SREE CHITRA TIRUNAL INSTITUTE FOR
MEDICAL SCIENCES AND TECHNOLOGY
THIRUVANANTHAPURAM

DEPARTMENT OF CARDIOLOGY

MORTALITY OUTCOMES AND INCIDENCE OF SHOCKS IN PATIENTS IMPLANTED WITH INTRACARDIAC DEFIBRILLATORS: A SINGLE-CENTER EXPERIENCE OVER TWO DECADES

A THESIS SUBMITTED FOR THE DEGREE OF

DM CARDIOLOGY

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JULY 2021

DEPARTMENT OF CARDIOLOGY,

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CERTIFICATE

I hereby certify that the work in this dissertation titled "**Mortality outcomes and incidence of shocks in patients implanted with Intracardiac defibrillators: A single-center experience over two decades**" is a certified record of original research work undertaken by Dr. Harsh Kumar pandey in the Department of Cardiology, Sree Chitra Tirunal Institute for Medical Sciences and Technology in partial fulfillment of the requirement for the award of DM Cardiology degree.

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I, Dr.Harsh Kumar Pandey, hereby declare that the project in this book, titled "Mortality outcomes and incidence of shocks in patients implanted with Intracardiac defibrillators: A single-center experience over two decades" was undertaken by me under the supervision of the faculty, Department of Cardiology, Sree Chitra Tirunal Institute for Medical Sciences and Technology.

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TITLE

"Mortality outcomes and incidence of shocks in patients implanted with Intracardiac defibrillators: A single-center experience over two decades"

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CONTENTS

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Dr. Harsh Kumar Pandey

ABBREVIATIONS

AICD	Automated Intracardiac defibrillator
ICD	Intra-cardiac defibrillator
CRT	cardiac resynchronization therapy
CRT-D	Cardiac resynchronization therapy & Defibrillator
DFT	Defibrillator testing
VT/VF	Ventricular tachycardia/Fibrillation
SCD	Sudden cardiac death
AF	Atrial fibrillation
VA	Ventricular arrhythmia
SVT	Supraventricular tachycardia
LVEF	Left ventricle ejection fraction
CAD	Coronary artery disease
NICMP	Non-ischemic cardiomyopathy
LVD	Left ventricular dysfunction
ECG	Electrocardiography
RBBB	Right bundle branch block
LBBB	Left bundle branch block
IVCD	Intraventricular conduction defect
NYHA	New York heart association
HCM	Hypertrophic cardiomyopathy
ARVD	Arrhythmogenic right ventricular dysplasia
IQR	Interquartile range

SYNOPSIS

Background

The beneficial effects of automated implantable cardioverter defibrillators (AICDs) in primary and secondary prevention patients are well established. However, there is a scarcity of Indian data on long-term follow-up of AICD recipients. Therefore, the study aimed to assess the differences in ICD shock and mortality between secondary and primary prevention AICD recipients.

Aim

- To assess appropriate shock & inappropriate shocks in patients who underwent ICD therapy in primary & secondary prevention groups.

Methods

This is a descriptive single-center study with retrospective case enrolment and cross-sectional follow-up. Patients who underwent ICD/CRT-D implantation from January 1997 to June 2020 were identified by searching an institutional database. The study population was grouped by type of prevention (secondary or primary) for sudden cardiac death. Device interrogation was checked for appropriate and inappropriate shocks. The last follow-up data were acquired in June 2020. Patients with 12 months of missing data were considered lost to follow-up.

Results

A total of 428 (81% male, mean age 55+/-11 years) ICD recipients were included. Of these, 290 (67.7%) patients received an ICD for secondary prevention of sudden cardiac death and 138 (32.3%) patients for primary prevention. During a 1913

patients year follow up (mean of 4.4+/-2.7 years), Secondary prevention patients exhibited a 33% increased risk for an appropriate shock compared with primary prevention patients. The incidence of appropriate shock was 14% in the primary prevention group & 30% in the secondary prevention group. On multivariate analysis, LV dysfunction (<50%) was a significant predictor for appropriate shock. Atrial fibrillation was observed as the most common cause of inappropriate shock.

During follow up 50 (11.6%) patients died. The incidence of mortality was 11.5% for primary prevention patients and 11.7% for secondary prevention patients. Congestive cardiac failure was observed as the most common mode of death in the secondary prevention group, whereas non-cardiac death was more commonly observed in the primary prevention group. On multivariate analysis, appropriate shock, non-ischemic CMP, was observed as a strong predictor of mortality in AICD recipients.

Conclusion

During long-term follow-up, the secondary prevention AICD recipient group compared to the primary prevention group exhibited a higher risk of appropriate therapy. Both groups showed lower & similar occurrences of inappropriate shocks. Comparable & different mortality patterns were observed between both groups.

INTRODUCTION

Since the first implantation in 1980, Automated Implantable cardioverter-defibrillators have revolutionized the treatment of individuals at high risk for SCD; the indications for this intervention have expanded as the clinical science supporting the use of ICDs.[1]

A population study on 22,724 individuals from the Southern part of India had shown a high prevalence of significant risk factors for CAD in India, with 10.3% deaths due to SCD occurring 5–8 years earlier than the Western population. [2]

Sudden cardiac death prevention is required in patients who have survived a life-threatening ventricular arrhythmia or had resuscitated cardiac arrest and those at increased risk of SCD.

Since the publication of landmark randomized clinical trials (MADIT II, AVID, SCD Heft) and its adoption in multiple professional guidelines, the implantable cardioverter-defibrillator (ICD) placement is currently a Class IB indication for secondary AICD prevention.[3]

Secondary prevention ICD patients having a higher occurrence of VA, causing higher appropriate device therapy, when compared with primary prevention ICD patients. [4] In a large study, appropriate and inappropriate shock rates among the 194 006 patients at five years were 23% and 17%, respectively. [5]. The estimated annual rates of appropriate ICD therapy in recipients of primary prevention ICDs with ischemic and non-ischemic cardiomyopathy range from 8% per year in historical randomized ICD trials. [6]

Identifying patients at risk for ventricular arrhythmias and sudden cardiac death (SCD) remains a clinical challenge for clinicians. For primary prevention, the use of implanted cardioverter defibrillator (ICDs) rely primarily on a reduced left ventricular ejection fraction (LVEF), which has low predictive efficiency, a single value of LVEF measurement is a poor surrogate for the complex

pathophysiological interplay of factors that increase the risk for ventricular arrhythmias. [7]

The reported frequency of appropriate ICD shock is 2 to 3 times higher among patients with secondary prevention[8], delineating the association between appropriate ICD therapy and its subsequent impact on survival.

Despite the proven survival benefits of an AICD, Inappropriate shock is a common adverse effect. Atrial fibrillation and sensing failure are mainly responsible for inappropriate shock, impairs life quality. Hence it becomes crucial to investigate the predictors and impacts of appropriate & inappropriate shocks for primary and secondary prevention of sudden cardiac death.

Shock delivery by an implantable cardioverter-defibrillator (ICD) is a life-saving measure in case of ongoing ventricular tachyarrhythmia. Nevertheless, recent studies have mentioned that ICD shocks have increased mortality than ICD patients without documented shocks, also known as the shocking paradox. [9]

In 2010, a meta-analysis of four prospective trials pooled the data from more than 2,100 patients, investigating the prevention of ICD shocks by preferential anti-tachycardia pacing (ATP). [10] Ventricular tachyarrhythmia treated by ATP had no impact on mortality compared to patients without ventricular arrhythmia. In contrast, the all-cause mortality was increased in patients treated with intracardiac shock compared to those without documented shock. In patients with only inappropriate shocks, this deleterious effect was not observed.

In 2013, single-center analysis of 561 patients with heart failure and primary preventive ICD observed the clinical outcome over a median follow-up period of 4 years. [11] The study concluded that the negative effect of appropriate shocks on survival is only evident within the first four years after ICD implantation. Appropriate shocks after the median follow-up period and inappropriate shocks

occurring at any time revealed no impact on survival. The study also mentioned that the harmful effect of intracardiac shocks was seen only in patients with ischemic heart failure, supporting the hypothesis of higher mortality based on the underlying cardiac pathology.

The Indian data on potential differences in mortality and ICD therapy rates between groups during long-term follow-up are scarce. Therefore, we conducted the current investigation to identify factors responsible for appropriate, inappropriate ICD shocks & all-cause mortality in a cohort of patients who met clinical guidelines for primary & secondary prevention of SCD through AICD. This study aimed to assess the differences in mortality & shock pattern (appropriate & inappropriate) between secondary and primary ICD recipients.

Review of literature

Secondary Prevention Trials

The DUTCH study was the first trial to investigate the use of AICDs in secondary prevention of sudden cardiac death, which began to enroll patients in 1983 and was concluded in 1993. It included 60 patients who survived SCD following a documented VT/VF; they were randomized to either conventional antiarrhythmic or AICD therapy. Compare to antiarrhythmic treatment, a 63% reduction of mortality was reported in the AICD recipient.

The Antiarrhythmics Versus Implantable Defibrillator study (AVID), the Canadian Implantable Defibrillator Study (CIDS), and the Cardiac Arrest Study Hamburg (CASH) are the three large trials that proved the effectiveness of ICD therapy for the secondary prevention of arrhythmic death.

The AVID trial (1997) was the most prominent trial on secondary prevention of SCD, enrolled 1016 patients who had a resuscitated cardiac arrest or had documented sustained VAs. Patients were randomized to receive either amiodarone therapy or ICD treatment, and the primary endpoint was all-cause mortality**.** [12] After a mean (SD) follow-up of 18.2 (12.2) months, the study was interrupted prematurely because of a significant reduction of mortality in the ICD arm (39% at one year). The most important benefit was observed in patients with low ejection fractions (LVEF $\leqslant$35%), whereas similar benefits were observed in patients with either VF or VT as index arrhythmia.

The CIDS trial had a similar design as the AVID trial and showed a 20% reduction in mortality in the ICD group, compared with the amiodarone treatment. [13] The CASH trial also showed a 23% reduction in mortality in patients who received AICD for secondary prevention (cardiac arrest survivors) compared to antiarrhythmic treatment. [14]

Primary Prevention Trials

MADIT (1996)(Multicentre Automatic Defibrillator Implantation Trial) was the first trial to demonstrate a prophylactic role for AICD therapy in patients with CAD, and cohort selected based on an episode of spontaneous non-sustained VT on Holter monitoring and inducible, non-suppressible VT/VF at electrophysiologic study. They included 1232 patients over four years with a history of prior MI & LVEF 30% or less. The study revealed that ICD therapy compared to conventional management reduced the incidence of cardiac death to 3% at one year and 17% at three years versus 23% and 46%, respectively, in the group treated with conventional therapy. [15] The results of this study resulted in modifying the ACC/AHA guidelines to include implantation of ICD for primary prevention of SCD as per MADIT inclusion criteria, as a class I recommendation (level of evidence B).

In the CABG-Patch trial (1997), 900 CAD patients with reduced LVEF (<36%), and abnormalities on signal-averaged ECGs, scheduled for elective coronary artery bypass graft surgery (CABG), were enrolled. They were randomly assigned to treatment with an ICD or the control group. The results indicated no statistical difference in survival between the two groups. There are explanations for these discordant results. The first is that revascularisation may have significantly improved left ventricular function after surgery in many post-CABG patients, reducing the risk level of these patients. Secondly, signal-averaged ECGs is probably a worse risk predictor for SCD than inducible VT.[16]

MUSTT (1999) (Multicentre Un-sustained Tachycardia Trial) with 700 patients of CAD, LVEF ⩽40%, spontaneous non-sustained VT, and inducible VT at electrophysiological study were enrolled. They were randomized to receive either antiarrhythmic treatment, including ICD or no antiarrhythmic treatment. Of those patients assigned to electrophysiologic guided therapy, only those who received an ICD had improved survival. [17]. Patients assigned to electrophysiologically guided therapy who received antiarrhythmic drugs and not defibrillators performed worse than those set to no antiarrhythmic treatment. The authors concluded that electrophysiologically guided therapy with AICD reduces the risk of sudden death in high-risk patients with CAD. [17]

Early primary prevention studies demonstrated the benefits of ICD therapy in CAD patients implanted late after MI. However, the optimal timing for implantation of prophylactic ICD in post-MI patients was examined in a sub-analysis of the MADIT II. Patients were divided into two groups: MI <18 months and ⩾18 months before enrolment in the study. Patients with remote MI showed more benefit from ICD implantation than patients with recent MI, although the difference did not reach statistical significance. [18]

Whether patients with recent MI could benefit from early AICD implantation was addressed in DINAMIT (2004) (Defibrillator in Acute Myocardial Infarction Trial). The patients enrolled in this study had recent ACS (6–40 days), reduced LVEF (⩽35%), and impaired cardiac autonomic function. At 30 month follow up no difference was observed in overall mortality between ICD and pharmacological treatment. ICD therapy reduced death from VF, but there was an increase in the rate of fatalities from non-arrhythmic causes. Results concluded that patients with a recent ACS do not benefit from ICD.[19]

The DEFINITE (Defibrillators in Non-Ischemic Cardiomyopathy Treatment Evaluation) trial in 2004 investigated whether patients with non-ischaemic dilated cardiomyopathy with LVEF ⩽35%, & premature ventricular beats, or non-sustained VT in holter would benefit from ICD implantation. The study randomizes patients to standard drug treatment for heart failure versus standard therapy for heart failure and ICD. Traditional medicine and ICD reduced the risk of death from any cause but did not reach statistical significance ($p=0.08$), probably because of a smaller cohort. [20]

SCD-HeFT (Sudden Cardiac Death in Heart Failure Trial),[21] enrolled 2521 patients with ischaemic (1311) and non-ischaemic (1210) heart disease, heart failure, and LVEF ⩽35%. The patients were randomized to receive either placebo or amiodarone or ICD implantation. It was observed that ICD therapy was associated with a significant (23%) reduction of all-cause mortality in both patients (ischaemic heart disease and non-ischaemic heart disease).

The COMPANION (Comparison of Medical Therapy, Pacing, and Defibrillation in Heart Failure) trial evaluated the effect of cardiac resynchronization therapy (CRT) combined with ICD. COMPANION enrolled 1520 patients with ischaemic and non-ischaemic heart failure with LVEF <35% and intraventricular conduction delay. The patients were randomized to receive optimal anti-heart failure drug treatment alone or associated with biventricular pacing with or without ICD. Although the COMPANION trial was designed to evaluate the effect of CRT on heart failure, it has also demonstrated an improvement of prognosis in patients who underwent CRT-D implantation. The trial result suggests that all patients treated with CRT would also benefit from an ICD.[22]

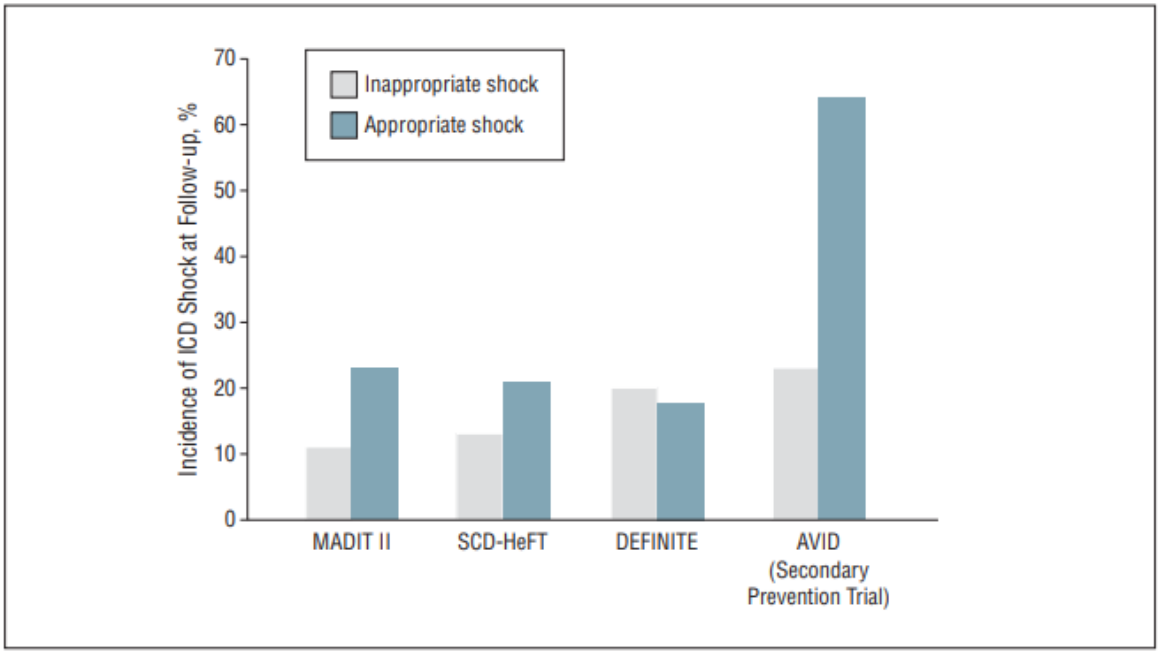
EPIDEMIOLOGY AND MECHANISMS OF ICD SHOCK-

Implantable cardioverter-defibrillators are used to assess and promptly terminate ventricular arrhythmias either by anti-tachycardia pacing or by defibrillator shock. Patients have described an ICD shock as "being hit by a truck or hit by knife," Given the traumatic nature (mentally & physically) of ICD shocks, it would be ideal if the ICD could always successfully distinguish life-threatening ventricular arrhythmias from non–life-threatening tachyarrhythmias such as supraventricular tachyarrhythmia and deliver shocks only for sustain VT or ventricular fibrillation (VF) (I.e., appropriate shocks)

The different devices using different algorithms that discriminate VA. from SVT have not been perfected. Inappropriate shocks are defined as the delivery of high voltage discharge for a reason other than a ventricular arrhythmia. However, the primary role of the ICD is to detect ventricular arrhythmias and deliver therapies to restore normal sinus rhythm. This therapy benefit comes at the cost of inappropriate shocks for non–life-threatening rhythms and other reasons.

The reported frequency of ICD shocks varies from different studies, but a consistent finding is that substantial proportions of patients receive shock after

ICD implantation. For example, in patients receiving ICDs in the secondary prevention Antiarrhythmics versus Implantable Defibrillators (AVID) trial, the ICD therapy (ATP and ICD shock) was 35% at three months, 53% at one year, and 68% at two years. In the Multicenter Automatic Defibrillator Implantation Trial (MADIT II) study, inappropriate ICD shocks were standard, with a cumulative 1- and 2-year event rate of 10% and 13%, respectively. In this trial, AF and atrial flutter were the most common SVTs to cause inappropriate ICD shocks.



