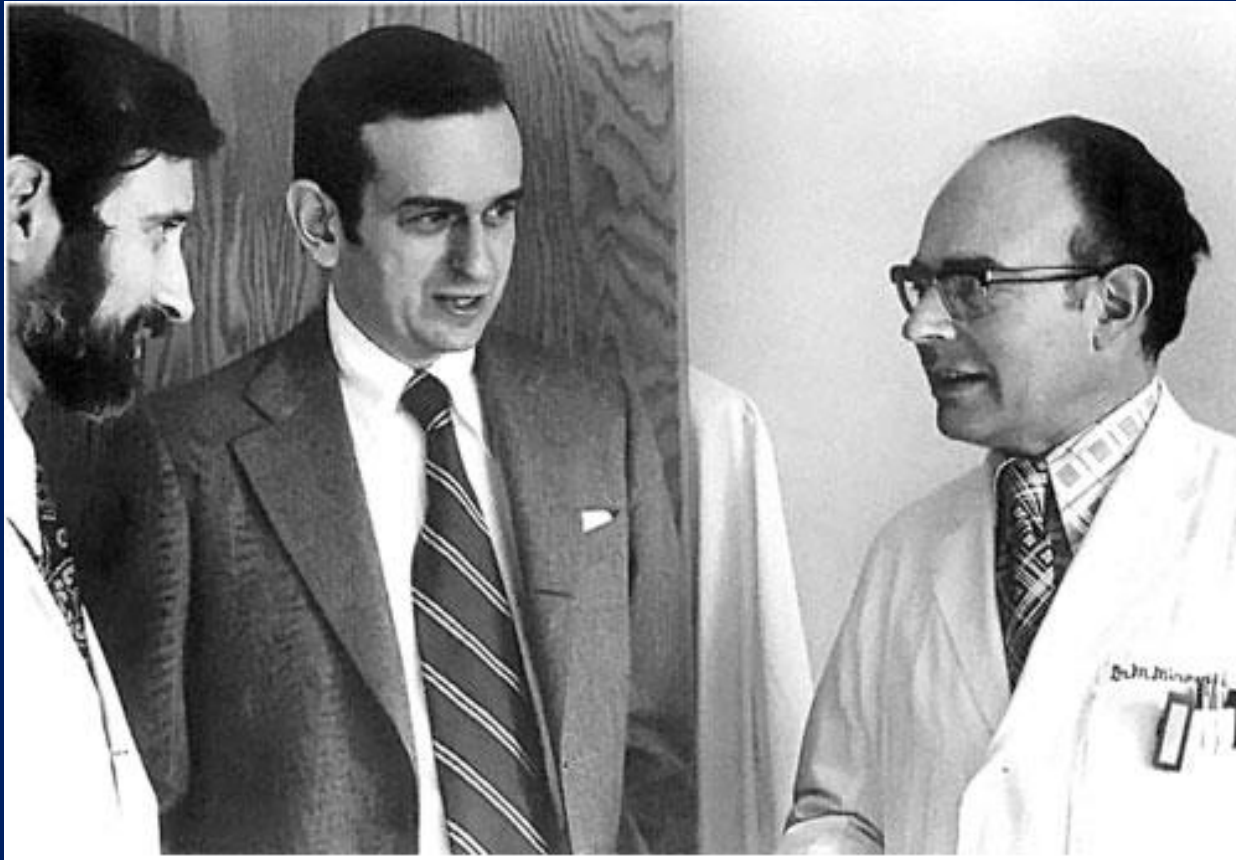
Multicenter Postinfarction Diltiazem Trial (MDPIT)



Moss AJ, Bigger JT Jr, Odoroff CL.

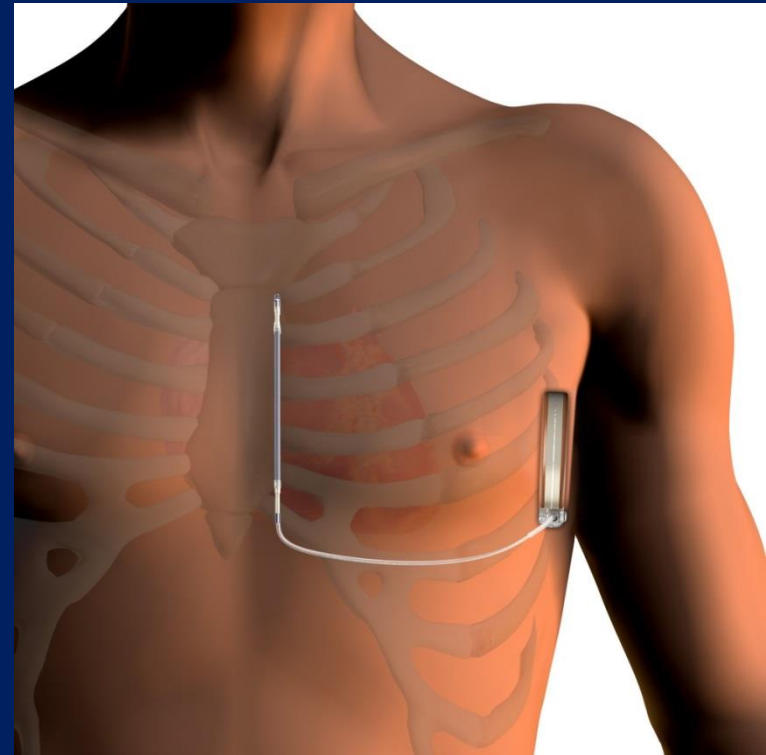
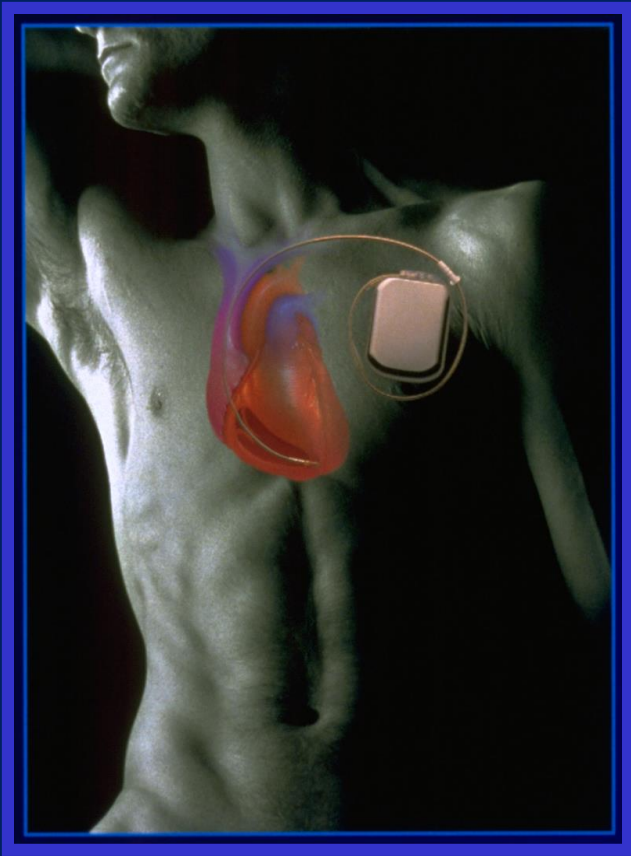
Prog Cardiovasc Dis. 1987 May-Jun;29(6):389-412