Programming of devices-

Implantable cardioverter-defibrillators are configured with different zones restricted by a particular heart rate above which the device is programmed to deliver therapy. The primary prevention patients usually have two VT zones, & the secondary prevention group will have 3 VA detection zones. In the secondary prevention group, the VT1 zone typically has a detection rate 10-20

beats faster than clinically detected VT. the VF zone is generally programmed to identify ventricular arrhythmias with faster speeds, for example, more than 180 to 200/min, or a cycle length of 300 to 330 milliseconds. If the device senses a cycle length shorter than this programmed cycle length and the other criteria are met, the device is programmed to deliver therapies, including burst or ramp ATP or high-energy discharges. Sometimes the supraventricular tachyarrhythmia that meets the diagnostic criteria for detection in the VT zone can result in inappropriate shock from the device. Inappropriate shocks most commonly occur due to atrial flutter, atrial fibrillation (AF), including sinus tachycardia, or rapid ventricular response. Supraventricular tachycardias can meet heart rate and duration criteria. Therefore, the device is programmed to deliver shocks and is accountable for the most common cause of inappropriate detection resulting in therapy.

Predictors of shock-

Technical causes can result in an inappropriate ICD shock, include faulty sensing, lead fracture, electromagnetic interference, oversensing of electrical noise, oversensing of diaphragm myopotentials, oversensing of T waves, and double counting of QRS complexes. Recently, there have been widely publicized recalls of ICD leads, specifically, the Medtronic Sprint Fidelis and the St Jude Medical Riata leads. Evidence suggested high rates of lead failure &, in some cases, manifest as inappropriate ICD shocks. [23]

RV pacing among ICD recipients is associated with higher mortality, possibly due to induction of left ventricular dyssynchrony and worsening heart failure. This hypothesis was confirmed in the MADIT II trial, where higher rates of RV pacing were associated with higher rates of appropriate shock or ATP for VA and new or worsened heart failure.24

Finally, Certain patients are at higher risk for any ICD shock. The study by Michael T. Koller et al. 2008, observed that appropriate ICD therapy was more likely in patients who received ICD therapy for secondary prevention, who were older, or had lower left ventricular ejection fraction. [24] Randomized clinical trials have also searched prognostic factors for inappropriate ICD

shocks. In a sub-study of MADIT II, patients with AF, tobacco use, and diastolic hypertension were detected to have a higher risk of receiving inappropriate shocks.

In the SCD-HeFT trial, inappropriate shocks were more frequent in patients with non-ischaemic heart disease than those with ischemic heart disease. Inappropriate ICD shocks were presumably more common in patients with prior or current AF.

HEALTH OUTCOMES AFTER ICD SHOCK-

ICD therapy (ATP & shocks) can prolong life in appropriately selected patients with LV systolic dysfunction because of aborting arrhythmic SCD with defibrillation. However, several studies have mentioned that the life-prolonging benefit of an ICD shock comes with a cost and is associated with adverse outcomes.

Psychiatric disorder post-AICD shock-

In the SCDHeFT trial—a primary prevention randomized controlled trial—patients who received shocks within one month of a scheduled assessment had a substantially poor health-related quality of life than those who had not received an AICD shock [25]. In the AVID trial, patients who had received at least one ICD shock had significantly poorer mental and physical outcomes. [26]

Implantable cardioverter-defibrillator shocks are associated with psychological disorders. Anxiety is prevalent among psychological issues, with 24% to 87% of patients with an ICD experiencing worsened symptoms and diagnosis of anxiety disorders. [27] Patients who underwent more ICD shocks were significantly more mental issues than the group not experiencing shocks. [27,28] Study by Luderitz B et al., in their study of 95 ICD recipients, concluded that those who experienced more than five shocks developed significantly higher anxiety than other ICD recipients. [29] Goodman et al. evaluated 90 patients with ICDs using a standardized interview that mainly focused on diagnosing anxiety

disorders. Found that panic disorder and agoraphobia were identified in 16.7% of those patients, which was markedly higher than the general population[30].

Heart failure post AICD shock-

Evidence suggests that ICD shocks are associated with an increased risk of heart failure hospitalization, particularly in those who had LV dysfunction at baseline. Subgroup analysis of MADIT II showed the risk of a heart failure event at one year was 26% and 31% after first AICD therapy for VT and VF, respectively, compared with 19% for those without ICD therapy. [31]

Mortality post AICD shock-

Clinical trials have shown the association between ICD shock and mortality. MADIT II found that appropriate ICD shock was associated with more than a 3-fold increase in mortality. In the SCD-HeFT trial, ICD shocks (both appropriate and inappropriate) were significant predictors of mortality, increased risk of mortality by 5- and 2-fold, respectively[31,32]

AICD shock-induced myocardial injury is a potential explanation for these apparent associations. Patients with inappropriate ICD therapy due to technical issues (noise and oversensing) were not at risk of mortality, supporting the claim that inappropriate AICD shocks are a marker rather than a mediator of adverse outcomes.

METHODS TO REDUCE INCIDENCE OF ICD SHOCK-

Anti-tachycardia pacing is a safe and effective alternative to shocks for terminating many ventricular arrhythmias. The ICD delivers a ventricular-paced beat at a rate faster than the underlying arrhythmia. This approach will often terminate re-entrant arrhythmias, thus preventing the need for shocks. Studies have shown that ATP may effectively terminate more than 90% of spontaneous VT.[33]. In addition, ATP has the advantage over shock include less patient discomfort, less battery drain.[34] Therefore, ATP is preferred as the initial mode

of therapy in the AICD setting for monomorphic VTs unless otherwise contraindicated.

Comparison of Efficacy: Ramp and Burst ATP Therapy

Studies have compared the use of burst and ramp pacing on spontaneous fast VT In the study by Gillis et al. [35], ATP efficacy proved to be 86% for burst and 38% for ramp ($P<0.05$). Schaumann et al.'s 36 study showed that ATP efficacy was 86% for burst and 77% for ramp ($P<0.05$). More recently, Peters et al. [36] found that ramp was less effective and associated with more frequent accelerations. Nevertheless, all the studies mentioned above were non-randomized. In their randomized controlled trial design, Michele M. Gulizia et(38) al showed the superiority of burst in terminating episodes with VTCL <320 ms. About ATP safety, burst pacing was associated with fewer accelerations than ramp pacing (2.3% versus 7.4% of cases), though this difference was not statistically significant ($P=0.085$). Ramp was more aggressive than burst, with the last ramp pulse delivered at a higher rate than the previous burst pulse, the difference being 10 ms for VTCL of 240 ms and 60 ms for VTCL >=300 ms.

The MADIT–Reduce Inappropriate Therapy trial evaluated whether more aggressive use of ATP would reduce inappropriate therapies. [37] Patients who received ICDs for primary prevention were randomly assigned to 1 of 3 programming configurations to assess the rates of inappropriate ICD therapy. After a mean follow-up of 1.4 years, delayed therapy groups compared with conventional device programming. Results significantly reduced the first and appropriate and inappropriate therapy with the delayed AICD therapy group. However, a more important observation was that the conventional treatment group had a significantly higher cumulative mortality during follow-up than the new programming strategies.

Other basic programming features may also reduce the likelihood of ICD shocks. For example, a suuden onset & regular arrythmia suggest VT (high stability), sinus tachycardia tends to accelerate slowly, and AF is irregularly irregular (low stability).

Brugada et al. [38] found that programming stability criteria & sudden onset helped discriminate supraventricular arrhythmias and reduced the risk of inappropriate shock. In addition, discrimination algorithms can be used to identify the differences in the contour of the sensed intracardiac electrograms of tachyarrythmia compared with a template of the electrograms during known sinus rhythm. [39] Although all devices are pre-programmed, the clinician needs to review the device settings because these settings may be inappropriate for the individual patient.

Dual-Chamber ICDs-

A dual-chamber ICD theoretically helps distinguish SVT from VT using atrial and ventricular sensing information to discriminate between the two arrhythmias. Detecting atrioventricular dissociation can help determine VT from SVT not only by using surface electrocardiography but also via device electrograms. However, no study reports that dual-chamber device programming effectively reduces the risk of inappropriate ICD shocks. [40],[41],[42].

Pharmacologic Therapy-

Use of Antiarrhythmic medications can reduce the frequency of ICD shocks. The mechanisms include suppressing atrial and ventricular arrhythmias and slowing episodes of VT, which may allow patients to tolerate VT better, thereby allowing for broader use of ATP. Among patients with LV Systolic Dysfunction evidence-based heart failure therapy with beta-blockers, ACE inhibitors and MRA reduce the risk of mortality (including SCD) & heart failure hospitalization[43],[44], [45].

Further, beta-blockers may reduce fast ventricular rates in patients with supraventricular arrhythmias which could prevent inappropriate ICD shocks.

s. In a randomized trial by Conolly et al. 2006, comparing beta-blocker alone, amiodarone and a-blocker, or sotalol, 40% of patients treated with-blockers alone had shocks at one year. In contrast, those treated with amiodarone and -blockers had only a 10% risk. [46] Thus, all patients with LV Systolic

Dysfunction should receive optimal anti heart failure medicstions, and in selected group of patients, additional rhythm control therapy may be warranted.

Most Antiarrhythmic medications can be proarrhythmic; higher doses (320mg/day) of sotalol has a considerable (1%-4%) risk of triggering torsades de pointes, renal dysfunction, with a history of VT or heart failure, and of the female gender. [47]Amiodarone causes many essential and sometimes severe extracardiac toxic effects. Hence the use of antiarrhythmics needs to be individualized, considering the number of shocks, the effect of these shocks on the patient, and the risk of adverse effects of the medications.

Catheter Ablation-

The indication for ablation is VT refractory to medical therapy in patients who receive multiple ICD shocks. Hampel et al. studied the prophylactic use of catheter ablation on the rate of ICD therapy in secondary prevention patients was examined 128 patients were randomized to either catheter ablation using a substrate-based approach or no ablation. [48] study concluded that there was a 65% reduction of ICD therapy (ATP or shock) in the ablation group and a 73% reduction of receiving ICD shocks.

Given the lack of clinical trials, the use of ablation techniques should not be considered clinically indicated as prophylaxis to reduce ICD therapy.

Optimizing Evidence-Based ICD Implantation-

The decision to implant an should be based upon established indications outlined in the relevant clinical guidelines. So we can minimize inappropriate device therapies [3],[49]

AIM & HYPOTHESIS

AIM

- To assess appropriate & inappropriate shocks in patients who underwent ICD therapy in primary & secondary prevention groups.

Hypothesis

- The incidence of AICD shock may be different for patients with varying (primary vs. secondary) indications.

- Patients who receive an AICD for primary prevention have a smaller number of appropriate shocks.

- Clinical outcome and long-term survival of patients implanted with AICD could be influenced by comorbid factors and incidence of ICD shocks

STUDY OBJECTIVE

Primary Objective

- To assess the incidence of mortality & pattern between primary & secondary AICD recipients.

Secondary Objective

- To assess appropriate & inappropriate AICD shock between primary & secondary AICD recipients.

MATERIALS & METHOD

Design: Retrospective cohort and cross-sectional study

Setting: Tertiary referral center, a university-level hospital (SCTIMST)

Inclusion Criteria:

All patients who underwent AICD insertion for SCD prevention between January 1997 to June 2020 were identified by a search of an institutional database and included in the study

Exclusion Criteria

- Patients with less than 12 months of follow up

Sample size: All 428 patients who underwent AICD insertion for SCD prevention between January 1997 and June 2021.

Methodology

This is a descriptive single-center study with retrospective case enrolment and cross-sectional follow-up. Patients who underwent AICD implantation from January 1997 to June 2020 were identified by a search of an institutional database. Data were collected by the principal investigator.

Patients data on follow up such as an electrocardiogram (ECG), device interrogation, were collected from the institutional database and analyzed. All patients on follow-up who were contacted by telephone were advised for a routine device interrogation. Patients who were unable to visit the SCTIMST OPD were advised to undergo the investigations at a nearby hospital and email the reports to the investigator.

1. Secondary prevention was defined as AICD implantation after survival of an episode of cardiac arrest, the occurrence of Ventricular Arrhythmia with loss of consciousness, or Ventricular Arrhythmia lasting longer than 30 secs.

2. Prevention was considered as primary in the case of depressed LVEF without prior sustained Ventricular Arrhythmia

Implantable cardioverter defibrillator therapies-

1. Appropriate when they occurred in response to ventricular tachycardia or ventricular fibrillation.
2. Inappropriate when triggered by sinus or supraventricular tachycardia, T-wave over sensing, lead sensing issues.

- Any mortality due to CCF, VT storm, MI, SCD was defined as cardiac mortality.
- Non-cardiac death was defined as death due to sepsis, infection, malignancy.
- NICMP was defined as normal coronary & LVEF<35%.
- CAD with LVD was defined as LVEF <50% & significant coronary involvement.
- CKD- eGFR <60ml/min/1.73m2 or Creatinine >1.5.

Data Analysis

The SPSS Statistics (windows 21 version) software was used for data analysis. Descriptive statistics for all variable comparisons were performed using appropriate univariate hypothesis tests. Categorical variables were expressed as with-in group percentages and compared for independent samples using either Pearson's or Fisher's exact tests. Continuous variables were expressed as either median or mean standard deviation on the overall variable distribution. Independent sample, single-factor analysis of variance was used for parametric data comparisons.

Potential risk factors for outcomes were evaluated using a regression model and multiple regression analysis was performed for outcomes with P values less than 0.05. Kaplan Meier analysis was done to analyze the incidence of shock & mortality in relation to time.

RESULTS

There were a total of 428 patients who underwent AICD implantation between January 1997- June 2020. 12 (3%) patients were lost to follow-up within 12 months of the AICD implantation. 14 patients were followed at a nearby hospital. 402 patients were on regular follow-up and had visited the SCTIMST outpatient department within the last 2 years. 14 patients were contacted on the phone and advised to get a device interrogation & mail the report.

CHARACTERISTICS OF INCLUDED PATIENTS:

Table 1 : Baseline characteristics

Total patients 428	Primary Prevention N (%) 138 (32.3)	Secondary Prevention N (%) 290 (67.7)	P VALUE
Male gender, n (%)	97 (71)	250 (86)	**<0.01**
Age at implantation (in years), mean±SD	54+/-12	55+/-11.7	0.411
NYHA functional class			
I n (%)	17 (13)	20 (6)	0.06
II n (%)	65 (47)	237 (83)	**<0.01**
III n (%)	49 (35)	29 (10)	**<0.01**
IV n (%)	7 (5)	4 (1)	**0.02**
Clinical characteristics			
Prior AF n (%)	17 (11)	21 (6)	0.08
DM n (%)	48 (17)	73 (25)	**0.04**
HTN n (%)	53 (18)	105 (36)	0.6
CKD n (%)	26 (8)	36 (12)	0.08
DLP n (%)	55 (19)	100 (35)	0.27
CAD with LVD n (%)	60 (43.4)	179 (61.7)	<0.01
NIDCMP n (%)	39 (28)	21 (7)	**<0.01**

Table 2: Baseline ECG & ECHOCARDIOGRAPHIC parameters

	Primary Prevention	Secondary Prevention	P-value
ECG parameters			
QRS duration(ms)	137+/-35	124+/-30	<0.01
<120	55 (40)	149 (51)	0.03
120-150	22 (16)	74 (26)	0.02
>150	61 (44)	59 (20)	<0.01
QTc (ms) mean+/-SD	460.9+/-48.	448+/-48	<0.01
LBBB	76 (55)	38 (13)	<0.01
RBBB	11 (7)	45 (15)	0.04
IVCD	3 (2)	14 (4)	0.18
ECHO parameters			
LVEF (%)	41+/-19.7	46+/-16	<0.01
>50	37 (27)	154 (38)	<0.01
50-30	38 (27)	74 (43)	0.6
<30	64 (46)	59 (19)	<0.01

Table 3 Baseline Medications

MEDICATIONS			
Amiodarone n (%)	45 (33)	210 (73)	<0.01
Beta blocker n (%)	117 (84)	240 (83)	0.7
ACE/ARB n (%)	79 (57)	154 (53)	0.5
MRA n (%)	85 (62)	130 (44)	<0.01
Statin n (%)	62 (45)	161 (55)	0.03
Diuretics n (%)	88 (63)	131 (45)	<0.01
Digoxin n (%)	46 (34)	30 (10)	<0.01
Antiplatelets n (%)	57 (41)	150 (51)	0.03
Sotalol n (%)	0	5 (1)	
Ranolazine n (%)	0	7 (2.4)	
Mexiletine n (%)	0	4 (1)	

As shown in Table 1,2,3, baseline comparison of the two groups revealed in the primary prevention group had a higher NYHA functional class III with a broader QRS complex (mean QRS: 137±35 vs. 124±30 ms; P- 0.001) and a lower LVEF (mean LVEF: 41±19.7 vs. 46±16%; P-0.001). The use of amiodarone, antiplatelet, statin was significantly higher in the secondary prevention group. The use of diuretics, digoxin, ACE/ARB, MRA was substantially higher in the primary prevention group (p=<0.05). Patients with NICMP were significantly higher in primary prevention & Patients with CAD with LVD were significantly higher in the secondary the primary prevention group.

Table 4 : Baseline EPS characteristics-

EPS & ICD Implantation	Primary Prevention		Secondary prevention		P value
Induction n (%)	34 (25)		68 (23)		0.80
	VT induced n (%)	VT not induced n (%)	VT induced N (%)	VT not induced N (%)	
	25(73)	9 (27)	48 (71)	20 (29)	0.70
Ablation n (%)	3 (2)		14(4)		0.18
DFT n (%)	8 (5)		37 (13)		**0.02**
Single Chamber ICD n (%)	62 (44)		246 (84)		**<0.01**
Dual Chamber ICD n (%)	15 (12)		22 (7.5)		0.10
CRT D n (%)	61 (44)		22 (7.5)		**<0.01**

As shown in Table 4, comparing the two groups revealed that the primary prevention group had higher use of CRT-D (44% vs.7.5%; P <0.01), VT induction was done equally in both the groups. However, DFT was done significantly higher in the secondary prevention group.

Figure 1: Distribution of Patients in Primary Prevention

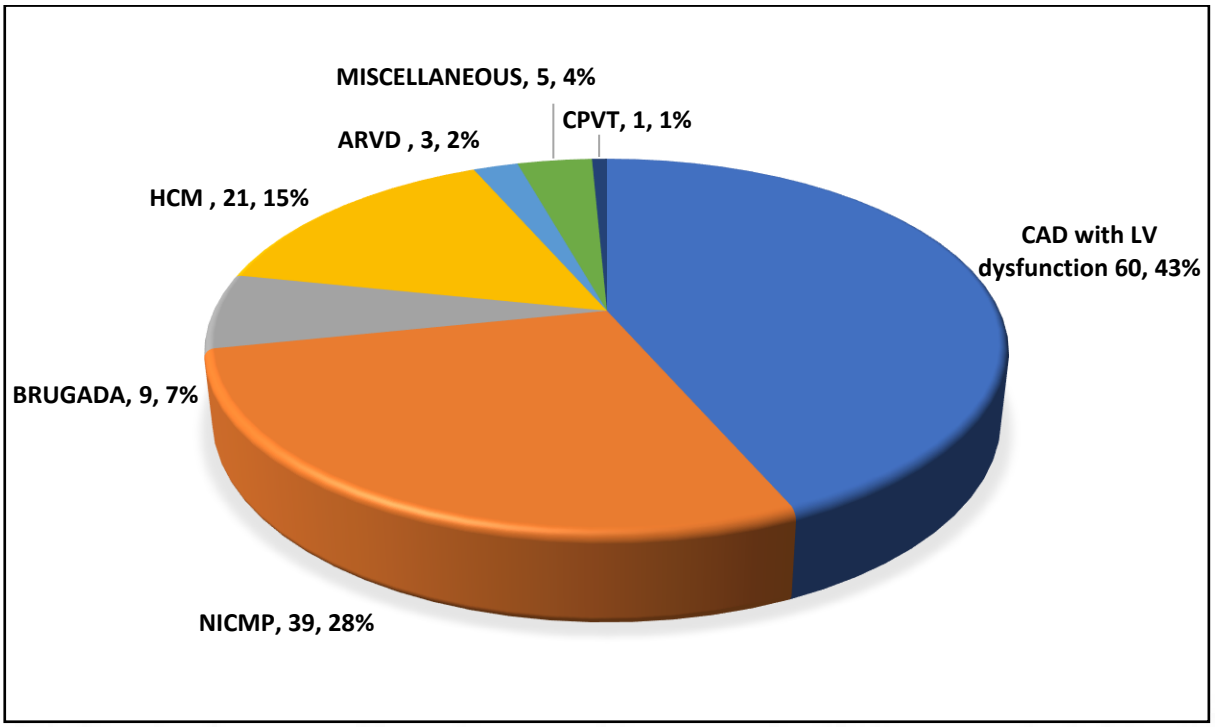
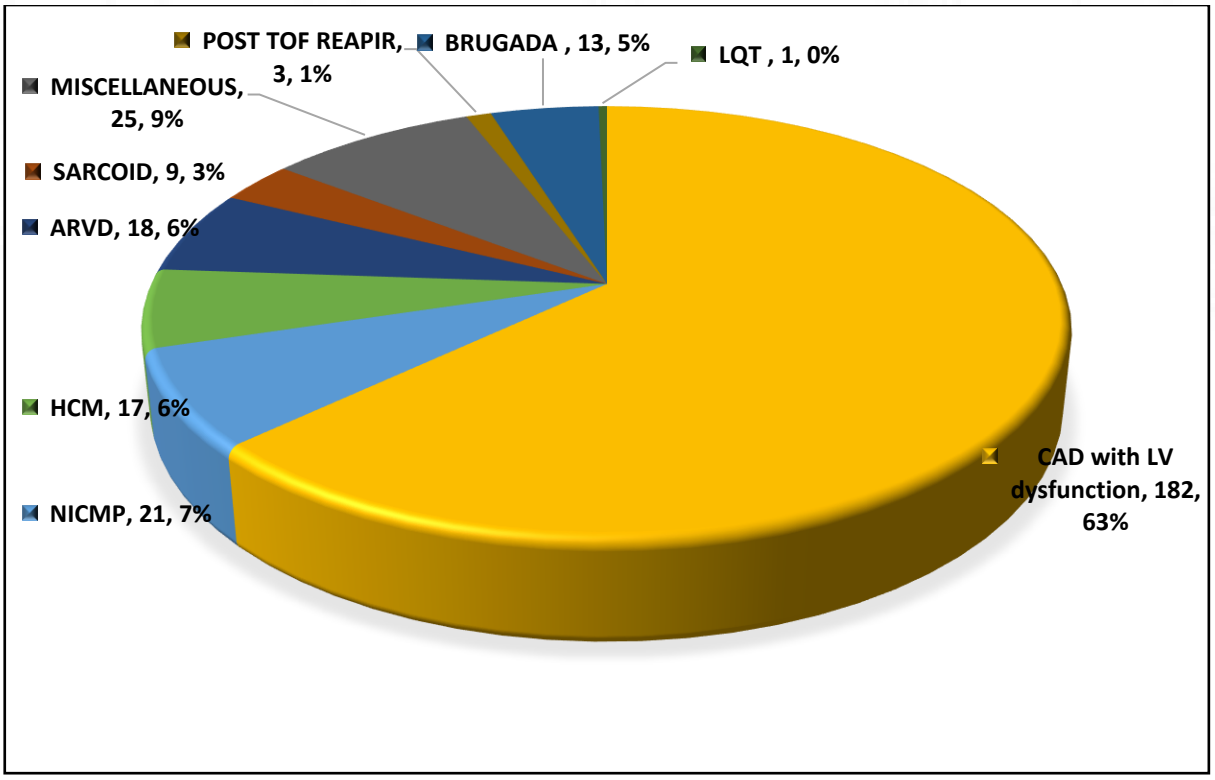


Figure 2: Distribution of Patients In Secondary Prevention Group



OUTCOMES:

Table 5 : Mortality outcomes

Primary Outcome	**Total N (%)**	**Primary prevention n (%)**	**Secondary Prevention N (%)**	**P Value**
Mortality n (%)	50(11.6)	16 (11.5%)	34 (11.7%)	0.9

As shown in table 5, during follow-up, 50 (11.6%) patients died. The primary prevention group cumulative incidence for all-cause mortality was 2% at one year, 12% at three years, and 22.2% at five years. In the secondary prevention group, cumulative incidence for all-cause mortality was 5% at one year, 11.7% at three years, and 21.8% at five years. Comparison between the two groups demonstrated a similar cumulative incidence of all-cause mortality for both groups.

Table 6: **Shock Outcomes**

Secondary Outcome	**Total N (%)**	**Primary prevention n (%)**	**Secondary prevention N (%)**	**P-value**
Appropriate shock N (%)	109(25.4)	20 (14.5%)	89 (30.6%)	<0.01
Inappropriate shock n (%)	16 (3)	3 (2%)	13 (4%)	0.27

Table: 7 SHOCK ANALYSIS

	Primary prevention	**Secondary prevention**	**P value**
Appropriate Shock at VT CL mean+/-SD	285.1+/-27.77	323.6+/-78.68	**<0.01**
Inappropriate shock at VT CL Mean +/- SD	311.6+/-54.85	361.3+/-56.6	**<0.01**
Avg. Time to first appropriate shock (months) median (IQR)	11 (4.75-29.75)	36(18—61)	**0.02**
Avg. Time to first inappropriate shock(months) median (IQR)	44(26-71)	39(20-66)	0.09

As we can see in Table 6,7, ventricular arrhythmia triggered appropriate shock in 109 (25.4%) patients. The cumulative incidence of appropriate shock after one year & 5 years was 7.69% & 27.4 %, respectively, in the primary prevention group. In the secondary prevention group, the cumulative incidence of appropriate shock was 13.5% after one year & 53.4% after five years. The cumulative incidence of inappropriate shock was 1% & 9% after 1 year & 5 year respectively in secondary prevention group & in primary prevention group it was & 1.5% & 5.7% after 1 year & 5 year respectively. In both, groups CAD with LVD patients received a higher percentage of appropriate & inappropriate shocks. We have found that patients with the primary prevention group received shock with significantly lower VT cycle length. (285.1+/- 27.77 vs 323.6+/- 78.68 P=<0.01). Also, the primary prevention group received appropriate shock significantly earlier 11 months (4.75-29.75) vs. 36 months (18-61) P=0.02

Figure: 3 Distribution of Patients Who Received an Appropriate Shock

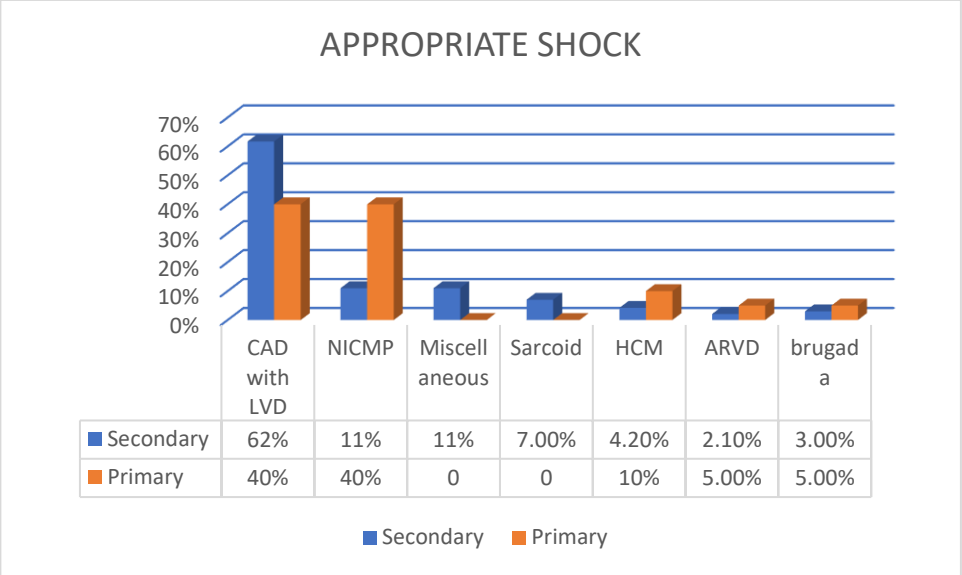


Figure:4 Distribution of Patients Who Received An Inappropriate Shock

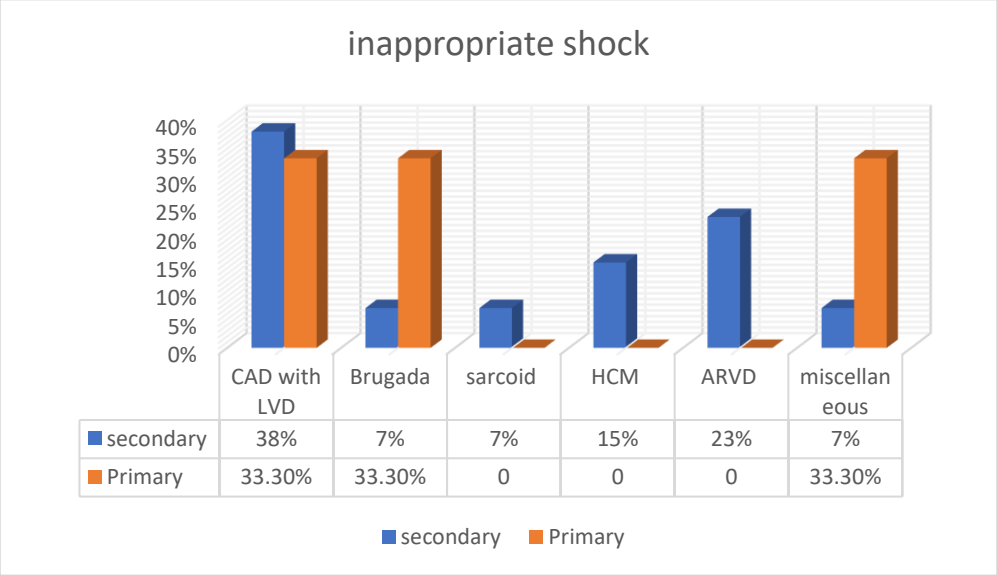


Table 8: Multivariate analysis of appropriate shock

Parameter	P VALUE	Multivariate analysis HR (95%CI)	P value
Amiodarone	<0.01	1.68(1.045 – 2.72)	<0.01
LVEF<50	0.03	1.71(1.04-2.81)	0.02
Diuretic use	0.02	1.65(1.06-2.58)	0.023
LBBB	<0.03	0.33(0.18-0.60)	<0.01
RBBB	<0.01	1.8(1.2-2.6)	0.85

As shown in the above table, on multivariate analysis, patients with amiodarone & diuretics, LVEF <50%, are associated with a higher risk of appropriate shock.

Table 9: Multivariate analysis of inappropriate shock

Parameter	**P value**	**HR (95%CI)**	**P value**
Prior AF	**<0.01**	**8.15(4.24-15.71)**	**<0.01**

History of prior AF came out as the sole predictive factor for inappropriate shock. The most common etiology for inappropriate shock was AF (56%), followed by other SVT (19%) (figure 6)

Figure 6: Cause of inappropriate shock

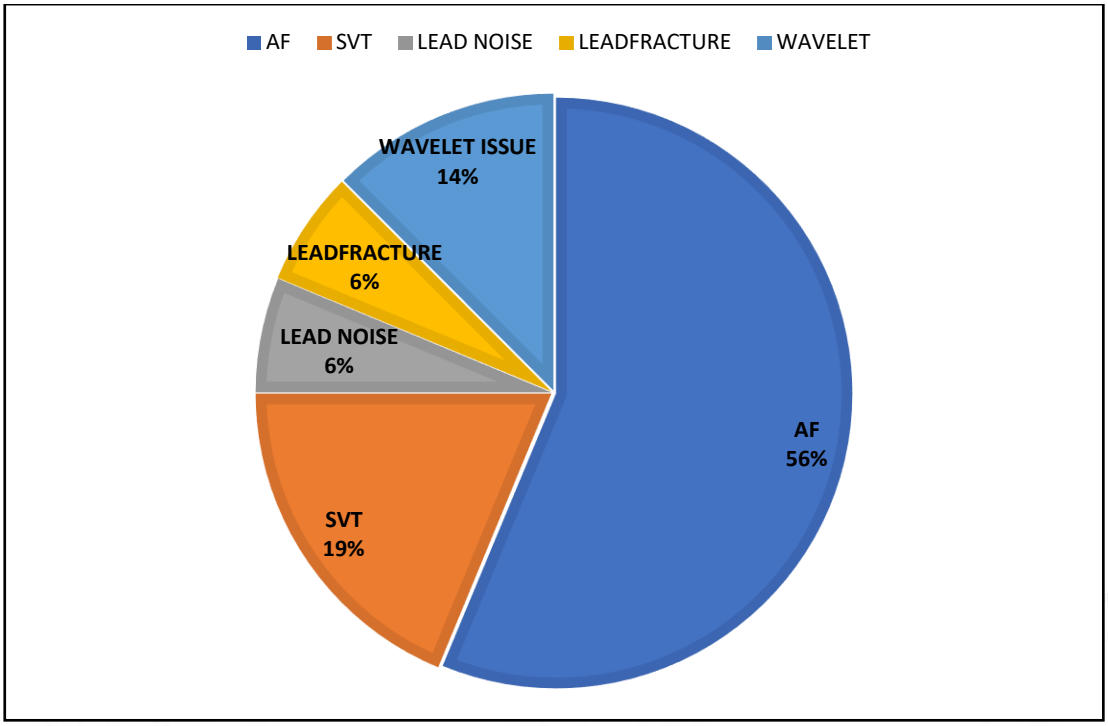


Table 10 Multivariate analysis for mortality

	Sig.	H.R.	95.0% CI for Exp(B)		MULTIVARIATE
			Lower	Upper	
NIDCMP	<0.01	2.74	1.68	4.48	<0.01
DIURETICS	<0.01	2.46	1.30	4.65	0.005
ACE/ARB	<0.01	1.34	1.09	1.34	0.036
Digoxin	<0.01	2.0	1.26	3.21	0.005
MRA	<0.01	1.14	1.14	1.76	0.007
Appropriate Shock	<0.01	2.62	1.43	4.82	0.001
LVEF<40	0.01	2.31	1.2	4.4	0.012

Multivariate analysis for mortality outcomes showed (table 10) NIDCMP patients, use of diuretics, ACE/ARB, digoxin, MRA, history of appropriate

shock, baseline LVEF <40% are significant predictors of mortality. In the primary prevention group, non-cardiac death (75%) was the most common cause of mortality, whereas congestive cardiac failure (47%) was the most common pattern, followed by VT storm (29%). (figure 7)

Figure 7 Mortality pattern of Primary & secondary prevention groups

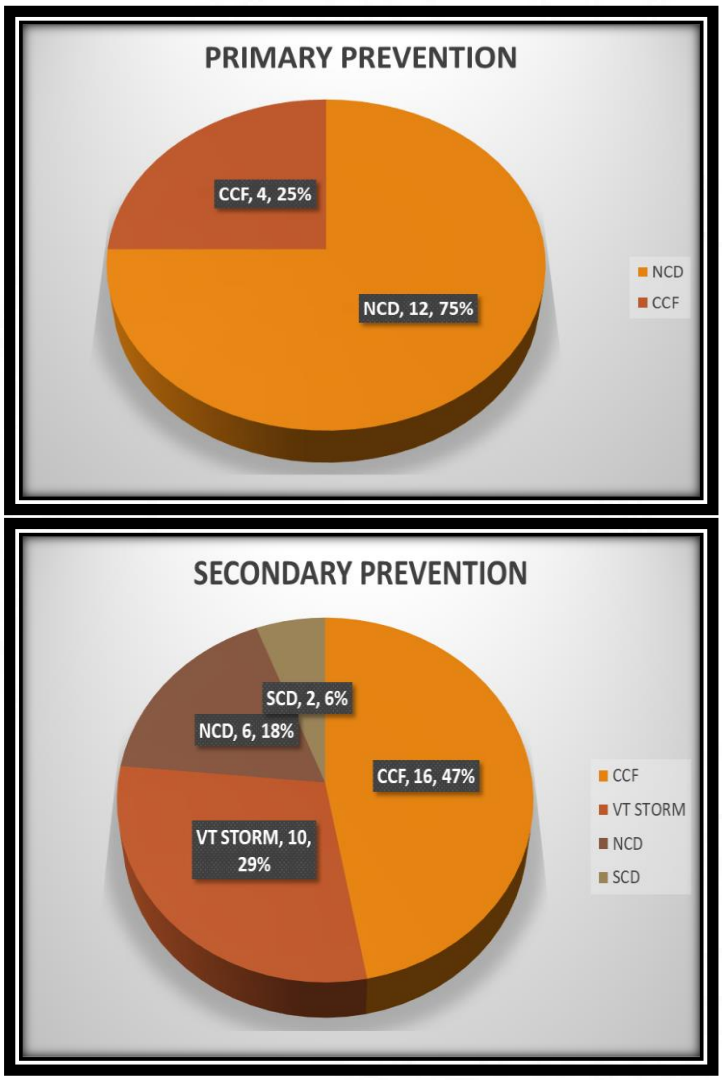


Figure: 8 Kaplan–Meier curves of appropriate shock for primary and secondary prevention implantable cardioverter-defibrillator recipients.