1973 – ICD Therapy on Hirozont



The first meeting of Dr A. J. Moss (centre), Dr Michel Mirowski (right), and Dr Morton Mower (left) 1973 in Baltimore, MA, USA

ICD Therapy



1991-1996 MADIT

The New England Journal of Medicine

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VOLUME 335

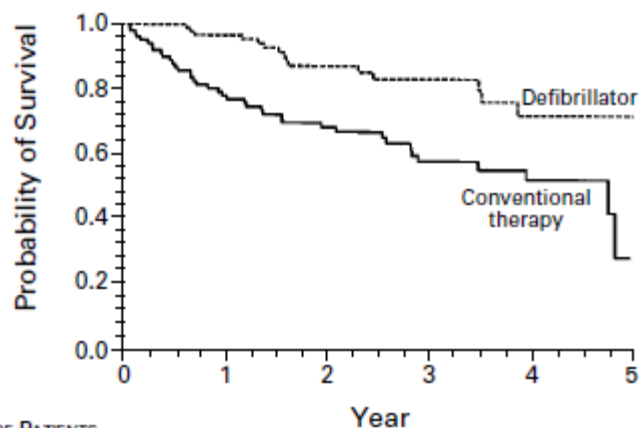
DECEMBER 26, 1996

NUMBER 26



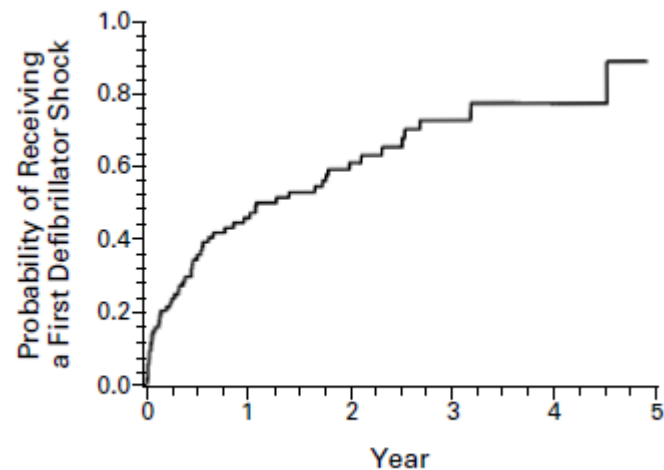
IMPROVED SURVIVAL WITH AN IMPLANTED DEFIBRILLATOR IN PATIENTS WITH CORONARY DISEASE AT HIGH RISK FOR VENTRICULAR ARRHYTHMIA

ARTHUR J. MOSS, M.D., W. JACKSON HALL, PH.D., DAVID S. CANNOM, M.D., JAMES P. DAUBERT, M.D.,
STEVEN L. HIGGINS, M.D., HELMUT KLEIN, M.D., JOSEPH H. LEVINE, M.D., SANJEEV SAKSENA, M.D.,
ALBERT L. WALDO, M.D., DAVID WILBER, M.D., MARY W. BROWN, M.S., AND MOONSEONG HEO, PH.D.,
FOR THE MULTICENTER AUTOMATIC DEFIBRILLATOR IMPLANTATION TRIAL INVESTIGATORS*