Log Rank <0.01

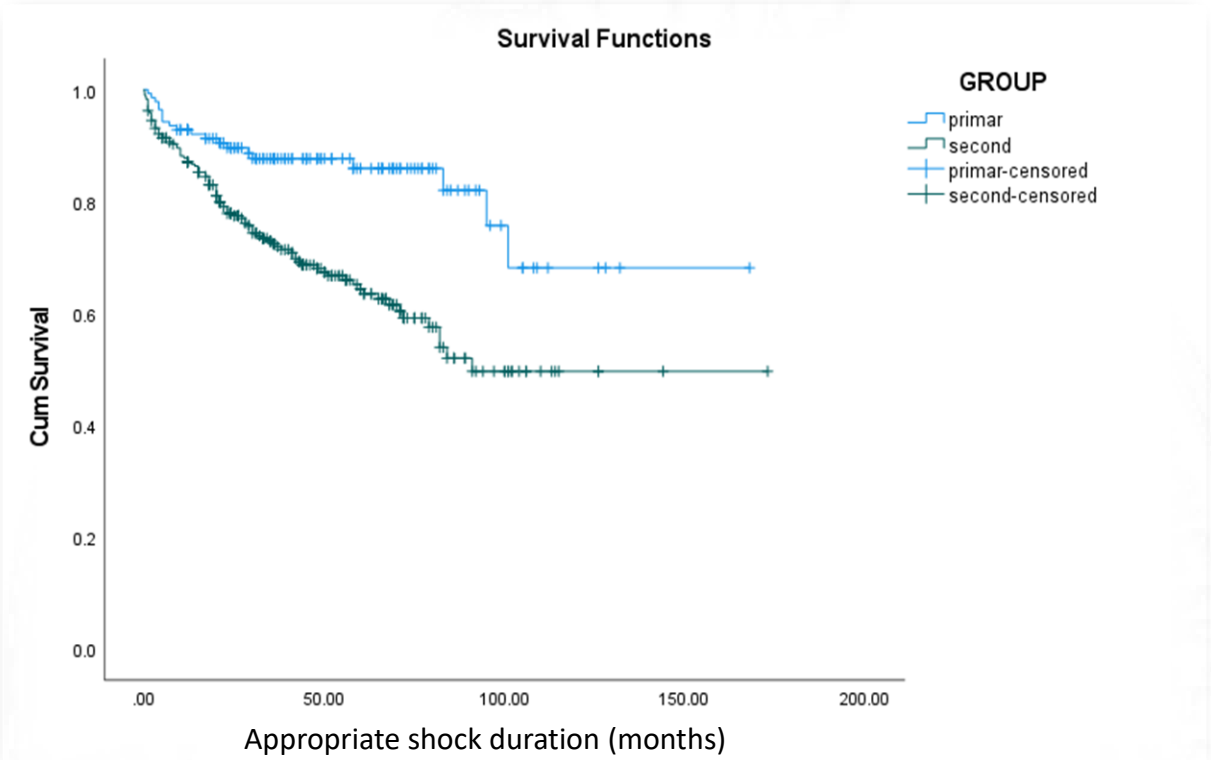


Figure: 9

Kaplan–Meier curves of inappropriate shock for primary and secondary prevention implantable cardioverter-defibrillator recipients.

Log Rank 0.33

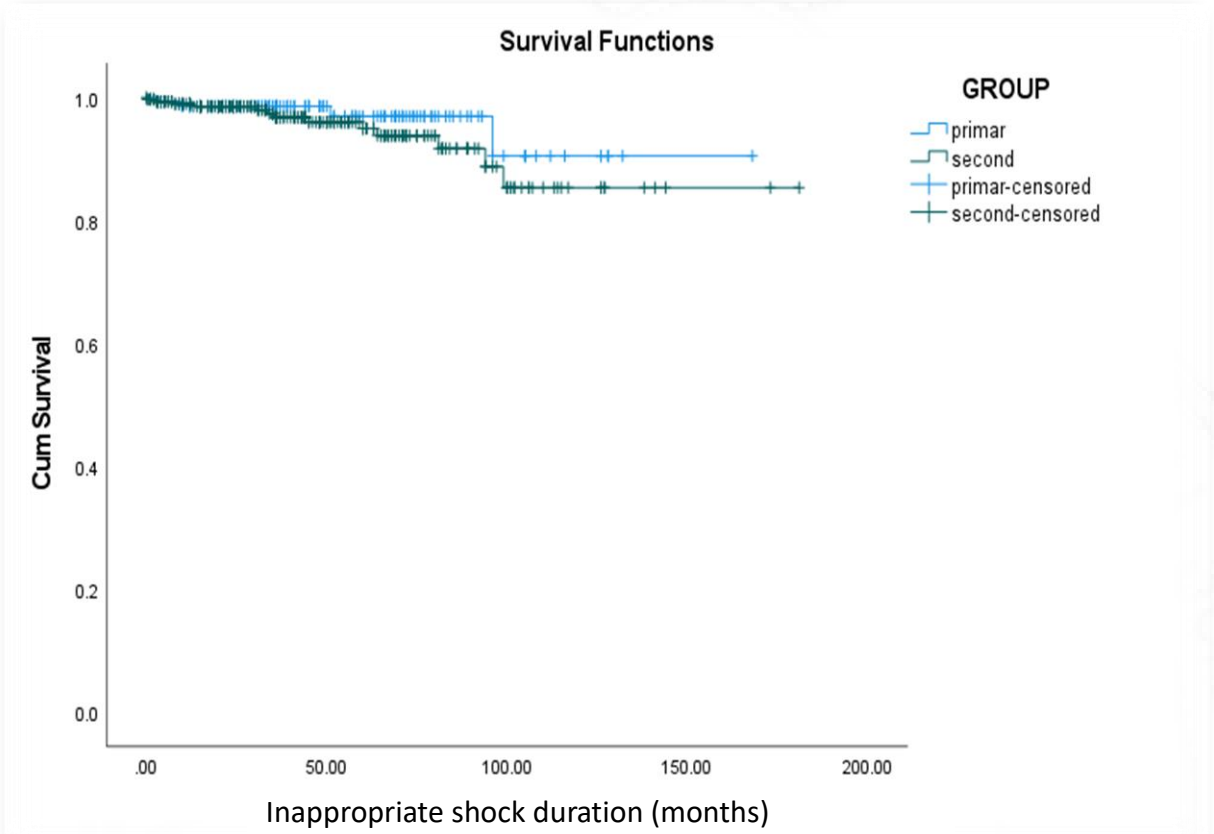


Figure: 10

Kaplan–Meier curves of mortality for primary and secondary prevention implantable cardioverter-defibrillator recipients.

Log rank=0.99

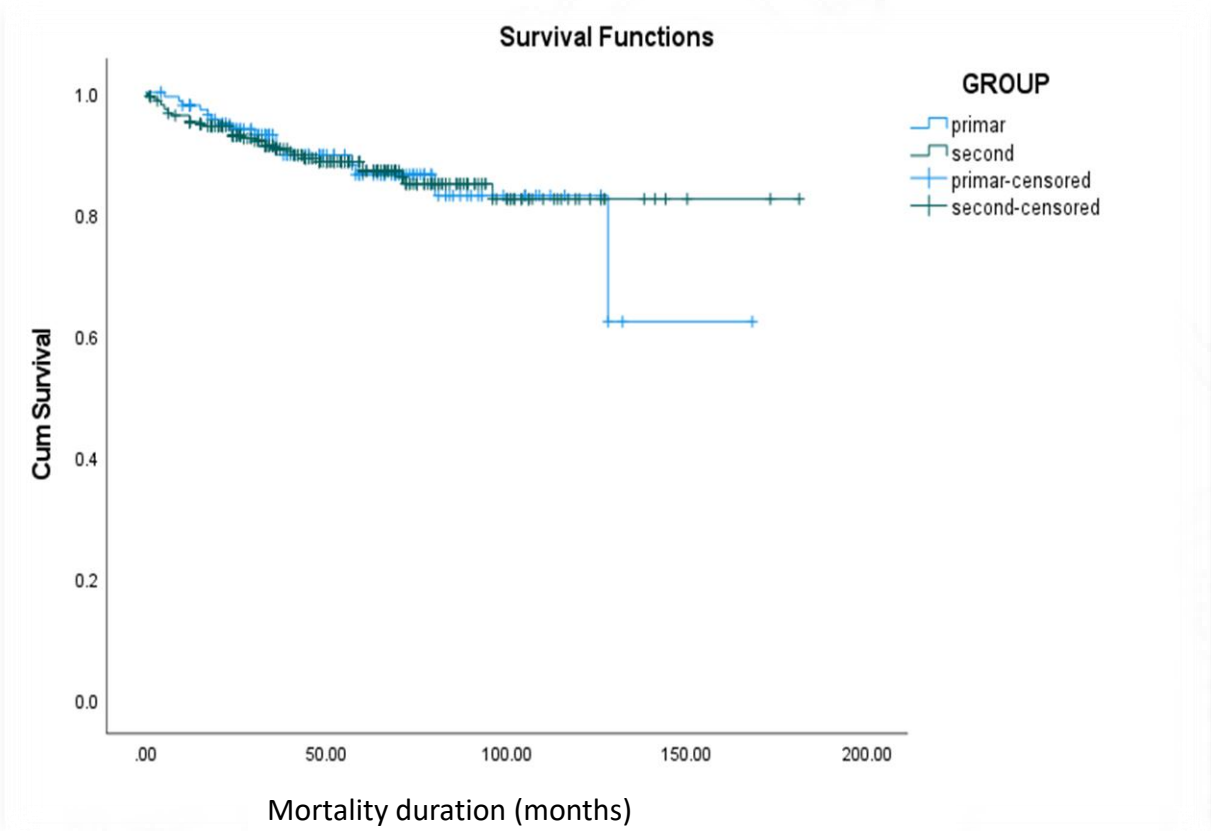


Figure: 11

Kaplan–Meier curves of Appropriate shock for primary and secondary prevention (ICD vs. CRT-D) implantable cardioverter-defibrillator recipients.

Log rank=0.001

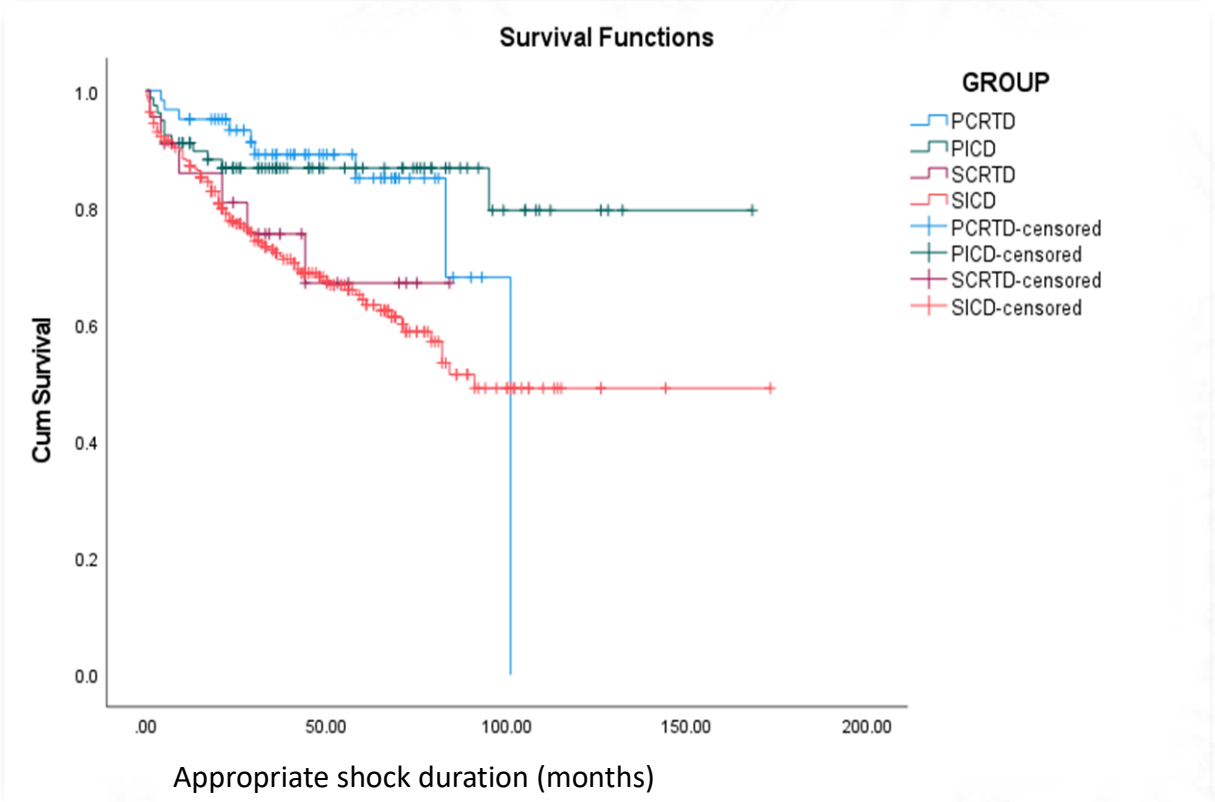
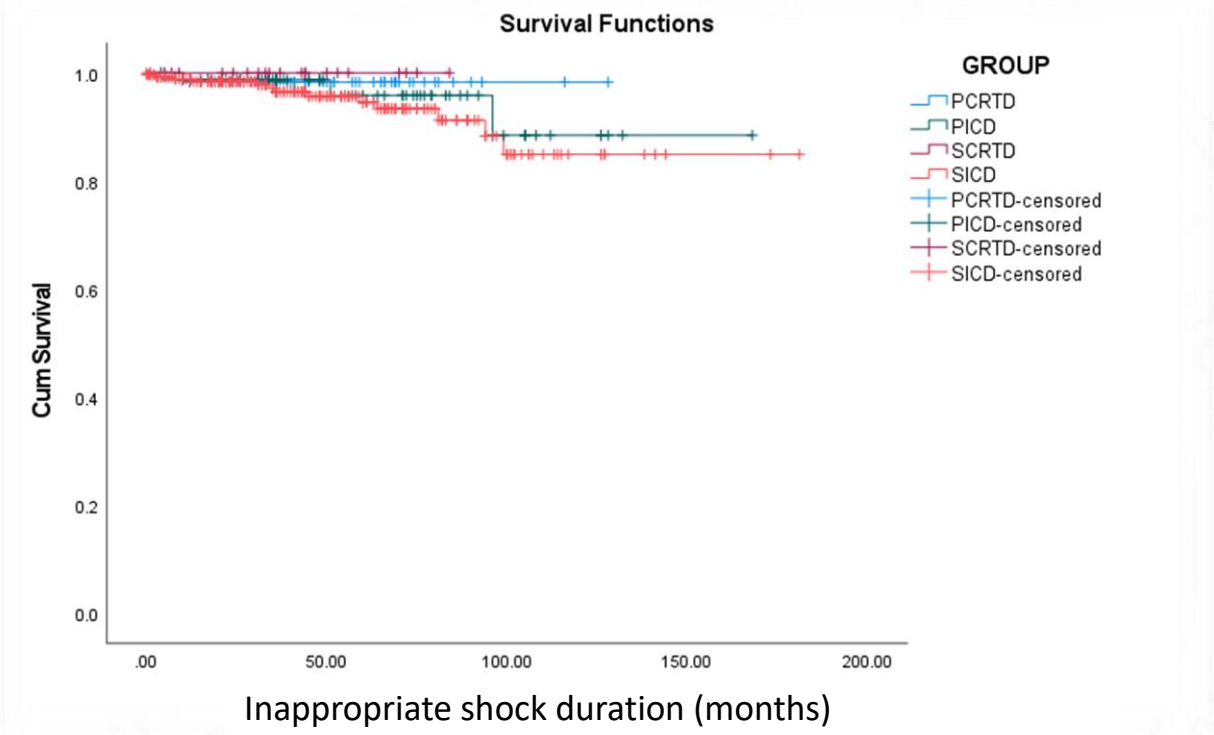


Figure: 12

Kaplan–Meier curves of inappropriate shock for primary and secondary prevention (ICD vs. CRT-D) implantable cardioverter-defibrillator recipients.

Log rank=0.580



Inappropriate shock duration (months)

Figure: 13

Kaplan–Meier curves of mortality for primary and secondary prevention (ICD vs. CRT-D) implantable cardioverter-defibrillator recipients.

Log rank=0.27

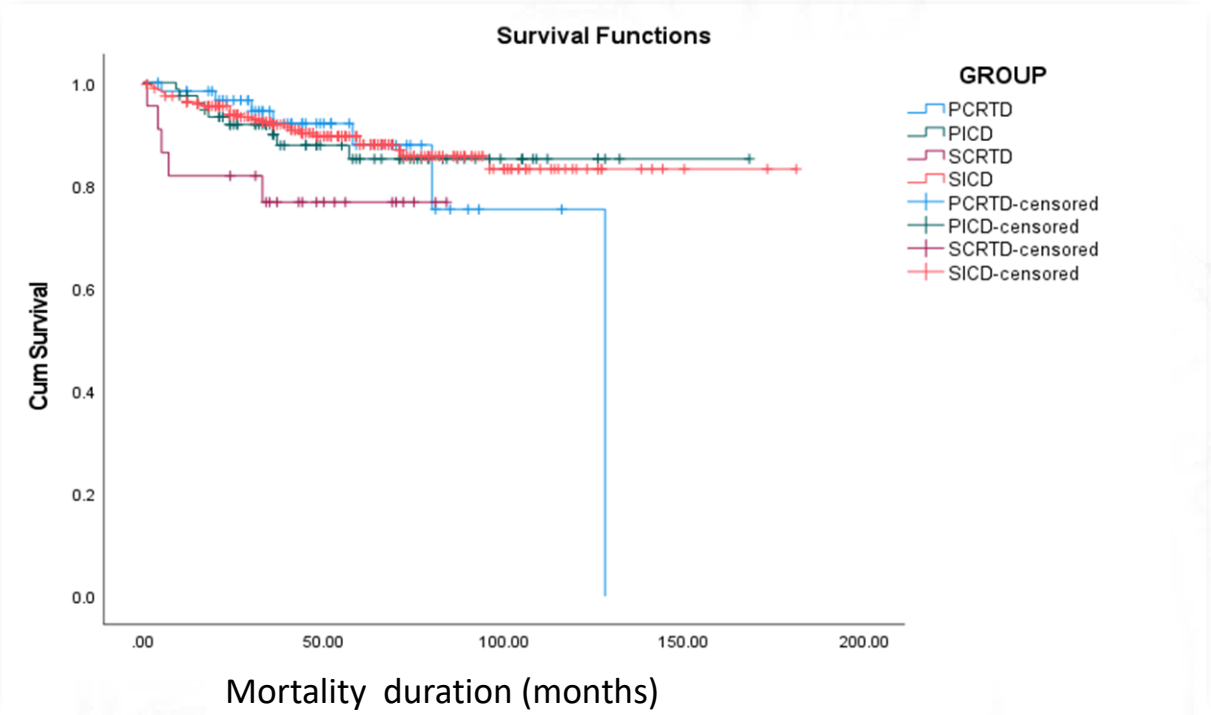


Table 11: Baseline characteristics of ICD patients (without CRT-D, channelopathy, HCM, Sarcoidosis,ARVD,brugada)

Total patients 221	Primary Prevention n(%) 40(18)	Secondary Prevention n(%) 181(82)	P VALUE
Male gender, n(%)	35(87)	167(92)	
Age (in years), mean±SD	54+/-11	57+/-10	0.09
NYHA functional class			
I n(%)	6(15)	2(1)	**<0.01**
II n(%)	28(70)	167(91)	**<0.01**
III n(%)	6(15)	11(6)	**0.055**
IV n(%)	0	1	
Clinical characteristics			
Prior AF n(%)	10(25)	10(5)	<0.01
DM n(%)	9(22)	54(30)	0.35
HTN n(%)	15(37)	90(49)	0.16
CKD n(%)	9(22.5)	28(15)	0.28
DLP n(%)	17(42)	83(46)	0.69
CAD+LVD n(%)	30 (75)	167(92)	**0.01**
NIDCMP n(%)	10 (25)	14(8)	**0.01**

Patients with primary prevention have significantly better NYHA functional class (p=<0.01) and significantly higher NICMP (p=0.01) and AF history (p=0.01) than the secondary prevention group.