NO. OF PATIENTS

Defibrillator	95	80	53	31	17	3
Conventional therapy	101	67	48	29	17	0

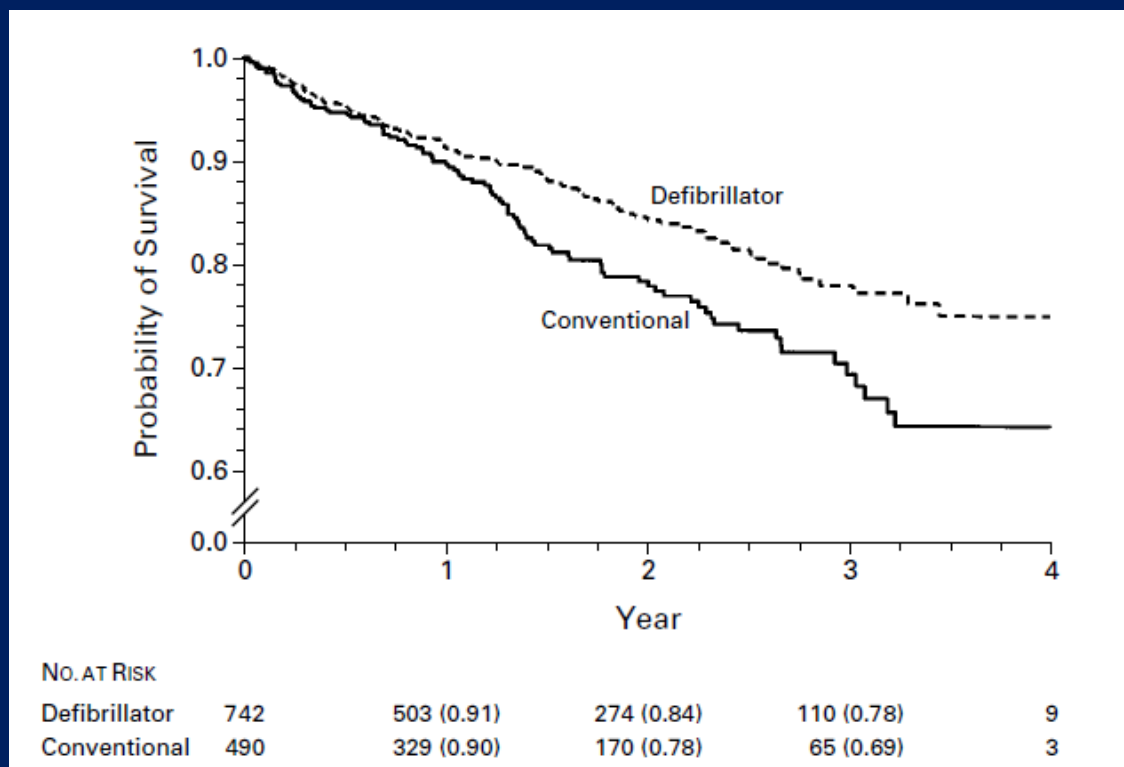


NO. OF PATIENTS 90 39 21 6 3 0

1997-2002 MADIT II

PROPHYLACTIC IMPLANTATION OF A DEFIBRILLATOR IN PATIENTS WITH MYOCARDIAL INFARCTION AND REDUCED EJECTION FRACTION

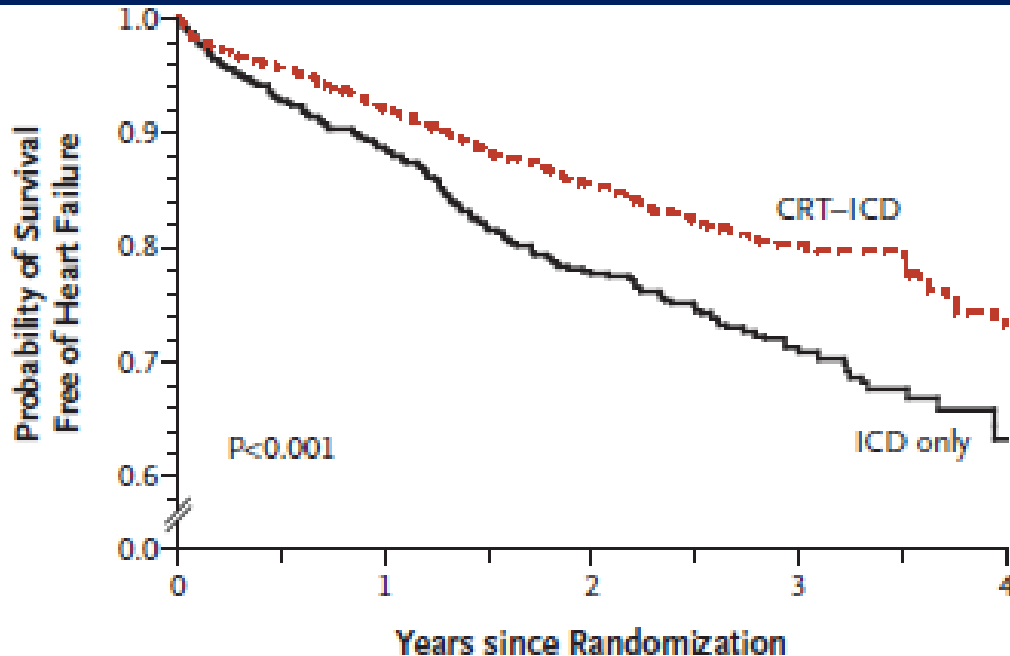
ARTHUR J. MOSS, M.D., WOJCIECH ZAREBA, M.D., PH.D., W. JACKSON HALL, PH.D., HELMUT KLEIN, M.D.,
DAVID J. WILBER, M.D., DAVID S. CANNOM, M.D., JAMES P. DAUBERT, M.D., STEVEN L. HIGGINS, M.D.,
MARY W. BROWN, M.S., AND MARK L. ANDREWS, B.B.S.,
FOR THE MULTICENTER AUTOMATIC DEFIBRILLATOR IMPLANTATION TRIAL II INVESTIGATORS*



2004 - 2009 MADIT - CRT

Cardiac-Resynchronization Therapy for the Prevention of Heart-Failure Events

Arthur J. Moss, M.D., W. Jackson Hall, Ph.D., David S. Cannom, M.D., Helmut Klein, M.D., Mary W. Brown, M.S., James P. Daubert, M.D., N.A. Mark Estes III, M.D., Elyse Foster, M.D., Henry Greenberg, M.D., Steven L. Higgins, M.D., Marc A. Pfeffer, M.D., Ph.D., Scott D. Solomon, M.D., David Wilber, M.D., and Wojciech Zareba, M.D., Ph.D., for the MADIT-CRT Trial Investigators*



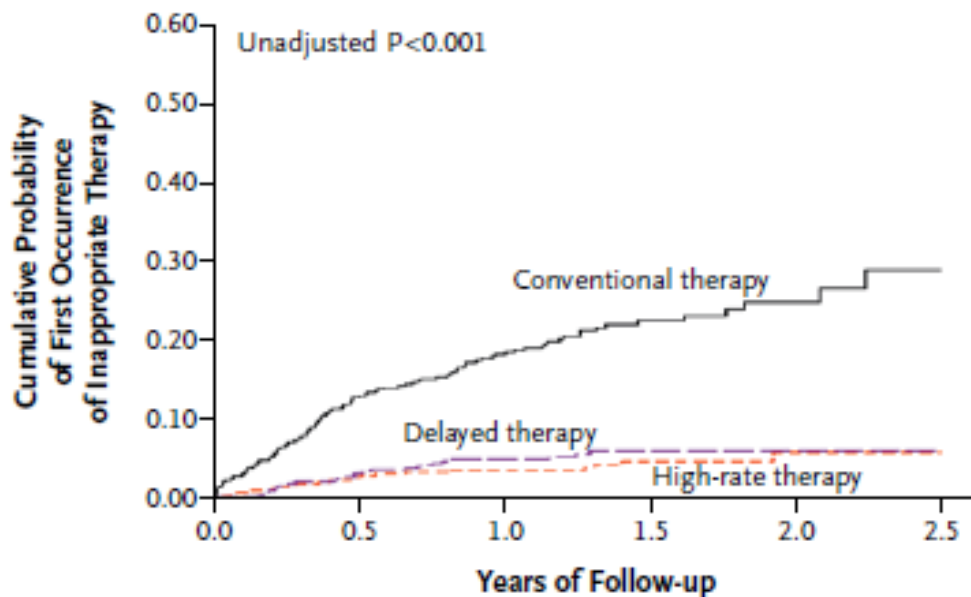
No. at Risk (Probability of Survival)

ICD only	731	621 (0.89)	379 (0.78)	173 (0.71)	43 (0.63)
CRT-ICD	1089	985 (0.92)	651 (0.86)	279 (0.80)	58 (0.73)

2009 - 2012 MADIT - RIT

Reduction in Inappropriate Therapy and Mortality through ICD Programming

Arthur J. Moss, M.D., Claudio Schuger, M.D., Christopher A. Beck, Ph.D., Mary W. Brown, M.S., David S. Cannom, M.D., James P. Daubert, M.D., N.A. Mark Estes III, M.D., Henry Greenberg, M.D., W. Jackson Hall, Ph.D.,* David T. Huang, M.D., Josef Kautzner, M.D., Ph.D., Helmut Klein, M.D., Scott McNitt, M.S., Brian Olshansky, M.D., Morio Shoda, M.D., David Wilber, M.D., and Wojciech Zareba, M.D., Ph.D., for the MADIT-RIT Trial Investigators†



No. at Risk

Conventional therapy	514	420 (0.13)	305 (0.18)	149 (0.22)	56 (0.25)	8 (0.29)
High-rate therapy	500	454 (0.03)	339 (0.04)	191 (0.05)	70 (0.06)	17 (0.06)
Delayed therapy	486	445 (0.03)	342 (0.05)	177 (0.06)	82 (0.06)	13 (0.06)

1971

**UNILATERAL CERVICOTHORACIC
SYMPATHETIC GANGLIONECTOMY FOR
THE TREATMENT OF LONG QT
INTERVAL SYNDROME**

ARTHUR J. MOSS, M.D., AND
JOSEPH McDONALD, M.D.

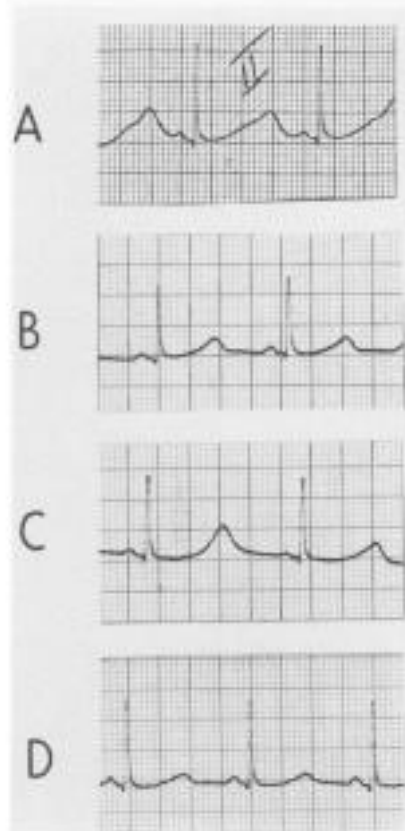


Figure 1. Electrocardiograms, Lead 2.

In A, taken on October 18, 1968, one day after the patient's first syncopal episode, the QT interval is 0.64 second. In B (April 20, 1970), 83 minutes after local left stellate-ganglion block, the QT interval is 0.46 second. In C (April 29, 1970), 40 minutes after local right stellate-ganglion block, the QT interval is 0.72 second. In D (November 5, 1970), six months after left cervicothoracic sympathetic gangliectomy, the QT interval is 0.44 second.

NEJM 1971; 285:903-904

1979 till present

The long QT syndrome: a prospective international study

ARTHUR J. MOSS, M.D., PETER J. SCHWARTZ, M.D., RICHARD S. CRAMPTON, M.D.,
EMANUELA LOCATI, M.D., AND ERIC CARLEEN, M.A.

Currently:

1,052 probands

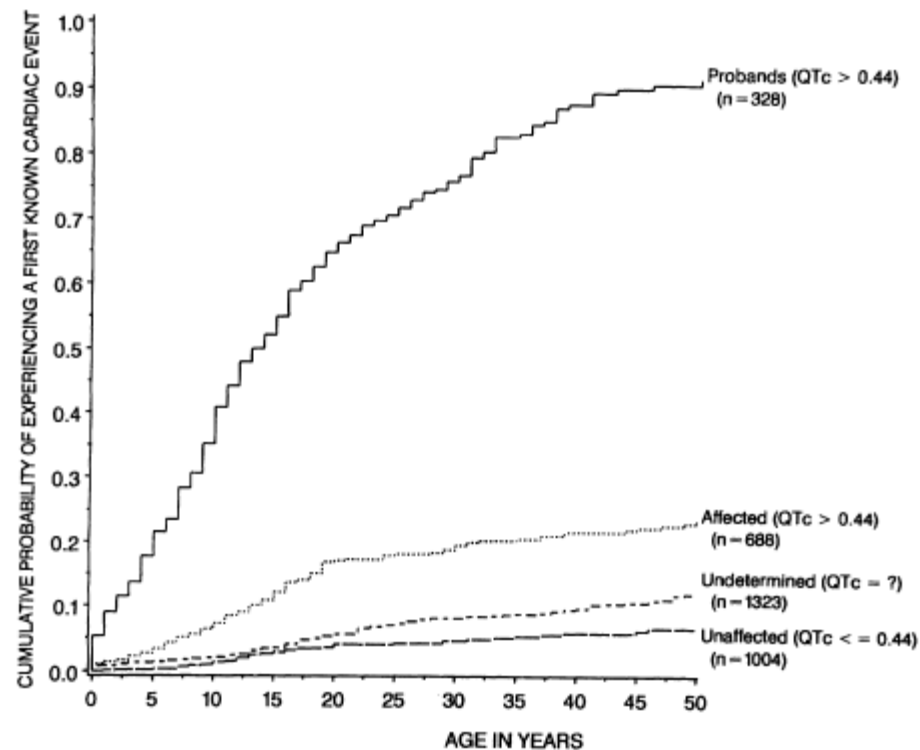
6,747 family members

1991

The Long QT Syndrome

Prospective Longitudinal Study of 328 Families

Arthur J. Moss, MD; Peter J. Schwartz, MD; Richard S. Crampton, MD; Dan Tzivoni, MD;
Emanuela H. Locati, MD; Jean MacCluer, PhD; W. Jackson Hall, PhD;
Lowell Weitkamp, MD; G. Michael Vincent, MD; Arthur Garson Jr., MD;
Jennifer L. Robinson, MS; Jesaia Benhorin, MD; and Sungsub Choi, PhD