Table 12

Baseline ECG & ECHOCARDIOGRAPHIC parameters of ICD patients (without CRT-D, channelopathy, HCM, Sarcoidosis, ARVD, Brugada)

	Primary Prevention	Secondary Prevention	P-value
ECG parameters			
QRS duration(ms)	116+/-12	121.4+/26	**0.069**
<120	25(62)	99(54)	**0.36**
120-150	12(30)	48(26)	**0.65**
>150	3(7)	27(14)	**0.21**
QTc (ms) mean+/- SD	445+/-34	449.7+/-40.5	**0.5**
LBBB	5(10)	20(11)	**0.79**
RBBB	13(32)	29(16)	**0.01**
IVCD	3(7.5)	13(7.1)	0.91
ECHO parameters			
LVEF(%)	35+/-8	40+/-12	**0.01**
>50	1(2.5)	37(20)	**0.006**
50-30	25 (62.5)	104(57)	0.55
<30	14(35)	41(22)	**0.10**

On echocardiographic parameters, LVEF was significantly lower (35±8 vs. 40±12) than the secondary prevention group.

Table 13

BASELINE MEDICATIONS of ICD patients (without CRT-D, channelopathy, HCM, Sarcoid,ARVD,Sarcoidosis)

MEDICATIONS	Primary Prevention	Secondary Prevention	P Value
Amiodarone n(%)	18(45)	146(81)	**<0.01**
Beta blocker n(%)	30(75)	157(87)	0.06
ACE/ARB n(%)	30(75)	122(68)	0.34
MRA n(%)	27(67)	98(54)	**0.12**
Statin n(%)	26(65)	130(72)	0.39
Diuretics n(%)	27(68)	103(57)	**0.21**
Digoxin n(%)	11(27)	10(4)	**<0.01**
Antiplatelets n(%)	23(57)	127(70)	0.12
Sotalol n(%)	0	0	
Ranolazine n(%)	1	4	0.91
Mexiletine n(%)	0	3	

Use of amiodarone was significantly higher in secondary prevention than primary prevention (81% vs. 45%) P=<0.01, use of digoxin was significantly higher in primary prevention than secondary prevention group.

Table 14

Baseline EPS parameters of ICD patients (without CRT-D, channelopathy, HCM, Sarcoid, ARVD, Brugada,Sarcoidosis)

EPS & ICD Implantation	**Primary Prevention**		**Secondary prevention**		**P value**
Induction n(%)	13(32)		33(81)		0.02
	VT induced	VT not induced	VT induced	VT not induced	
	11(27)	2(15)	27(15)	6(18)	0.03
Ablation n(%)	2(15)		11(33)		0.79
DFT n(%)	4(10)		23(12.7)		**0.63**
Single Chamber ICD n(%)	35(87)		158(87)		**0.91**
Dual Chamber ICD n(%)	8(20)		8(4)		(<0.01)
CRT D n(%)	-		-		

VT induction was significantly higher in primary prevention than the secondary prevention group 27% vs.15% P=0.03. The use of dual-chamber ICD was significantly higher in the primary prevention group. (20% vs.4%)

Table 15 shock analysis of AICD patients (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

Parameters	Primary prevention	Secondary prevention	P value
Appropriate Shock at VT CL mean+/-SD	292+/-30	326+/-74	**0.04**
Inappropriate shock at Tachycardia CL Mean +/- SD	375	392+/-67	**0.11**
Avg. Time to first appropriate shock (months) median(IQR)	25(17-45)	36(19-57)	**0.64**
Avg. Time to first inappropriate shock(months) median(IQR)	34(23-50)	41(23-65)	0.3

Patients with primary prevention having first appropriate shock at faster VT CL than secondary prevention (292±30 vs.326±74). Time to first AICD shock after AICD implantation was not significantly different in between both the groups. However, it was earlier in the primary prevention group.(34, IQR 21-50months, vs. 41, IQR 23-65, months)

Table 16: shock outcomes (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

Secondary Outcome	Total	Primary prevention 40	Secondary prevention 181	P-value
Appropriate shock n(%)	65(29)	7 (17.5)	58(32.5)	0.06
Inappropriate shock n(%)	6(2)	1(2.5)	5(2.7)	0.90

In patients with secondary prevention, the appropriate shock tended to significant than the primary prevention group. P=0.06. The inappropriate shock was statistically not significant between both groups.

Table 17: Mortality analysis (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

Primary Outcome	Total	All shock(app+inapp) 46	No shock 181	P Value
Mortality n(%)	28 (12.6)	9(19.5)	19(10.4)	0.09

Mortality was higher in those who received a shock; however, it was statistically not significant. P=0.09

Table 18 predictors of appropriate shock (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

N=217	APPROPRIATE SHOCK 65(30)	NO SHOCK 152(70)	P VALUE
CLINICAL PARAMETERS			
Male gender n(%)	64(98)	138(63139/1)	0.04
NYHA functional class			
I n(%)	1	7	0.27
II n(%)	59	133	0.48
III n(%)	4	12	0.65
IV n(%)	1	0	NS
DM n(%)	18	44	0.85
HTN n(%)	27	76	0.25
CKD n(%)	13	22	0.31
DLP n(%)	26	72	0.31
CAD LVD n(%)	54(83)	139(91)	0.07
NICMP n(%)	11(13)	13(8)	0.07
History of AF n(%)	2	14	0.11

Table 19 predictors of appropriate shock (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

	Appropriate shock	No shock	P Value
QRS duration(ms)mean+/-SD	124.4+/-29.7	118.8+/-23.3	0.13
<120 n (%)	34	88	0.44
120-150 n (%)	15	45	0.32
>150 n(%)	10	18	0.47
QTc (ms)mean+/-SD	456.6+/-36	446.1+/-40.7	0.07
LBBB n(%)	4(6)	28(18)	**0.01**
RBBB n(%)	16(24)	18(11)	**0.01**
IVCD n(%)	4	12	0.64
LVEF n(%)	37+/-10	40.18+/-12.10	0.06
>50 n(%)	7	28	0.16
50-30 n(%)	35	92	0.36
<30 n(%)	23(65)	32(21)	0.026
LVEF<50%	58(89)	124(82)	**0.16**

Table 20 predictors of appropriate shock (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

MEDICATIONS	Appropriate shock	No Shock	
Amiodarone n(%)	54(83)	107(70)	**<0.01**
Beta blocker n(%)	56	127	0.62
ACE/ARB n(%)	49	99	0.13
MRA n(%)	44	79	0.03
Statin n(%)	44	109	0.55
Diuretics n(%)	47(72)	80(52)	**0.007**
Digoxin n(%)	7	13	0.60
Sotalol n(%)	0	0	-
Ranolazine n(%)	0	4	-
Mexiletine n(%)	1	2	0.9

Table 21 Predictors of appropriate shock (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

EPS & AICD implantation	Appropriate shock	No Shock	p Value
Induction n(%)	20(31)	26(17)	0.02
Induced n(%)	17(26)	21(14)	0.02
Ablation n(%)	6(7)	7(4)	0.18

SC ICD n(%)	62(95)	139(91)	0.30
DC ICD n(%)	3(4)	13(8)	0.30

Table 22 Multivariate analysis of Appropriate shock (Without CRT-D/HCM/Channelopathy/ARVD/Brugada/Sarcoidosis)

Parameter	**HR(95%CI)**	**P value**
Amiodarone	**1.7(0.9-3.0)**	**0.06**
LVEF<30	**1.6(1.07-2.42)**	**0.02**
Diuretic use	**1.8(1.1-2.5)**	**0.01**
LBBB	**0.37(0.14-0.96)**	**0.04**
RBBB	1.75(1.14-2.70)	0.01
Induction	1.6(1.09-2.54)	0.01
Induced VT	1.6(1.06-2.56)	0.01

On univariate & multivariate analysis, LVEF<30, induction of VT before ICD implantation, baseline RBBB, use of diuretics & amiodarone was significantly associated with future risk of appropriate shock. (P<0.05)

Table 23 Multivariate analysis of inappropriate shock

Predictors of Inappropriate Shock	**HR**	**P value**
AF	4.43(0.88-22.35)	0.07
LBBB	0.88(0.10-7.33)	0.91
QRSd >150	6.5(1.4-30)	0.01

On multivariate analysis, QRSd>150 was a significant predictor for future risk of receiving an inappropriate shock. In addition, the history of prior AF tended to be a significant predictor.

DISCUSSION

The main findings of the current study of mean follow up of 4.4+/-2.7-years (median 48 months) of the total of 428 primary and secondary prevention ICD patients can be summarized as follows:

(i) Patients treated for secondary prevention experienced appropriate AICD shock more often.

(ii) The long-term risk for all-cause mortality was comparable for both groups.

(iii) No differences were demonstrated in the incidence of inappropriate shocks.

The current study is of additive value to the contemporary literature since it assesses long-term follow-up in an Indian population of primary and secondary prevention ICD recipients in general practice outside the clinical trial setting.

Survival in implantable cardioverter-defibrillator recipients-

Previous large randomized clinical trials for primary and secondary prevention have demonstrated improved survival in patients treated with ICD therapy. [21],[7] The initial trials on the secondary prevention of sudden cardiac death reported all-cause mortality rates ranging from 16 to 36% over 18 to 57 months, respectively. [14]. On the other hand, primary prevention trials demonstrated mortality incidences ranging from 14% to 23% over 20 to 39 months of the follow-up period, respectively. [15]

In the current study, comparable mortality rates were observed. During the long-term follow-up of 1913 patient-years, 11.7% of secondary prevention patients died compared with 11.3 % of primary prevention patients. Primary prevention ICD patients have more advanced heart disease, making them vulnerable to increased risk for non-arrhythmic death. In contrast, secondary prevention ICD recipients exhibited a higher risk of life-threatening arrhythmic events than primary prevention patients, as can be assessed from higher incidences of appropriate AICD shock. A study by Guido H. van Welsenes et al. with a total of 2134 ICD recipients (average follow-up of 3.4+2.8 years).

The 5-year reported cumulative incidence of mortality was 25% and 23% for primary prevention & secondary prevention patients, respectively.

Furthermore, by reducing sudden cardiac death, CRTD, as compared with CRTP, reduces all-cause mortality. [22] Altogether, this may change the mode of death in the CRT D group of patients. In the current study, the primary prevention group experienced more non-cardiac causes of death as CRT-D were implanted significantly higher in the primary prevention group. In the secondary prevention group, the commonest cause of mortality was congestive heart failure (47%), followed by VT storm (29%). Notably, sudden cardiac death occurred in 6 % of cases, comparable to another retrospective study. [50] Death often involves the interplay of several contributing factors, and these are not always easily discernible. For example, reducing sudden cardiac death by implantation of ICDs leads to an increase in other modes of death; in the primary-prevention ICD population, heart failure contributes to 25% of death & 75% of patients died of non-cardiac causes. Nevertheless, our data also highlight the importance of optimal management of heart failure. However, this also indicates a more restrictive approach to ICD implantation in our cohort**.**

Occurrence of an appropriate and inappropriate implantable cardioverter-defibrillator shock

Germano et al. evaluated the incidence of appropriate & inappropriate therapy in seven major primary and secondary prevention ICD trials. They reported appropriate ICD therapy rates ranging from 54% during 45 months of follow-up to 64% during 36 months of follow-up in secondary prevention trials. Lower incidences were reported ranging from 17% over 29 months of follow-up to 31% over 24 months of follow-up in primary prevention trials. The reported prevalence of appropriate ICD therapy was significantly higher in survivors of cardiac arrest or life-threatening arrhythmias. Primary prevention patients received less shock than the secondary prevention group, which can be explained by the fact that these patients have different AICD programming compared to the secondary prevention AICD group. In our study, during a total

of 1913 patient-years (mean: 4.46±2.69 years, median of 4 years n=428), the incidence of appropriate shock was 14.5 % & 30% in primary & secondary prevention groups, respectively. The total incidence of shock in our entire cohort was 56.9/1000 patient-years. The cumulative incidence of appropriate shock after one year & five years was 7.69% & 27.4 %, respectively; in the primary prevention group & in the secondary prevention group incidence of appropriate shock was 13.5% after one year & 53.4% after five years. The cumulative incidence of inappropriate shock was 1% & 9% after 1 year & 5 year respectively in secondary prevention group & in primary prevention group it was & 1.5% & 5.7% after 1 year & 5 year respectively. As atrial fibrillation & SVT accounts for the strongest predictor for inappropriate shock. The lower incidence of atrial fibrillation, better use of guideline-directed medical therapy & better discrimination between supraventricular tachyarrhythmia from ventricular arrhythmia accounts for a lesser incidence of inappropriate shock in our cohort.

Predictors-

On multivariate analysis, we found that patients receiving an appropriate ICD shock tended to have LV dysfunction (<50%), diuretics & amiodarone use was significantly higher among them.

A meta-analysis study of 1463 patients by Emily P. Zeitler et al. found that LV dysfunction was a significant predictor of appropriate shock.[51]. Another study by Leonard Bergau et al. [52] also mentioned impaired LV function as a predictor of appropriate AICD shock. Ventricular tachycardia (VT) is common in patients with heart failure. Larger infarcts with more significant left ventricular systolic dysfunction are more likely to be associated with VT. On observing the ionic mechanism, increased calcium leak seems relevant for arrhythmias in patients with LV dysfunction. This results from the activation of NCX: Ca2+ leaking out of the Sarcoplasmic Reticulum, which activates NCX to remove Ca2+ from the cytosol in exchange for Na+. Since NCX is electrogenic (3 Na+

versus 1 Ca2+), this results in a net inward current generating the so-called delayed afterdepolarizations (DADs) as a trigger of arrhythmia.

We concluded that amiodarone was a confounding factor for appropriate shock. Patients who received an AICD for secondary prevention have received a higher percentage of amiodarone for VT prevention than those who received AICD for primary prevention. The use of diuretics also accounts for a confounder as those group of patients has significantly lower LVEF.

Inappropriate shocks were relatively uncommon in both groups of ICD recipients, occurring in 5.7% of primary prevention patients and 9% of secondary prevention patients after five years of follow-up.

The study by Dominic A.M.J et al. mentioned that the incidence of inappropriate ICD therapy was 14% at a mean follow-up of 22+/-16 months. Germano et al. reviewed the seven major trials & mentioned, Inappropriate ICD therapies occurring in 10% to 24% of patients over 20 to 45 months of follow-up.[53] It should be noted that both groups in our study had a similar risk for experiencing inappropriate shocks. Previously reported studies in the literature to characterize patients who experience inappropriate shocks as the history of atrial fibrillation, younger patients with non-ischaemic heart disease, and smoking.[54] [55] [56]. In our study, Atrial fibrillation was the only risk factor for an inappropriate shock on multivariate analysis. Thus, unlike with the occurrence of appropriate ICD therapy, which is predicted by poor cardiac function, inappropriate ICD therapy occurs mainly due to atrial fibrillation or erroneous discrimination of supraventricular arrhythmias. As we know, the incidence of VT is significantly higher in the specific genetic cause of cardiac disorders (Brugada/Sarcoidosis/ARVD/HCM/Long QT) & also use of CRT-D may alter the natural history in patients with LV dysfunction. Hence we analyzed the data after removing them. It was observed that RBBB also came as a predictive factor for appropriate AICD shock. Anatomically right bundle branch and left anterior fascicle, commonly perfused by proximal septal perforating branch of the left anterior descending (LAD) coronary artery but not the left posterior fascicle.[57] Thus, proximal LAD occlusions should cause right bundle branch

block not left bundle branch block. Hence it can be postulated baseline RBBB with LVD can be a predictive factor for appropriate shock.

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LIMITATION

1. It is a single-center study. From tertiary center hospital involves high-risk population.

2. It is a retrospective analysis of AICD recipients; the data collection involves accurate documentation of follow-up records.

3. Out-of-hospital mortality patterns were assessed based upon a clinical questionnaire which may not reflect the actual mortality pattern.

4. Since patients were collected over a long period between 1997-2020, evolving guidelines have changed over this period & could have been created a heterogeneous population.

CONCLUSION

During long-term follow-up of ICD recipients, we have observed:

1. Compared to the primary prevention AICD recipient group, the secondary prevention group exhibited a higher risk of appropriate therapy.

2. Both groups showed lower & similar occurrences of inappropriate shocks.

3. The primary prevention group has significant shock-free survival compare to the secondary prevention group.

4. Prior VT ablation does not have any impact on shock outcomes.

5. The use of amiodarone came out to be a risk factor for an appropriate shock. However, its use signifies a higher burden of ventricular arrhythmia in those patients rather than a causative factor for appropriate shock.

6. The use of diuretics also came as a predictive factor for appropriate shock; however, it should be count as a confounding factor, as those patients have significantly lower LVEF.

7. Among SVT, AF was the most cause for inappropriate shock, followed by device sensing related issues.

8. DFT does not have any impact on shock or mortality outcomes.

9. LV dysfunction <50% is a significant predictor for appropriate shock.

10. Prior history of Atrial fibrillation was the only significant predictor of inappropriate shock.

11. The secondary CRT-D group has lesser freedom from mortality than primary CRT-D and ICD for the primary & secondary prevention group. However, it was statistically not significant.

12. Mortality incidence was comparable between both groups. Freedom from mortality was not significantly different in both the group.

13. Appropriate shock has a significant impact on mortality. In comparison, inappropriate shock does not affect mortality.

14. The use of anti heart failure medications (ACE/ARB, digoxin, MRA, diuretics) also came as a predictor of mortality. However, these medications improve mortality; their use signifies a sicker group of patients.

15. NICMP patient has more impact on mortality compared to the ischemic group of patients.

16. The mortality pattern was different in both groups. However, the primary prevention group had a higher incidence of non-cardiac deaths than the secondary prevention group, where a higher incidence of cardiac deaths was observed.

17. The incidence of SCD, VT storms was significantly higher in the secondary prevention group.

18. After removing CRT-D HCM, Brugada/Sarcoid/Chennelopathy/ARVD. It was observed that RBBB is a predictive factor for appropriate shock. Wider QRSd>150ms also accounts for predicting inappropriate shock.

SUMMARY

We analyzed the mortality & shock outcomes of 428 patients who received ICD treatment during the study period of 1997-2020.

1. Of the total, 12 (3%) patients were lost to follow-up, of whom 9 (75%) patients received an ICD for secondary prevention and 3 (25%) patients for primary prevention. The study population and had a mean follow-up duration of 4.4+/-2.7 years (median of 4 years).

2. Of the total, 10% of patients were diagnosed with a congenital monogenetic cardiac disease (Brugada, Long QT, Sarcoidosis, ARVD). In addition, 8.8% were HCM, 14% were NICMP, 56% were having a diagnosis of CAD with LV dysfunction, 2% were diagnosed as sarcoidosis.

3. In the primary prevention group, the mean LVEF of NICMP & CAD with LVD patients was 30.4±7.7% & 30.9±8.8%, respectively.

4. Based on a prior history of resuscitated cardiac arrest or sustained ventricular arrhythmia, patients were divided into primary prevention and secondary prevention.

5. 32.3% of patients received ICD for primary prevention, 67.7% patients received ICD for secondary prevention.

6. The mean age of implantation was 54±12 years in the primary prevention group & 55±11.7 years in the secondary prevention group.

7. CRT-D was implanted significantly higher in the primary prevention group compared to the primary prevention group. (44% vs 7.7%)

8. Single chamber AICD was implanted significantly higher in the secondary prevention group compared to the primary prevention group. (84% vs 44%).

9. On baseline LBBB, LVEF <30%, higher NYHA class III or more were significantly higher in the primary prevention group than the secondary prevention group.

10. 25% of patients underwent VT induction in primary prevention compared to 23% in secondary prevention. 2% & 4% patients had VT ablation prior to ICD implantation in primary & secondary prevention group respectively.

11. The use of anti-heart failure medications (MRA, digoxin, ACE/ARB, diuretics) was significantly higher in the primary prevention group. The use of amiodarone was considerably higher in the secondary prevention group.

12. On 1913 patient-years follow-up, we observed 11.7% mortality in the secondary prevention group compared with 11.3 % of the primary prevention group.

13. We have observed different mortality patterns in both groups. For example, non-cardiac death was the most common mode of death in primary prevention & CCF was the most common mode of death in the secondary prevention group.

14. LV dysfunction, ACE/ARB/diuretics/ MRA/Digoxin, appropriate shock, NICMP were predictors of mortality.

15. During the 1913 patient-years follow-up, the appropriate shock was 14.5 % & 30% in primary & secondary prevention groups, respectively. Thus, the total incidence of shock in our entire cohort was 56.9/1000 patient-years.

16. The cumulative incidence of appropriate shock after one year & five years was 7.69% & 27.4 %, respectively, in the primary prevention group, & in the secondary prevention group, it was 13.5% after one year & 53.4% after five years.

17. The cumulative incidence of inappropriate shock was 1% & 9% after 1 year & 5 year respectively in secondary prevention group & in primary prevention group it was & 1.5% & 5.7% after 1 year & 5 year respectively.

18. The primary prevention group gets the first appropriate shock earlier at a median time duration of 11 months (IQR 4.75-29.75) compared to 36 months (IQR 18—61) in the secondary prevention group.

19. Patients with primary prevention received shock with significantly shorter tachycardia cycle length (285.1+/-27.77 ms) than the secondary prevention group (323.6+/-78.68 ms).

20. Patients with LV dysfunction, use of diuretics & amiodarone were predictors of appropriate shock.

21. History of prior AF was a predictor of inappropriate shock.

22. After separating the patients with CRT-D, channelopathies, HCM, Brugad Sarcoid & ARVD, the patient with induced VT was an additional

significant predictor of appropriate shock & wider QRS >150 significant predictor of inappropriate shock.

23. In the cohort without CRT-D & ICD with monogenic causes of VT, it was observed, using dual-chamber AICD was significantly higher in primary prevention (20% vs. 4%). However, the incidence of AF was lower in both groups. (2.5% vs. 2.7% P=>0.05)

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APPENDIX

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम
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Institutional Ethics Committee

(IEC Regn No. ECR/189/Inst/KL/2013/RR-16)

SCT/IEC/1480 /NOVEMBER-2019 27.11.2019

Dr. Harsh Kumar Pandey
Resident
Department of Cardiology
SCTIMST, Thiruvananthapuram

Dear Dr. Harsh Kumar Pandey,

The Institutional Ethics Committee reviewed and discussed your application to conduct the study entitled "ASSESSMENT OF APPROPRIATE SHOCK IN INTRA CARDIAC DEFIBRILLATOR (ICD) RECIPIENTS (IEC/1480)" on 5th November, 2019.

The following documents were reviewed:

Original submission

1. *Covering Letter addressed to the Chairperson, IEC, SCTIMST dated 25.09.2019 with checklist*
2. *Forwarding Letter from the HOD*
3. *TAC Approval Letter*
4. *IEC Application Form*
5. *Project Proposal*
6. *Proforma*
7. *CV of Principal Investigator and Co-Principal Investigators*

Revised submission

1. *Covering Letter addressed to the Chairperson, IEC, SCTIMST dated 25.11.2019 with checklist*
2. *Forwarding Letter from the HOD*
3. *TAC Approval Letter*
4. *IEC Application Form*
5. *Project Proposal*
6. *Proforma*
7. *CV of Principal Investigator and Co-Principal Investigators*

The following members of the Ethics Committee were present at the meeting held on 5th November, 2019 at G. Parthasarathi Board Room, AMCHSS, SCTIMST

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation wit Institution(s)
1.	Dr. R V G Menon	M Tech, PhD	Male	Lay Person (Chairman)	No
2.	Dr. Kala Kesavan. P	MBBS, MD	Female	Basic Medical Scientist	No
3.	Dr. K R S Krishnan	M.E., Ph.D.	Male	Medical Technology	Yes
4.	Dr. Harikrishna Varma PR	Ph.D(Materials Science)	Male	Medical Technology	Yes
5.	Dr. S S Giri Sankar	LL.M. Ph.D.	Male	Legal Expert	No
6.	Dr. V. Raman Kutty	M D, M Phil, M P H	Male	Health Sciences Expert/Clinician	Yes
7.	Dr. Aneesh V Pillai	BA. LLB (Hons.), LLM, Ph. D, SET (Law)	Male	Legal Expert	No
8.	Smt. Sathi Nair	MA (English Literature)	Female	Lay Person	No
9.	Dr. P. Manickam	BSMS, MSc (Epid)..PhD	Male	Health Science Expert/ Social Scientist	No
10.	Dr. Harikrishnan S	MD, DM (Cardiology) DNB (Cardiology)	Male	Clinician	Yes
11.	Mr. Satheesh Chandran	MSW, PGDPM	Male	Lay person/ NGO/ Social Scientist	No
12.	Dr. Christina George	MD Psychiatry	Female	Clinician	No
13.	Dr. Mala Ramanathan	PhD	Female	Social Scientist (Member Secretary)	Yes

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:
The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Mala Ramanathan
Member Secretary, IEC

Technical Advisory Committee (Clinical Studies)

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM – 695011, INDIA

TAC Registration No: SCT-/S/2019/944 **Date: 14.06.2019**

Project title: ASSESSMENT OF APPROPRIATE SHOCK IN INTRA CARDIAC DEFIBRILLATOR (ICD) RECIPIENTS

Principal Investigator:	
Dr. Harsh Kumar Pandey Resident, Department of Cardiology, SCTIMST	Degree: MBBS, MD MEDICINE
Co-Principal Investigator(s)	
Dr. V. K. Ajit Kumar Professor , Department of Cardiology, SCTIMST	Degree: MBBS, MD, DM CARDIOLOGY
Dr. Krishna Kumar M. ADULT CARDIAC ELECTROPHYSIOLOGY(UNIVERSITY OF TORANTO) Assistant Professor , Department of Cardiology, SCTIMST	Degree: MBBS, MD, DM CARDIOLOGY, FELLOWSHIP IN

Members who participated in the TAC meeting on 01/06/2019

Dr. Rupa Sreedhar (Chairperson)
Dr. Sankara Sarma P
Dr. Prasantakumar Dash
Dr. Sylaja. P.N
Dr. Ashalatha
Dr. Krishna Kumar K
Dr. Sanjay G
Dr. Bijulal S
Dr. Syam K
Dr. Jayadevan ER
Dr. K. Shivakumar (Member Secretary)

Dr. Jayadevan ER, Dr. Sylaja. P.N, Dr. Bijulal S, Dr. Ashalatha, Dr. Rupa Sreedhar, Dr. Prasantakumar Dash and Dr. Sanjay G stayed away from the proceedings when the projects in which they are involved as investigator were discussed (#921, 925, 929, 934, 937, 938, 942, 943, 945, 948).

Risk Classification of the project (Minimum/ Moderate/ High): Minimum

Requirement of DSMB: No

Recommended members of DSMB: Not applicable

Recommendations of TAC:
Recommended for consideration of IEC in the light of the responses received from the investigator

The PI may note that there can be no additions / alterations in the documents approved by TAC when they are submitted to the IEC.

Signature of the Member Secretary, TAC (Clinical Studies)

Note for IEC
Copy of the investigator's responses to questions/suggestions from TAC is attached (Appendix-1).

Received Harsh Pandey 3/7/19

Appendix-1

1. Please clarify regarding the objective w.r.t these parameters: primary vs secondary prevention ICD, appropriate and inappropriate shocks. Mentioned differently in TAC/ IEC forms

   Answer: Objectives clarified.

2. Questionnaire for telephonic conversation / postal communication may be provided. Please specify if patients will be contacted for data collection, if so, consent forms/ participant information sheet may need to be provided.

   Answer: Patients will not be contacted (telephonic conversation/ postal communication) for data collection.

3. Data entry form does not capture essential variables such as date of ICD implant, underlying heart disease (only IHD is mentioned), rhythm, heart failure, electrolytes, hospitalisation data, acute coronary event, renal function, antiarrhythmic medications used in patients with ventricular arrhythmias other than amiodarone etc. The variables which are known determinants of ICD shocks may be captured.

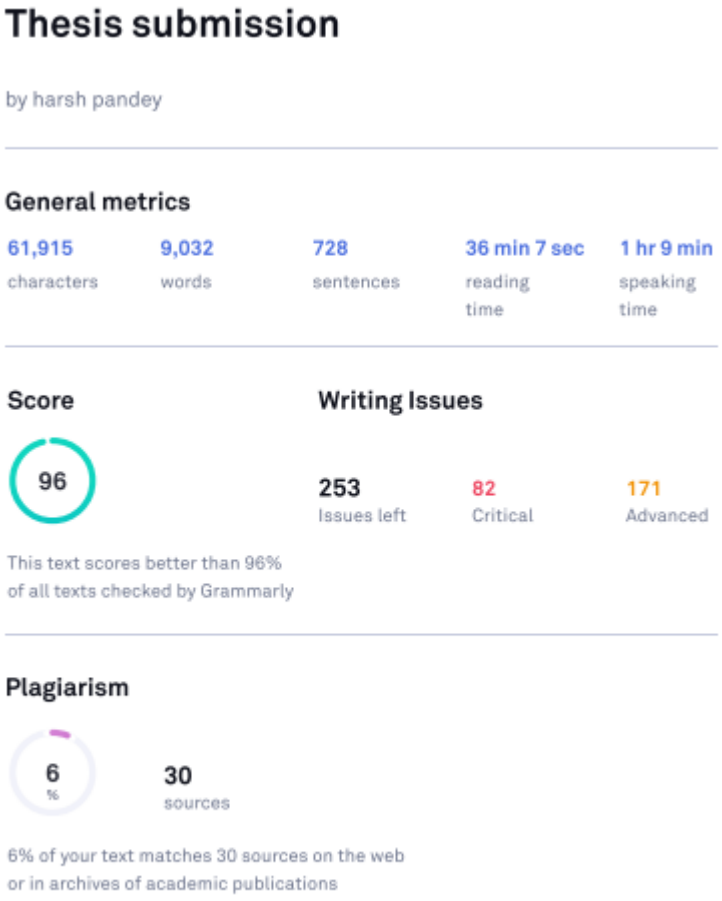
   Answer: Essential variables included in data entry.

Proforma

	PRIMARY PREVENTION GROUP	SECONDARY PREVENTION GROUP	Total patients
NAME			
AGE			
GENDER			
Underlying heart disease			
PRIOR REVASCULARIZATION PCI CABG			
Date of ICD implant			
AGE AT ICD IMPLANT			
UNDERLYING RHYTHM			
Clinical & lab			
HEART FAILURE			
NYHA CLASS			
I			
II			
III			
IV			

LVEF%			
PRIOR SVT			
PRIOR VENTRICULAR ARRHYTHEMIA			
QRS DURATION			
TYPE OF DEVICE SINGLE CHAMBER DUALCHAMBER			
CARDICA MEDICATIONS			
BETA BLOCKER			
ACE INHIBITOR			
ANGIOTENSIN RECEPTOR BLOCKER			
CALCIUM CHANNEL BLOCKER (verapamil/diltiazem)			
STATIN			
DIGOXIN			
AMIODARONE			
CLASS (Ia/Ib/Ic) ANTIARRHYTHMIC			
SOTALOL			
DIURETICS			
HEART FAILURE ADMISSION AFTER ICD IMPLANTATION			
MORTALITY			
APPROPRIATE SHOCK			
INAPPROPRIATE SHOCK			

Plagiarism- 6% (Checked-Grammarly)



Thesis submission

by harsh pandey

General metrics

61,915	9,032	728	36 min 7 sec	1 hr 9 min
characters	words	sentences	reading time	speaking time

Score

96

This text scores better than 96% of all texts checked by Grammarly

Writing Issues

253	82	171
Issues left	Critical	Advanced

Plagiarism

6 %

30 sources

6% of your text matches 30 sources on the web or in archives of academic publications