1991

Long QT Syndrome New Electrocardiographic Characteristics

Jesaia Benhorin, MD, Mario Merri, PhD, Michela Alberti, MS, Emanuela Locati, MD,
Arthur J. Moss, MD, W.J. Hall, PhD, and L. Cui, MA

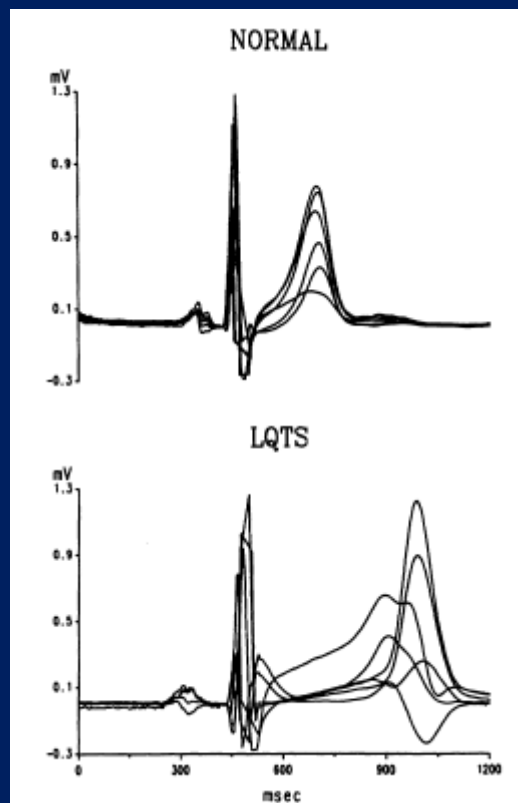


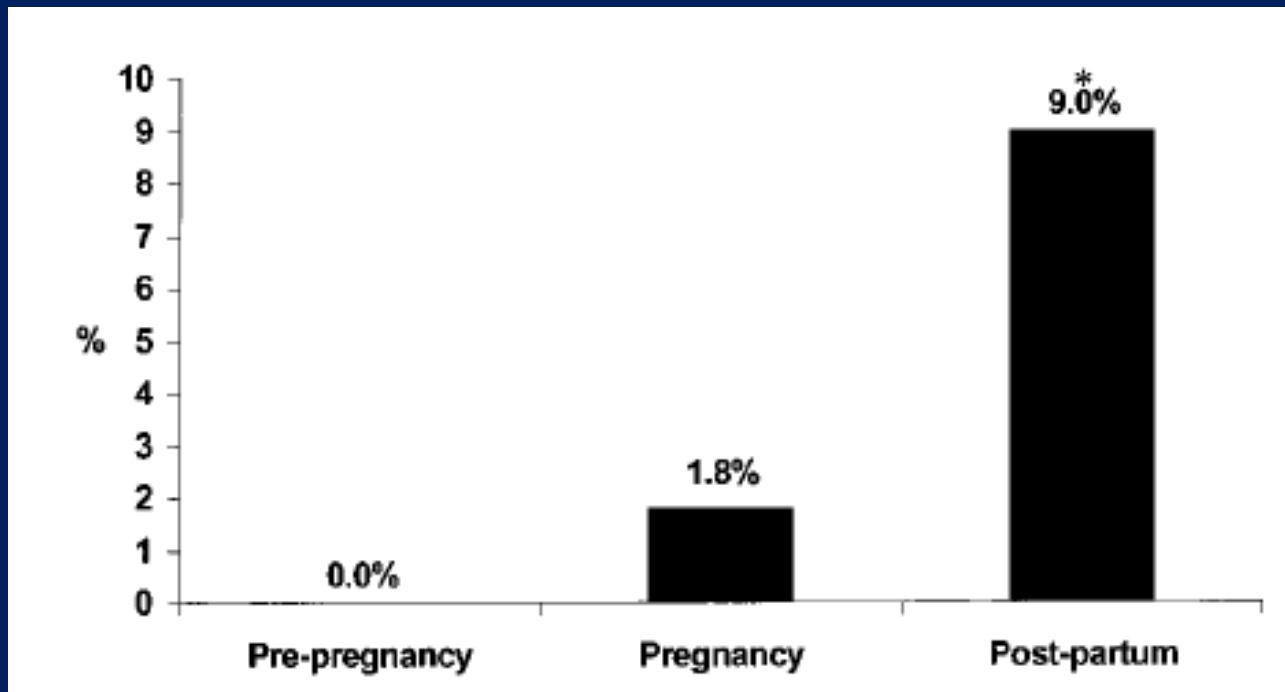
TABLE 1. Demographic and Repolarization Variables in Normal Subjects and in Patients With the Long QT Syndrome

Variable	Normal subjects (n=315)	Patients with LQTS (n=37)	p
Demographic			
Age (yr)	36±10	35±14	NS
Gender (% females)	44.8	64.9	<0.05
RR (msec)	911±145	1029±208	<0.005
Total duration			
QTc (msec ^{1/2})	414±17	535±68	<0.0001
Early duration			
SoTmc (msec ^{1/2})	223±23	314±59	<0.0001
Late duration			
TmTo (msec)	111±17	150±59	<0.001
Rate			
tA25-75 (msec)	82±28	115±43	<0.0001
Area			
Atot (mV·msec)	47.0±22.1	57.2±32.8	NS
Symmetry			
SR	1.54±0.27	1.79±0.63	<0.05
Late phenomena			
%A@To (%)	88.3±6.3	94.0±6.0	<0.0001
Heterogeneity			
SoTm.sd (msec)	17.2±14.6	35.3±23.8	<0.0001