MASTER CHART

H/N	DATE IMP	LAST VISIT	F/P duration	MORTALITY	DATE	MORTALITY	SHOCK	SHOCK DURA	SHOCK	APPRO	INAPPRO	INAPP DUR	CAUSE	VT CL ms	SUCC	UNSUC	2ND SCHO	DATE	DURATION	VT STORM
8707116	2007-03-21	31-10-17	127.00	0		0	24-9-08	18.00	1	1	0	127.00	3	280	1	0	1	14-02-2011		24-9-08
198888	2010-03-06	15-4-21	181.00	0		0	1-6-11	15.00	1	1	0	181.00	3	370	1	0	1	17-11-2012		12-02-2013
294760	2009-05-14	10-11-20	138.00	0		0	31-5-09	0.53	1	1	0	138.00	3	327	1	0	1	09-10-2011		
308458	2010-03-06	9-9-10	54.00	0		0	14-5-10	2.00	1	1	0	54.00	1	320	1	0	1	08-09-2010		08-09-2010
272267	2007-10-25	29-5-18	127.00	0		0	23-9-11	48.00	1	1	0	127.00	3	320	1	0	1	30-09-2011		24-09-2011
267907	2009-08-13	12-07-15	71.00	1	12-07-15	1	1-2-11	18.00	1	1	0	71.00	3	352	1	0	1	03-08-2013		03-08-2013
348841	2013-01-31	3-11-20	94.00	0		0	17-12-13	12.00	1	1	0	94.00	3	386	1	0	0			17-12-2013
296330	2009-11-09	7-8-19	117.00	0		0	6-4-12	28.00	1	1	0	117.00	3	270	1	0	1	01-11-2012		06-04-2012
346403	2012-06-26	20-10-20	100.00	0		0	8-8-12	1.50	1	1	0	100.00	3	353	1	0	0			
362372	2013-06-05	16-8-19	80.00	0		0	10-3-15	22.00	1	1	0	80.00	3	450	1	0	1	20-06-2019		
386505	2013-01-29	23-6-20	89.00	0		0	20-10-14	21.00	1	1	0	89.00	3		1	0				20-10-2014
257990	2012-10-18	27-10-20	96.00	0		0	6-4-14	18.00	1	1	0	96.00	4	370	1	0				
277446	2009-02-05	1-1-21	141.00	0		0	**1-1-10**	56.00	1	1	0	141.00	3	280	1					
321825	2011-01-19	18-12-19	107.00	0		0	31-7-13	30.00	1	1	0	107.00	3	280	1		1	01-01-2016		
379341	2014-07-22	26-11-19	64.00	0		0	9-7-19	50.00	1	1	0	64	3	261	1		1	26-11-2019		
294375	2011-02-11	11-2-16	65.00	1	26-07-16	1	27-6-16	65.00	1	0	1	64.00	5		0	0				27-06-2016
322512	2011-11-08	1-2-13	15.00	1	01-02-13	1		15.00	0	0	0	15.00	3							
201524	2012-03-01	17-7-20	100.00	0		0		100.00	0	0	0	100.00	3							
8804285	2009-01-24	7-1-14	60.00	0		0		60.00	0	0	0	60.00	3							
295897	2009-05-21	16-5-09	12.00	0		0		12.00	0	0	0	12.00								
292915	2009-08-01	18-4-17	92.00	0		0		92.00	0	0	0	92.00	3							
319737	2010-12-16	8-5-18	89.00	0		0		89.00	0	0	0	89.00								
381397	2014-07-22	27-7-14	12.00	0		0		12.00	0	0	0	12.00								
231222	2004-10-11	7-3-19	173.00	0		0		173.00	0	0	0	173.00								
254766	2010-06-17	15-12-20	126.00	0		0		126.00	0	0	0	126.00								
9601622	2009-01-26	2-7-19	126.00	0		0		126.00	0	0	0	126.00								
365032	2013-08-31	26-4-18	56.00	0		0	na	56.00	0	0	0	56.00								
363280	2013-09-17	15-5-18	56.00	0		0	31-5-15	20.00	1	1	0	20.00	3	315	1	0	1	26-12-2016		01-01-1900
363261	2015-07-07	24.04.2018	33.00	0		0		33.00	0	0	0	33.00								
362781	2013-06-19	1-1-14	12.00	1	01-01-14	1		12.00	0	0	0	12.00				0				
203830	2013-05-30	15-8-20	87.00	0		0	7-8-15	27.00	1	1	0	27.00	1	352	1	0	1	15-10-2015		07-08-2015
344458	2014-07-01	8-2-20	67.00	0		0		67.00	0	0	0	67.00			0	0				
350527	2013-03-05	11-2-20	83.00	0		0		83.00	0	0	0	83.00			0	0				
229777	2013-06-11	1-1-17	48.00	1	01-01-17	1		48.00	0	0	0	48.00			0	0				
189021	2011-07-05	18-2-21	115.00	0		0		115.00	0	0	0	115.00			0	0				
221413	2011-11-07	26-9-20	106.00	0		0	20-7-17	68.00	1	1	1	94.00	1	490	1	0	1	30-09-2017		01-01-1900
245366	2012-03-19	18-8-20	101.00	0		0		101.00	0	0	0	101.00								
288416	2010-10-21	6-8-19	106.00	0		0		106.00	0	0	0	106.00								
362053	2013-07-03	10-3-20	80.00	0		0	27-1-16	30.00	1	1	0	30.00	3	300	1	0	1	11-02-2016		27-01-2016
361039	2013-06-27	28-5-19	71.00	0		0	na	71.00	0	0	0	71.00			0	0				
360754	2013-08-02	30-10-19	74.00	0		0	17-2-17	42.00	1	1	0	42.00	3	352	0	0				17-2-17
355883	2013-01-29	2-6-20	89.00	0		0	na	89.00	0	0	0	89.00			0	0				01-01-1900
355403	2014-06-18	22-5-16	24.00	1	22-05-16	1	na	24.00	0	0	0	24.00			0	0				
355310	2013-01-17	8-7-13	6.00	0		0	na	6.00	0	0	0	6.00				0				
354323	2013-06-28	28-1-20	79.00	0		0	na	79.00	0	0	0	79.00								
340792	2012-02-24	19-9-18	91.00	0		0	23-3-18	61.00	1	1	0	61.00	3	280	1	0	1	15-12-2018		01-01-1900
342444	2012-08-09	27-12-13	16.00	1	27-12-13	1	31-1-13	5.00	1	1	0	5.00	3	330	1	0	1	27-12-2013		
350178	2012-09-20	15-4-21	91.00	0		0		91.00	0	0	0	91.00		0	0	0				
344304	2012-05-17	07-08-2012	3.00	1	01-08-15	1	7-8-12	3.00	1	0	1	3.00	3	0	0	0	1	25-05-2013		
349426	2012-09-12	08-05-2018	69.00	0		0		69.00	0	0	0	69.00								
342253	2012-03-27	01-01-2017	60.00	1	01-01-17	1	01-01-2013	10.00	1	1	0	10.00	3	330	1	0				
341959	2012-03-21	25-9-12	6.00	1	25-9-12	1	21-05-2012	2.00	1	1	0	2.00	3	390	1	0				
9804465	2014-08-19	03-07-2018	47.00	0		0		47.00	0	0	0	47.00								
381810	2014-07-29	05-07-2016	24.00	0		0	01-06-2015	11.00	1	1	0	11.00	3	333	1	0				
381047	2014-08-05	26-06-2014	2.00	1	30-07-14	1		2.00	0	0	0	2.00			0	0				
9801786	22-04-2013	02-02-2021	82.00	0		0	30-01-2014	9.00	1	1	0	9.00	3	320	0	0	1	04-02-2014		01-01-1900
371788	23-01-2014	02-04-2019	63.00	0		0		63.00	0	0	0	63.00			0	0				
367161	17-09-2013	01-07-2014	12.00	0		0	01-04-2014	7.00	1	1	0	7.00	3	350	1	0				01-01-1900
375219	24-02-2014	25-05-2016	27.00	1	27-05-16	1	21-07-2015	17.00	1	1	0	17.00	3	270	0	0				
232746	11.4.06	27-10-2008	30.00	1	16-11-08	1	11-07-2007	15.00	1	1	0	15.00	3	260	1	0	1	28-06-2008		01-01-1900
380579	15-07-2014	08-03-2021	80.00	0		0	30-10-2015	15.00	1	1	0	15.00	3	333	1	0	1	01-11-2015		01-11-2015
388817	06-01-2015	15-12-2020	71.00	0	0	0	0	71.00	0	0	0	71.00			0	0				
388256	13-01-2015	26-02-2021	73.00	0	0	0	0	73.00	0	0	0	73.00		429	0	0				
294148	28-01-2015	23-02-2021	73.00	0	0	0	01-04-2016	14.00	1	1	0	14.00	3	370	0	0				
384817	05-02-2015	06-10-2020	68.00	0	0	0		68.00	0	0	0	68.00			0	0				
390675	06-02-2015	18-02-2021	72.00	0	0	0		72.00	0	0	0	72.00			0	0				
383488	10-02-2015	03-03-2020	61.00	0	0	0		61.00	0	0	0	61.00			0	0				
187180	16-02-2015	17-12-2019	60.00	0		0		60.00	0	0	0	60.00								
389790	24-02-2015	14-07-2015	5.00	1	14-07-2015	1		5.00	0	0	0	5.00								
241956	12-03-2015	02-02-2021	71.00	0	0	0	20-03-2018	71.00	1	0	1	36.00	3	355	0	0				
391817	12-03-2015	06-04-2021	72.00	0		0		72.00	0	0	0	72.00								
387171	17-03-2015	05-11-2019	60.00	0		0		60.00	0	0	0	60.00								
392516	24-03-2015	22-12-2017	24.00	1	22-12-2017	1		24.00	0	0	0	24.00								
384528	22-04-2015	30-03-2021	71.00	0		0		71.00	0	0	0	71.00								
13172	13-05-2015	15-09-2018	40.00	1	19-09-2018	1	11-10-2015	0.43	1	1	0	0.43	1	460	1	0	1	11-10-2015		11-10-2015
396072	08-05-2015	11-02-2021	69.00	0		0		69.00	0	0	0	69.00								
274032	14-06-2008	22-12-2020	150.00	0		0	10-04-2010	22.00	1	1	0	22.00	3	320	1	0	1	20-01-2013		
395438	14-05-2015	01-01-2017	24.00	1	01-01-2017	1		24.00	0	0	0	24.00								
395723	19-05-2015	05-01-2021	68.00	0		0		68.00	0	0	0	68.00								
7762	15-06-2015	08-01-2021	67.00	0		0		67.00	0	0	0	67.00								
395917	07-07-2015	01-10-2019	51.00	0		0		51.00	0	0	0	51.00								
392795	20-07-2015	23-01-2020	54.00	0		0		54.00	0	0	0	54.00								
400196	24-08-2015	23-07-2019	47.00	0		0	23-01-2018	29.00	1	1	0	29.00	3	280						
20931	11-08-2015	12-06-2019	46.00	0		0		46.00	0	0	0	46.00								
398925	04-08-2015	19-01-2021	66.00	0		0		66.00	0	0	0	66.00								
400852	03-09-2015	27-04-2021	67.00	0		0	15-05-2017	20.00	1	1	1	34.00	1	430	1					
9503402	05-10-2015	27-04-2021	66.00	0		0		66.00	0	0	0	66.00								
401183	16-09-2015	18-02-2021	65.00	0		0		65.00	0	0	0	65.00		330						
402802	14-10-2015	04-06-2019	44.00	0		0	13-09-2017	23.00	1	1	0	23.00	3	210	1					
402910	28-09-2015	18-02-2019	41.00	0		0		41.00	0	0	0	41.00		375						
221039	05-10-2015	09-02-2021	64.00	0		0	24-10-2015	5.00	1	1	0	5.00	1	375	1	1				
402987	21-10-2015	16-07-2019	45.00	0		0		45.00	0	0	0	45.00								
210039	09-11-2015	24-07-2019	44.00	0		0		44.00	0	0	0	44.00								
405119	12-11-2015	16-07-2019	44.00	0		0		44.00	0	0	0	44.00								
403562	16-11-2015	27-04-2021	66.00	0		0		66.00	0	0	0	66.00								
403522	23-11-2015	27-04-2021	66.00	0		0		66.00	0	0	0	66.00								
402876	24-11-2015	08-04-2021	65.00	0		0		65.00	0	0	0	65.00								
400520	26-11-2015	04-03-2021	64.00	0		0	25-02-2020	60.00	1	1	0	60.00	3	400	1					
400152	19-11-2015	25-02-2020	52.00	0		0		52.00	0	0	0	52.00								
407026	22-12-2015	07-05-2019	41.00	0		0		41.00	0	0	0	41.00		229						
405175	04-01-2016	01-12-2020	59.00	0		0	25-02-2020	49.00	0	0	0	49.00	3		1					
405845	14-01-2016	29-12-2020	59.00	0		0		59.00	0	0	0	59.00								
409379	10-02-2016	18-02-2021	60.00	0		0		60.00	0	0	0	60.00								
407908	22-02-2016	18-02-2020	48.00	0		0		48.00	0	0	0	48.00								
404249	29-02-2016	17-09-2019	43.00	0		0		43.00	0	0	0	43.00		270						
406224	22-03-2016	07-09-2020	54.00	0		0	26-02-2019	35.00	1	1	0	35.00	3	270						
411958	18-04-2016	29-12-2020	56.00	0		0		56.00	0	0	0	56.00								
415065	11-06-2016	06-01-2021	55.00	0		0	06-05-2018	23.00	1	1	0	23.00	3	280						
415430	25-07-2016	27-04-2021	57.00	0		0		57.00	0	0	0	57.00								
418364	16-08-2016	27-04-2021	56.00	0		0		56.00	0	0	0	56.00								
9707567	12-08-2016	16-03-2021	55.00	0		0		55.00	0	0	0	55.00								
9503292	26-07-2016	09-02-2021	55.00	0		0		55.00	0	0	**0**	55.00								
419203	05-09-2016	12-05-2020	44.00	0		0		44.00	0	0	**0**	44.00								
423812	13-12-2016	22-04-2021	52.00	0		0	29-08-2017	8.00	1	1	**0**	8.00	3	390	1		1	30-10-2018		30-10-2018
421717	20-12-2016	30-03-2021	51.00	0		0	09-01-2017	1.00	1	1	**0**	1.00	3	320						29-08-2017
329910	20-12-2016	27-04-2021	52.00	0		0		52.00	0	0	**0**	52.00								
280878	07-02-2017	15-04-2021	50.00	0		0		50.00	0	0	**0**	50.00								
428037	21-02-2017	11-02-2020	36.00	0		0		36.00	0	0	**0**	36.00								
310409	22-04-2010	28-07-2020	123.00	0		0	09-01-2012	21.00	1	1	**0**	21.00	3	270			1	28-10-2014		
9710605	27-02-2017	17-03-2020	37.00	0		0	07-03-2018	13.00	1	1	**0**	13.00	3	320	1					
282419	14-03-2017	12-01-2021	46.00	0		0	27-05-2017	3.00	1	1	**0**	3.00	1	380	1					27-05-2017
424125	06-04-2017	27-06-2018	12.00	0		0		12.00	0	0	**0**	12.00								
428714	30-03-2017	27-04-2021	48.00	0		0		48.00	0	0	**0**	48.00								
431868	08-05-2017	27-04-2021	48.00	0		0		48.00	0	0	**0**	48.00								
432555	01-06-2017	27-08-2019	26.00	0		0		26.00	0	0	**0**	26.00								
432912	04-07-2017	29-10-2019	27.00	0		0	08-05-2018	10.00	1	1	**0**	10.00	3	388			1	18-09-2018		
349520	12-06-2017	24-07-2021	49.00	0		0	16-06-2017	1.00	1	1	**0**	1.00	1	275			1	09-04-2019		16-06-2017
435290	14-07-2017	27-04-2021	45.00	0		0		45.00	0	0	**0**	45.00								
434049	18-08-2017	07-07-2020	36.00	0		0		36.00	0	0	**0**	36.00								
437416	25-08-2017	24-04-2021	48.00	0		0		48.00	0	0	**0**	48.00								
437623	25-08-2017	27-04-2021	44.00	0		0		44.00	0	0	**0**	44.00								
436596	18-08-2017	19-03-2021	43.00	0		0		43.00	0	0	**0**	43.00								
435132	17-08-2017	28-04-2021	44.00	0		0		44.00	0	0	**0**	44.00								
438480	07-10-2017	27-04-2021	42.00	0		0	25-05-2020	42.00	1	0	**1**	**31.00**	3							25-05-2020
9508413	31-10-2017	23-07-2019	33.00	0		0	21-11-2018	13.00	1	1	**0**	33.00	3	240						
410452	04-11-2017	11-11-2018	12.00	1	11-11-2018	1		12.00	0	0	**0**	12.00								
432244	10-11-2017	24-07-2021	44.00	0		0		44.00	0	0	**0**	44.00								
437783	26-09-2017	11-02-2020	29.00	0		0		29.00	0	0	**0**	29.00								
307681	11-12-2017	01-12-2020	36.00	0		0	17-08-2019	20.00	1	1	**0**	20.00	3	400		1	1	21-11-2019		01-01-1900
442078	23-11-2017	27-04-2021	44.00	0		0		44.00	0	0	**0**	44.00								
438065	01-06-2018	05-06-2020	24.00	0		0		24.00	0	0	**0**	24.00								
443383	09-01-2018	27-10-2020	15.00	0		0		15.00	0	0	**0**	15.00								
445176	22-01-2018	19-01-2021	36.00	0		0		36.00	0	0	**0**	36.00								
443351	22-01-2018	24-11-2020	34.00	0		0	21-07-2019	18.00	1	1	**0**	18.00	3	352						
444054	30-01-2018	30-01-2019	12.00	1	30-01-2019	1	04-12-2018	10.00	1	1	**0**	10.00	3	286						
336772	16-02-2018	08-04-2021	38.00	0		0		38.00	0	0	**0**	38.00								
428615	26-01-2018	28-04-2021	39.00	0		0		39.00	0	0	**0**	39.00								
435300	13-03-2018	02-02-2021	35.00	0		0		35.00	0	0	**0**	35.00								
447513	12-03-2018	28-04-2021	37.00	0		0	12-04-2018	1.00	1	1	**0**	1.00	1	330						12-04-2018
447398	19-03-2018	30-03-2021	36.00	0		0		36.00	0	0	**0**	36.00								
445191	03-04-2018	24-04-2021	36.00	0		0		36.00	0	0	**0**	36.00								
449523	27-04-2018	09-03-2021	35.00	0		0	10-05-2018	1.00	1	1	**0**	1.00	3	392						10-05-2018
447086	30-04-2018	09-03-2021	35.00	0		0	26-06-2018	2.00	1	1	**0**	2.00	1	310			1	11-02-2019		07-07-2018
304444	21-05-2018	23-04-2021	35.00	0		0		35.00	0	0	**0**	35.00								
451790	28-05-2018	09-02-2021	33.00	0		0		33.00	0	0	**0**	33.00								
449802	12-06-2018	09-03-2020	21.00	0		0		21.00	0	0	**0**	21.00								
449139	22-05-2018	24-04-2021	35.00	0		0		35.00	0	0	**0**	35.00								
453755	16-07-2018	21-01-2021	30.00	0		0		30.00	0	0	**0**	30.00								
454826	27-07-2018	24-04-2021	34.00	0		0	**06-11-2020**	20.00	1	1	**0**	20.00	3							
9704950	31-07-2018	24-11-2020	40.00	0		0		40.00	0	0	**0**	40.00								
388166	04-08-2018	17-11-2020	27.00	0		0		27.00	0	0	**0**	27.00								
453824	10-09-2018	04-04-2021	31.00	0		0		31.00	0	0	**0**	31.00								
457245	05-12-2018	05-01-2021	35.00	0		0		35.00	0	0	**0**	35.00								
461486	07-12-2018	24-04-2021	28.00	0		0		28.00	0	0	**0**	28.00								
460746	10-12-2018	10-11-2021	35.00	0		0		35.00	0	0	**0**	35.00								
453097	17-12-2018	05-01-2021	25.00	0		0		25.00	0	0	**0**	25.00								
461507	08-02-2019	04-02-2021	24.00	0		0		24.00	0	0	**0**	24.00								
324867	18-02-2019	21-01-2021	23.00	0		0		23.00	0	0	**0**	23.00								
463233	12-02-2019	24-04-2021	26.00	0		0		26.00	0	0	**0**	26.00								
465004	12-02-2019	24-04-2021	26.00	0		0		26.00	0	0	**0**	26.00								
465207	11-03-2019	28-04-2021	24.00	0		0		24.00	0	0	**0**	24.00								
465964	30-03-2019	24-04-2021	25.00	0		0		25.00	0	0	**0**	25.00								
427106	23-05-2019	28-04-2021	25.00	0		0	28-04-2021	23.00	1	1	**0**	23.00	3	390						
469776	06-06-2019	09-03-2021	21.00	0		0		21.00	0	0	**0**	21.00								
470128	20-06-2018	23-02-2021	32.00	0		0		32.00	0	0	**0**	32.00								
470049	18-07-2019	02-02-2021	19.00	0		0		19.00	0	0	**0**	19.00								
304782	15-07-2019	13-04-2021	21.00	0		0		21.00	0	0	**0**	21.00								
464812	01-08-2019	23-02-2021	18.00	0		0		18.00	0	0	**0**	18.00								
474749	22-08-2019	09-02-2021	18.00	0		0	21-10-2019	2.00	1	1	**0**	2.00	3	383						
472796	26-08-2019	16-02-2021	18.00	0		0		18.00	0	0	**0**	18.00								
473534	03-08-2019	28-04-2021	20.00	0		0		20.00	0	0	**0**	20.00								
475221	25-09-2019	11-02-2021	17.00	0		0		17.00	0	0	**0**	17.00								
371892	23-01-2014	12-01-2018	36.00	1	12-01-2018	1	12-01-2018	36.00	1	1	**0**	36.00	3	p						
372738	11-02-2014	22-04-2021	86.00	0		0	15-09-2017	43.00	1	1	**0**	43.00	3	400						
8600923	01-04-2014	05-01-2021	81.00	0		0		81.00	0	0	**0**	81.00								
377880	23-04-2014	22-11-2016	24.00	0		0		24.00	0	0	**0**	24.00								
380268	09-07-2014	28-04-2021	104.00	0		0	05-12-2017	41.00	1	1	**0**	41.00	3	193						
378334	15-07-2014	28-04-2021	102.00	0		0		102.00	0	0	**0**	102.00								
381837	26-08-2014	12-01-2021	77.00	0		0		77.00	0	0	**0**	77.00								
381111	03-09-2014	14-01-2020	64.00	0		0	26-09-2017	37.00	1	1	**0**	37.00	3	390						
380339	11-09-2014	30-04-2021	104.00	0		0		104.00	0	0	**0**	104.00								
379687	28-10-2014	28-04-2016	24.00	1	28-04-2016	1		24.00	0	0	**0**	24.00								
385203	11-11-2014	16-02-2021	75.00	0		0		75.00	0	0	**0**	75.00								
384287	17-11-2014	28-04-2021	77.00	0		0		77.00	0	0	**0**	77.00								
378404	09-12-2014	27-07-2020	79.00	0		0	06-06-2017	30.00	1	1	**0**	30.00	3	333						
9609256	25-01-1997	**01-01-2005**	96.00	1	01-01-2005	1	20-06-1998	17.00	1	1	**0**	17.00	3	300						
398897	28-07-2015	13-10-2020	63.00	0		0	12-02-2016	7.00	1	1	**0**	7.00	1	286	0		1	31-07-2018		12-02-2016
306260	2010-05-06	1-1-17	80.00	0		0	n	80.00	0	0	0	80.00			0	1				
353914	2012-12-08	15-10-19	82.00	0		0		82.00	0	0	0	82.00			0	0				
360121	09-12-2014	22-09-2020	69.00	0	0	0	0	69.00	0	0	0	69.00			0	0				
313475	2010-07-03	16-6-20	119.00	0		0	19-3-13	32.00	1	1	0	32.00	1	300	1	0				19-03-2013
320707	2012-06-28	17-9-20	93.00	0		0	7-1-20	91.00	1	1	1	99.00	3	285	0	0				
304423	2009-12-10	10-12-15	72.00	1	10-12-15	1		72.00	0	0	**0**	72.00								
211567	09-04-2019	04-05-2021	25.00	0		0	01-05-2019	1.00	1	1	**1**	3.00	1	235						
275501	21-01-2013	04-05-2021	100.00	0		0	0	100.00	0	0	**0**	100.00								
468643	01-08-2019	04-05-2021	20.00	0		0	0	20.00	0	0	**0**	20.00								
469423	14-06-2019	04-05-2021	22.00	0		0	0	22.00	0	0	**0**	22.00								
487295	21-09-2020	03-05-2021	8.00	0		0	0	8.00	0	0	**0**	8.00								
9502425	11-12-2018	12-05-2021	29.00	0		0	0	29.00	0	0	**0**	29.00								
214358	23-03-2017	03-05-2021	50.00	0		0	0	50.00	0	0	**0**	50.00								
298544	09-06-2015	2019	60.00	0		0	0	60.00	0	0	**0**	60.00								
267503	2007	no con	12.00	0		0	0	1.00	0	0	**0**	12.00								
269969	05-08-2007	no con	12.00	0		0	05-08-2007	0.00	1	1	**0**	**12.00**	3	214			1	12-08-2007		12-08-2007
258839	02-04-2019	20-01-2021	21.00	0		0		21.00	0	0	**0**	21.00								
389558	23-12-2014	16-04-2019	52.00	0		0		52.00	0	0	0	52.00								
410241	28-03-2016	23-02-2021	59.00	0		0	09-06-2020	51.00	1	1	1	51.00	3							
395793	12-05-2015	25-09-2020	64.00	0		0	03-09-2015	4.00	1	1	0	4.00	3	333			1	09-04-2019		01-01-1900
298259	16-07-2009	04-02-2021	144.00	0		0		144.00	0	0	**0**	144.00								
330032	23-07-2011	16-03-2021	120.00	0		0	07-10-2011	3.00	1	1	**0**	3.00	1	330						
342983	10-04-2012	21-06-2021	110.00	0		0		110.00	0	0	**0**	110.00								
342664	10-05-2012	10-03-2021	94.00	0		0		94.00	0	0	**0**	94.00								
346113	14-06-2012	30-04-2021	86.00	0		0		86.00	0	0	**0**	86.00								