1998

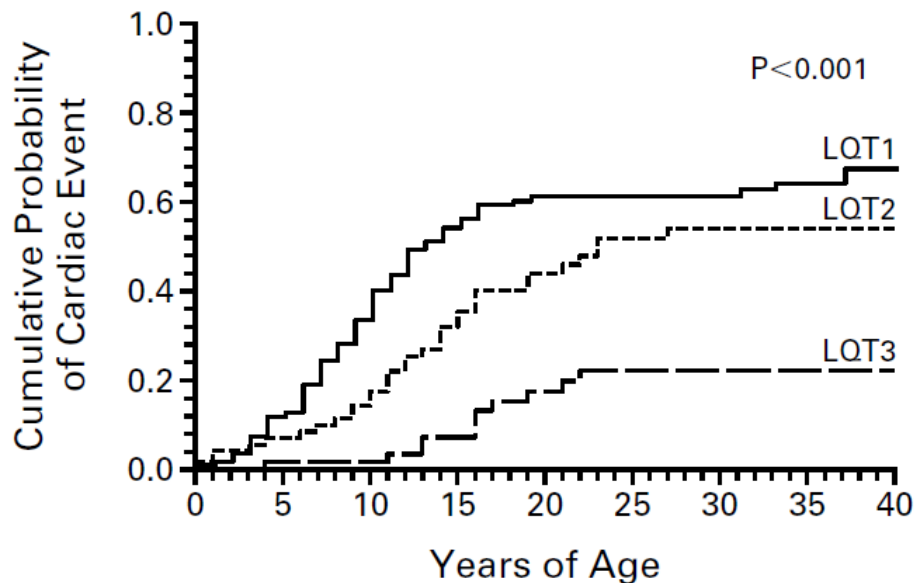
Influence of Pregnancy on the Risk for Cardiac Events in Patients With Hereditary Long QT Syndrome

Eric J. Rashba, MD; Wojciech Zareba, MD, PhD; Arthur J. Moss, MD; W. Jackson Hall, PhD;
Jennifer Robinson, MS; Emanuela H. Locati, MD; Peter J. Schwartz, MD;
Mark Andrews, BA; for the LQTS Investigators



INFLUENCE OF THE GENOTYPE ON THE CLINICAL COURSE OF THE LONG-QT SYNDROME

WOJCIECH ZAREBA, M.D., PH.D., ARTHUR J. MOSS, M.D., PETER J. SCHWARTZ, M.D., G. MICHAEL VINCENT, M.D., JENNIFER L. ROBINSON, M.S., SILVIA G. PRIORI, M.D., PH.D., JESAIA BENHORIN, M.D., EMANUELA H. LOCATI, M.D., PH.D., JEFFREY A. TOWBIN, M.D., MARK T. KEATING, M.D., MICHAEL H. LEHMANN, M.D., AND W. JACKSON HALL, PH.D.,
FOR THE INTERNATIONAL LONG-QT SYNDROME REGISTRY RESEARCH GROUP



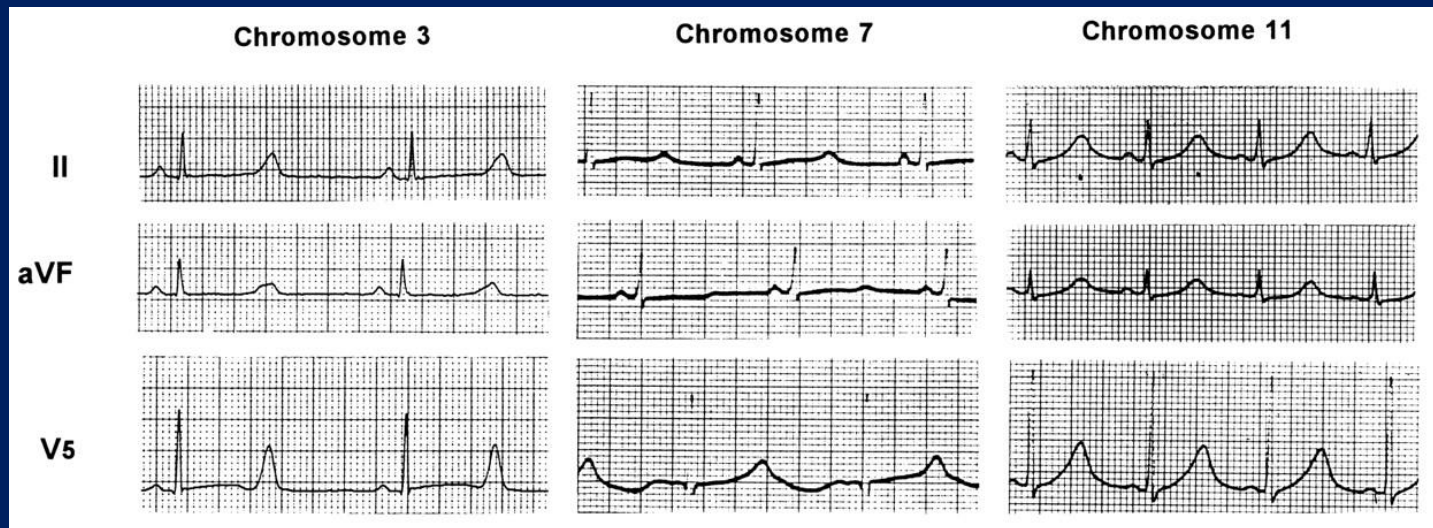
No. of SUBJECTS

LQT1 group	112	72	36	27	19
LQT2 group	72	56	29	16	11
LQT3 group	62	56	36	24	16

1995

ECG T-Wave Patterns in Genetically Distinct Forms of the Hereditary Long QT Syndrome

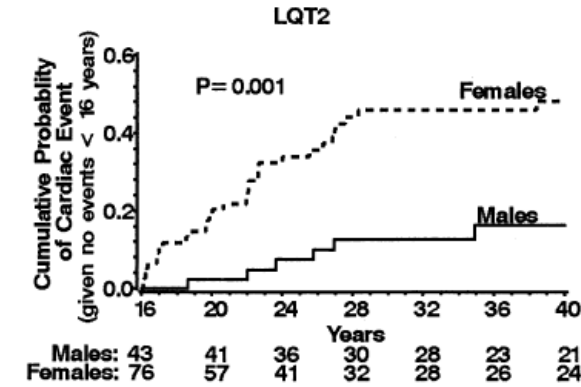
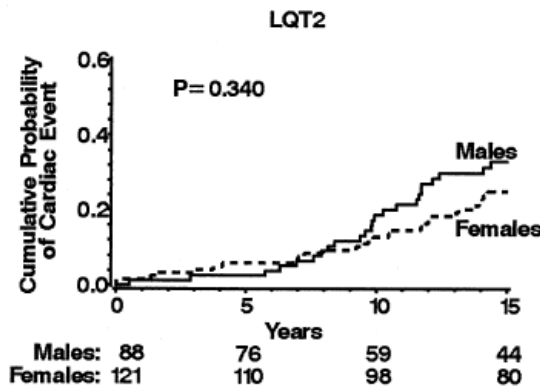
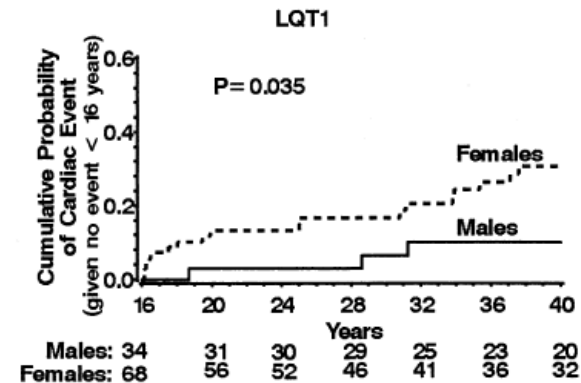
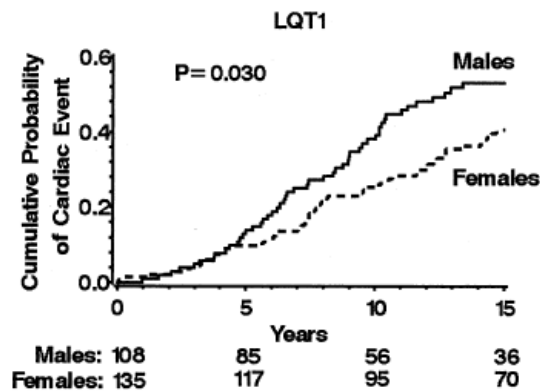
Arthur J. Moss, MD; Wojciech Zareba, MD, PhD; Jesaia Benhorin, MD; Emanuela H. Locati, MD;
W. Jackson Hall, PhD; Jennifer L. Robinson, MS; Peter J. Schwartz, MD; Jeffrey A. Towbin, MD;
G. Michael Vincent, MD; Michael H. Lehmann, MD; Mark T. Keating, MD;
Jean W. MacCluer, PhD; Katherine W. Timothy



2003

Modulating Effects of Age and Gender on the Clinical Course of Long QT Syndrome by Genotype

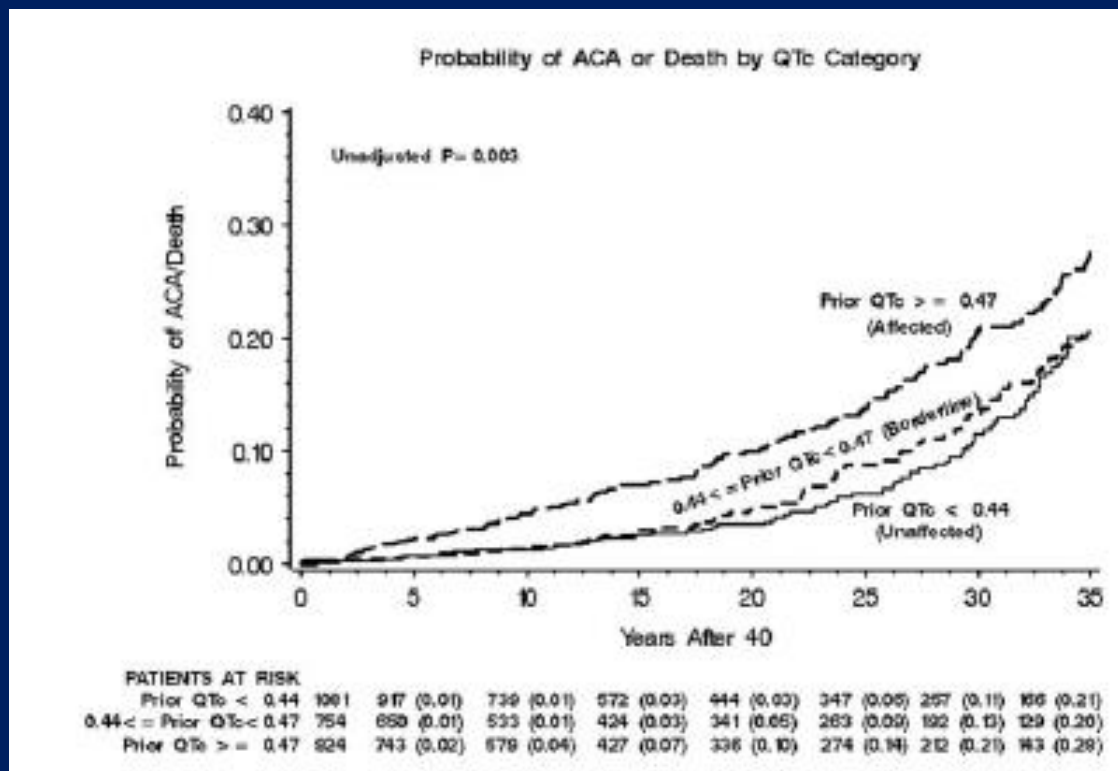
Wojciech Zareba, MD, PhD, FACC,* Arthur J. Moss, MD, FACC,* Emanuela H. Locati, MD, PhD,‡
 Michael H. Lehmann, MD, FACC,§ Derick R. Peterson, PhD,† W. Jackson Hall, PhD,†
 Peter J. Schwartz, MD, FACC,|| G. Michael Vincent, MD, FACC,¶ Silvia G. Priori, MD, PhD,#
 Jesaja Benhorin, MD, FACC,** Jeffrey A. Towbin, MD, FACC,†† Jennifer L. Robinson, MS,*
 Mark L. Andrews, BBA,* Carlo Napolitano, MD,# Katherine Timothy,¶ Li Zhang, MD,¶
 Aharon Medina, MD,** for the International Long QT Syndrome Registry



2008

Long-QT Syndrome After Age 40

Ilan Goldenberg, MD; Arthur J. Moss, MD; James Bradley, MS; Slava Polonsky, MS;
 Derick R. Peterson, PhD; Scott McNitt, MS; Wojciech Zareba, MD, PhD; Mark L. Andrews, BBA;
 Jennifer L. Robinson, MS; Michael J. Ackerman, MD, PhD; Jesaia Benhorin, MD;
 Elizabeth S. Kaufman, MD; Emanuela H. Locati, MD; Carlo Napolitano, MD;
 Silvia G. Priori, MD, PhD; Ming Qi, MD; Peter J. Schwartz, MD; Jeffrey A. Towbin, MD;
 G. Michael Vincent, MD; Li Zhang, MD



2000

Effectiveness and Limitations of β -Blocker Therapy in Congenital Long-QT Syndrome

Arthur J. Moss, MD; Wojciech Zareba, MD, PhD; W. Jackson Hall, PhD; Peter J. Schwartz, MD; Richard S. Crampton, MD; Jesaia Benhorin, MD; G. Michael Vincent, MD; Emanuela H. Locati, MD, PhD; Silvia G. Priori, MD, PhD; Carlo Napolitano, MD; Aharon Medina, MD; Li Zhang, MD; Jennifer L. Robinson, MS; Katherine Timothy, BA; Jeffrey A. Towbin, MD; Mark L. Andrews, BBA

2003

Implantable Cardioverter Defibrillator in High-Risk Long QT Syndrome Patients

WOJCIECH ZAREBA, M.D., PH.D., ARTHUR J. MOSS, M.D., JAMES P. DAUBERT, M.D., W. JACKSON HALL, PH.D., JENNIFER L. ROBINSON, M.S., and MARK ANDREWS, B.B.A.

2005

Safety and Efficacy of Flecainide in Subjects with Long QT-3 Syndrome (Δ KPQ Mutation): A Randomized, Double-Blind, Placebo-Controlled Clinical Trial

Arthur J. Moss, M.D.,* John R. Windle, M.D.,# W. Jackson Hall, Ph.D.,† Wojciech Zareba, M.D., Ph.D.,* Jennifer L Robinson, M.S.,* Scott McNitt, M.S.,* Patricia Severski, B.S.,* Spencer Rosero, M.D.,* James P. Daubert, M.D.,* Ming Qi, Ph.D.,‡ Michael Ciecioraka, R.N.,# and Allan S. Manalan, M.D.¶

2007

Clinical Aspects of Type-1 Long-QT Syndrome by Location, Coding Type, and Biophysical Function of Mutations Involving the KCNQ1 Gene

Arthur J. Moss, MD*; Wataru Shimizu, MD, PhD*; Arthur A.M. Wilde, MD, PhD*;
Jeffrey A. Towbin, MD*; Wojciech Zareba, MD, PhD; Jennifer L. Robinson, MS; Ming Qi, PhD;
G. Michael Vincent, MD; Michael J. Ackerman, MD, PhD; Elizabeth S. Kaufman, MD;
Nynke Hofman, MSc; Rahul Seth, MD; Shiro Kamakura, MD, PhD; Yoshihiro Miyamoto, MD, PhD;
Ilan Goldenberg, MD; Mark L. Andrews, BBA; Scott McNitt, MS

2009

Genotype-Phenotype Aspects of Type 2 Long QT Syndrome

Wataru Shimizu, MD, PhD,* Arthur J. Moss, MD,‡ Arthur A. M. Wilde, MD, PhD,||
Jeffrey A. Towbin, MD,# Michael J. Ackerman, MD, PhD,** Craig T. January, MD, PhD,††
David J. Tester, BS,** Wojciech Zareba, MD, PhD,‡ Jennifer L. Robinson, MS,‡ Ming Qi, PhD,§
G. Michael Vincent, MD,‡‡ Elizabeth S. Kaufman, MD,§§ Nynke Hofman, MSc,¶
Takashi Noda, MD, PhD,* Shiro Kamakura, MD, PhD,* Yoshihiro Miyamoto, MD, PhD,†
Samit Shah, BA,‡ Vinit Amin, MA,‡ Ilan Goldenberg, MD,‡ Mark L. Andrews, BBA,‡ Scott McNitt, MS‡

2016

Clinical Aspects of Type 3 Long-QT Syndrome An International Multicenter Study

2018

Primary prevention with the implantable cardioverter-defibrillator in high-risk long-QT syndrome patients

Yitschak Biton^{1,2*}, Spencer Rosero³, Arthur J. Moss¹, Ilan Goldenberg², Valentina Kutyaifa¹, Scott McNitt¹, Bronislava Polonsky¹, Jayson R. Baman^{1,4}, and Wojciech Zareba¹

Table 4 Risk score calculation

Risk variables	0 points	1 point	2 points
QTc	≤499 ms	500–549 ms	≥550 ms
Prior syncope while on β-blockers	No	Yes	
LQT2	No	Yes	
Multiple mutations	No	Yes	

The calculated score is the sum of the points of all four risk variables categories.

2015

Long QT Syndrome: How Effective Therapy in a Single Patient Favorably Influenced the Long-Term Clinical Course and Genetic Understanding of this Hereditary Disorder

Katherine M. Lowengrub^a, Deborah R. Moss^b, David A. Moss^c, Arthur J. Moss^{d,}*

Progress of Cardiovascular Diseases 2015;58:221-6

LQTS – Recent and Ongoing Research in Rochester

- 2019
 - Sex-specific Differences in LQTS
 - Risk Calculator to Predict Life-Threatening Events
 - Effectiveness of ICD Therapy in LQTS Patients
 - Psychological Factors in LQTS Patients
 - Atrial Fibrillation in LQTS Patients
 - Effect of Ranolazine on QT in LQT3 Patients
 - Pluripotent stem cells in LQT3 Patients

- 2018
 - T wave morphology in LQT2 Patients
 - Risk Stratification in ICD Patients
 - Everyday Emotion and QT Prolongation
 - Antidepressants in LQTS Patients
 - Genotype-specific Risk Stratification