INAPPRO	cause	CL	date	DATE IMP	MORTALITY	DATE	MORTALITY	AGE	NON CARI	SCD	CCF	VT STORM	INFECTION	LEAD	HEMATOMA	INDUCTION	INDUCED	PRE ABLATE	POST CCF	VT STORM	POST EPS
0				2007-03-21	0		0	0	0	0	0	0	0	0	0	1	1	0	0	14-02-2011	0
0				2010-03-06	0		0	0	0	0	0	0	0	0	0	1	1	0	1	12-02-2013	0
0				2009-05-14	0		0	0	0	0	0	0	0	0	1	0	0	0	0		2
0				2010-03-06	0		0	0	0	0	0	0	0	0	0	0	1	0	1	08-09-2010	0
0				2007-10-25	0		0	0	0	0	0	0	0	0	0	0	0	0		24-09-2011	2
0				2009-08-13	1	12-07-15	1	72	0	0	0	1	0	0	0	0	0	0	0	19-09-2013	1
0				2013-01-31	0		0		0	0	0	0	0	0	0	0	0	0	0	17-12-2013	2
0				2009-11-09	0		0		0	0	0	0	0	0	0	1	0	0		06-04-2012	2
0				2012-06-26	0		0		0	0	0	0	0	0	0	0	0	0	0		0
0				2013-06-05	0		0		0	0	0	0	0	0	0	0	0	0			
0				2013-01-29	0		0		0	0	0	0	0	0	0	1	1	1	0	20-10-2014	2
0				2012-10-18	0		0		0	0	0	0	0	0	0	1	1	1	0		0
0				2009-02-05	0		0		0	0	0	0	0	0	0	1	1	0	0		0
0				2011-01-19	0		0		0	0	0	0	0	0	0	1	1	0			2
0				2014-07-22	0		0		0	0	0	0	0	0	0	0	0	0			0
1	lead#	370	27-06-16	2011-02-11	1	01-01-16	1	75	0	0	0	1	0	2	0	0	0	0		27-06-2016	0
0				2011-11-08	1	01-02-13	1	66	0	0	0	1	0	0	0	0	0	0			
0				2012-03-01	0		0		0	0	0	0	1	0	0	0	0	0	0		
0				2009-01-24	0		0		0	0	0	0	0	0	0	1	1	0	0		
0				2009-05-21	0		0		0	0	0	0	0	0	0	0	0	0			
0				2009-08-01	0		0		0	0	0	0	0	0	0	1	1	0	0		
0				2010-12-16	0		0		0	0	0	0	0	0	0	1	1	0			
0				2014-07-22	0		0		0	0	0	0	0	0	0	0	0	0			
0				2004-10-11	0		0		0	0	0	0	0	1	0	1	1	0			
0				2010-06-17	0		0		0	0	0	0	0	0	0	0	0	0			
0				2009-01-26	0		0		0	0	0	0	0	0	0	0	0	0			
0				2013-08-31	0		0		0	0	0	0	0	0	0	0	0	0			
0				2013-09-17	0		0	0	0	0	0	0	0	0	0	1	1	0		01-01-1900	1
0				2015-07-07	0		0		0	0	0	0	1	1	0	0	0	0			
0				2013-06-19	1	01-01-14	1	1	1	0	0	0	0	0	0	0	0	0			
0				2013-05-30	0		0		0	0	0	0	0	0	0	0	0	0		07-08-2015	2
0				2014-07-01	0		0		0	0	0	0	0	0	0	0	0	0			
0			00-01-00	2013-03-05	0		0		0	0	0	0	0	0	0	1	0	0			
0			00-01-00	2013-06-11	1	01-01-17	1	0	0	0	0	1	0	0	0	0	0	0			
0			00-01-00	2011-07-05	0		0	0	0	0	0	0	0	0	0	0	0	0			
1	SVT	490	18-09-19	2011-11-07	0		0	0	0	0	0	0	0	0	0	1	1	0		01-01-1900	2
0				2012-03-19	0		0		0	0	0	0	0	0	0	0	0	0			
0				2010-10-21	0		0		0	0	0	0	0	0	0	0	0	0			
0				2013-07-03	0		0	0	0	0	0	0	0	0	0	0	0	0		27-01-2016	1
0			00-01-00	2013-06-27	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				2013-08-02	0		0	0	0	0	0	0	0	0	0	1	1	0		17-2-17	1
0			00-01-00	2013-01-29	0		0	0	0	0	0	0	0	0	0	0	0	0		01-01-1900	1
0			00-01-00	2014-06-18	1	22-05-16	1	1	0	0	1	0	0	0	0	0	0	0			
0			00-01-00	2013-01-17	0		0	0	0	0	0	0	1	0	0	0	0	0			
0				2013-06-28	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				2012-02-24	0		0	0	0	0	0	0	0	0	0	0	0	0		01-01-1900	1
0				2012-08-09	1	27-12-13	1	0	0	0	1	0	0	0	0	1	1	1	1		
0			00-01-00	2012-09-20	0		0	0	0	0	0	0	0	0	0	0	0	0			
1	AF	375	07-08-12	2012-05-17	1	01-08-15	1	72	1	0	0	0	0	0	0	0	0	0			
0				2012-09-12	0		0		0	0	0	0	0	0	0	0	0	0			
0				2012-03-27	1	01-01-17	1	62	0	0	0	1	0	0	0	1	1	0			
0				2012-03-21	1	25-9-12	1	62	0	0	1	0	0	0	0	0	0	0			
0				2014-08-19	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				2014-07-29	0		0	0	0	0	0	0	0	0	0	1	1	0			
0			00-01-00	2014-08-05	1	30-07-14	1	70	0	0	1	0	0	0	0	0	0	0	1		
0				22-04-2013	0		0	0	0	0	0	0	0	0	0	0	0	0		01-01-1900	1
0			00-01-00	23-01-2014	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				17-09-2013	0		0	0	0	0	0	0	0	0	0	0	0	0		01-01-1900	1
0				24-02-2014	1	27-05-16	1	56	0	0	0	1	0	0	0	0	0	0			
0				11.4.06	1	16-11-08	1	55	0	0	1	0	0	0	0	0	0	0		01-01-1900	1
0				15-07-2014	0		0	0	0	0	0	0	0	0	0	1	1	0		01-11-2015	1
0				06-01-2015	0	0	0	0	0	0	0	0	0	0	0	1	1	0			
0				13-01-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				28-01-2015	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	11-01-1900	1
0				05-02-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				06-02-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				10-02-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				16-02-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				24-02-2015	1	14-07-2015	1	78	1	0	0	0	0	0	0	0	0	0			
1	AT	375	20-03-2018	12-03-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				12-03-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				17-03-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				24-03-2015	1	22-12-2017	1	66	0	0	0	1	0	0	0	0	0	0			
0				22-04-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				13-05-2015	1	19-09-2018	1	49	0	0	0	1	0	0	0	1	0	0			
0				08-05-2015	0		0		0	0	0	0	0	0	0	1	0	0			
0				14-06-2008	0		0		0	0	0	0	0	0	0	0	0	0			
0				14-05-2015	1	01-01-2017	1	65	0	1	0	0	0	0	0	0	0	0			
0				19-05-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				15-06-2015	0		0		0	0	0	0	0	0	0	1	1	0	1		
0				07-07-2015	0		0		0	0	0	0	0	2	0	0	0	0			
0				20-07-2015	0		0		0	0	0	0	0	0	0	1	1	0			
0				24-08-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				11-08-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				04-08-2015	0		0		0	0	0	0	0	0	0	0	0	0			
1	leadnoise		24-07-2018	03-09-2015	0		0		0	0	0	0	0	1	0	1	1	1			
0				05-10-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				16-09-2015	0		0		0	0	0	0	0	0	0	1	1	1			
0				14-10-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				28-09-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				05-10-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				21-10-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-11-2015	0		0		0	0	0	0	0	0	0	0	0	0	1		
0				12-11-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				16-11-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				23-11-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				24-11-2015	0		0		0	0	0	0	0	0	0	0	0	0	0		0
0				26-11-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				19-11-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-12-2015	0		0		0	0	0	0	0	0	0	0	0	0			
0				04-01-2016	0		0		0	0	0	0	0	0	0	1	0	0			
0				14-01-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				10-02-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-02-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				29-02-2016	0		0		0	0	0	0	0	0	0	1	1	1			
0				22-03-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				18-04-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				11-06-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				25-07-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				16-08-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				12-08-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				26-07-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				05-09-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				13-12-2016	0		0		0	0	0	0	0	0	tamponade	1	0	0		29-09-2017	1
0				20-12-2016	0		0		0	0	0	0	0	0	0	1	1	1		29-08-2017	1
0				20-12-2016	0		0		0	0	0	0	0	0	0	0	0	0			
0				07-02-2017	0		0		0	0	0	0	0	0	0	1	1	1	0		
0				21-02-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-04-2010	0		0		0	0	0	0	0	0	0	1	0	0			
0				27-02-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				14-03-2017	0		0		0	0	0	0	0	1	0	0	0	0		27-05-2017	1
0				06-04-2017	0		0		0	0	0	0	0	0	0	1	0	0			
0				30-03-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				08-05-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				01-06-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				04-07-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				12-06-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				14-07-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				18-08-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				25-08-2017	0		0		0	0	0	0	0	2	0	0	0	0			
0				25-08-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				18-08-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				17-08-2017	0		0		0	0	0	0	0	0	0	0	0	0			
1	AF	335	25-05-2020	07-10-2017	0		0		0	0	0	0	0	0	0	0	0	0		25-05-2020	
0				31-10-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				04-11-2017	1	11-11-2018	1	41	0	0	1	0	0	0	0	1	1	1			
0				10-11-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				26-09-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				11-12-2017	0		0		0	0	0	0	0	0	0	0	0	0		01-01-1900	
0				23-11-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				01-06-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-01-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-01-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-01-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				30-01-2018	1	30-01-2019	1	42	1	0	0	0	0	0	0	0	0	0			
0				16-02-2018	0		0		0	0	0	0	0	0	0	1	0	0			
0				26-01-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				13-03-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				12-03-2018	0		0		0	0	0	0	0	0	0	0	0	0		12-04-2018	
0				19-03-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				03-04-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				27-04-2018	0		0		0	0	0	0	0	0	0	0	0	0		10-05-2018	1
0				30-04-2018	0		0		0	0	0	0	0	0	0	0	0	0		07-07-2018	2
0				21-05-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				28-05-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				12-06-2018	0		0		0	0	0	0	0	0	0	0	0	0			
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0				16-07-2018	0		0		0	0	0	0	2	0	0	0	0	0			
0				27-07-2018	0		0		0	0	0	0	0	0	0	1	0	0			
0				31-07-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				04-08-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				10-09-2018	0		0		0	0	0	0	0	0	0	0	0	0			
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0				07-12-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				10-12-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				17-12-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				08-02-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				18-02-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				12-02-2019	0		0		0	0	0	0	0	0	0	1	0	0			
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0				30-03-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				23-05-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				06-06-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				20-06-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				18-07-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				15-07-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				01-08-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				22-08-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				26-08-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				03-08-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				25-09-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				23-01-2014	1	12-01-2018	1		0	0	0	1	0	0	0	0	0	0			
0				11-02-2014	0		0		0	0	0	0	0	0	0	0	0	0			incomplete
0				01-04-2014	0		0		0	0	0	0	0	0	0	1	0	0			1
0				23-04-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-07-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				15-07-2014	0		0		0	0	0	0	0	0	0	1	1	1			
0				26-08-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				03-09-2014	0		0		0	0	0	0	0	0	0	1	1	0			
0				11-09-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				28-10-2014	1	28-04-2016	1		0	0	1	0	0	0	0	1	1	1			
0				11-11-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				17-11-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-12-2014	0		0		0	0	0	0	0	0	0	0	0	0			
0				25-01-1997	1	01-01-2005	1		0	0	0	1	0	0	0	1	1	0			
0				28-07-2015	0		0	0	0	0	0	0	1	0	0	0	0	0		12-02-2016	
0			00-01-00	2010-05-06	0		0		0	0	0	0	0	0	0	0	0	0			
0				2012-12-08	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-12-2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0				2010-07-03	0		0		0	0	0	0	0	0	0	1	1	0		19-03-2013	2
1	AF	288	17-09-20	2012-06-28	0		0		0	0	0	0	0	0	0	0	0	0			
0				2009-12-10	1	10-12-15	1		0	1	0	0	0	0	0	0	0	0			
1	AF	333	27-06-2019	09-04-2019	0		0		0	0	0	0	1	0	0	0	0	0			
0				21-01-2013	0		0		0	0	0	0	0	0	0	1	0	0			
0				01-08-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				14-06-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0				21-09-2020	0		0		0	0	0	0	0	0	0	0	0	0			
0				11-12-2018	0		0		0	0	0	0	0	0	0	0	0	0			
0				23-03-2017	0		0		0	0	0	0	0	0	0	0	0	0			
0				09-06-2015	0		0		0	0	0	0	0	0	1	0	0	0			
0				2007	0		0		0	0	0	0	0	0	0	0	0	0			
0				05-08-2007	0		0		0	0	0	0	0	0	0	1	0	0			
0				02-04-2019	0		0		0	0	0	0	0	0	0	0	0	0			
0			0	23-12-2014	0		0	0	0	0	0	0	0	0	0	0	0	0			
1	AF	280	09-06-2020	28-03-2016	0		0	0	0	0	0	0	0	0	0	0	0	0			
0			0	12-05-2015	0		0	0	0	0	0	0	0	0	0	0	0	0		01-01-1900	1
0				16-07-2009	0		0	0	0	0	0	0	0	0	0	1	1	0			
0				23-07-2011	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				10-04-2012	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				10-05-2012	0		0	0	0	0	0	0	0	0	0	0	0	0			
0				14-06-2012	0		0	0	0	0	0	0	0	0	0	1	0	0			

DFT	DFT	SC/DC	PG CHANG	PG DATE	CRT D UP	NYHA 1	NYHA 2	NYHA 3	NYHA 4	AMIODARO	QTc	QRSd	QRSd<120	120-150	>150	RESUS ARI	VT	AGE	AGE AT 1S	Age at pre	SEX	AWMI	IPMI	IWMI	CABG	cad
0		0	1		0	0	1	0	0	1	460	130	0	0	0	0	1	43		23	1	1	0	0	0	1
0		0	0		1	0	0	1	0	1	440	200	0	0	0	0	1	54		54	1	1	0	0	1	1
0		0	1		0	0	1	0	0	1	436	120	1	0	0	0	1	55	50	55	1	0	1	0	0	1
1	15	0	0		0	0	1	0	0	1	432	110	0	0	0	0	1	44	43	44	1	0	0	0	0	0
1	15	0	0		0	0	1	0	0	1	420	120	1	0	0	0	1	50	50	50	1	1	0	0	0	1
1	11	0	0		0	0	1	0	0	1	440	110	1	0	0	0	1	67	60	60	1	0	0	1	0	1
0		0	0		0	0	1	0	0	1	431	80	1	0	0	0	1	47	37	48	1	1	0	0	0	1
1	19	0	1	08-09-2015	0	0	1	0	0	1	421	120	1	0	0	0	1	34	34	34	0	0	0	0	0	0
0		0			0	0	1	0	0	1	433	116	1	0	0	0	1	48	35	48	1	0	0	0	0	0
0		0			0	0	1	0	0	1	445	160	0	0	1	0	1	70	50	70	1	1	0	0	0	1
0		0			0	0	1	0	0	1	440	200	0	0	1	0	1	49	30	50	1	1	0	0	0	1
0		0			0	0	1	0	0	0	492	130	0	1	0	0	1	62	54	54	1	1	0	0	0	1
1	11	0			0	0	1	0	0	1	417	110	0	0	0	0	1	64	35	63	1	0	1	0	0	1
1	20	0	1	17-12-2019	0	0	1	0	0	1	488	188	0	0	0	0	1	55	31	55	1	1	0	0	0	1
0		0	0		0	0	1	0	0	1	450	160	0	0	1	0	1	57	50	57	1	1	0	0	0	1
1	15	0			0	0	1	0	0	1	427	120	0	0	1	0	1	70	49	70	1	1	0	0	0	1
1	10	0			0	0	1	0	0	1	450	80	1	0	0	0	1	57	57	57	1	1	0	0	0	1
0		0			0	0	1	0	0	1	398	110	1	0	0	0	1	54	44	54	1	0	0	1	0	1
1		0			0	0	1	0	0	1	494	160	0	0	1	0	1	58	57	58	1	1	0	0	0	1
1	18	0			0	0	1	0	0	1	480	160	0	0	1	0	1	56	40	57	1	1	0	0	0	1
1	15	0			0	0	1	0	0	1	494	120	0	0	0	0	1	52	48	52	1	1	0	0	0	1
1	17	0			0	0	1	0	0	1	479	100	1	0	0	0	1	69	59	64	1	1	0	0	0	1
0		0			0	0	1	0	0	1	491	140	0	1	0	0	1	74	60	74	1	0	0	1	0	1
1	20	1	1	16-03-2019	0	0	1	0	0	1	498	172	0	0	1	0	1	49	49	49	1	1	0	0	0	1
1	15	0	1	23-08-2017	0	0	1	0	0	1	437	102	1	0	0	0	1	39	36	36	1	1	0	0	0	1
1	15	0			0	0	1	0	0	1	439	114	1	0	0	0	1	73	59	73	0	1	0	0	0	1
0		0			0	0	1	0	0	0	415	113	1	0	0	0	1	35	35	35	0	0	0	0	0	0
0		0			0	0	1	0	0	1	409	146	0	1	0	0	1	64	64	64	1	0	0	0	0	0
0		0			0	0	1	0	0	1	470	125	0	1	0	0	1	75	72	75	1	0	0	0	0	1
0		0			0	0	1	0	0	1	453	120	0	1	0	0	1	71	63	71	1	1	0	0	0	1
0		0			0	0	1	0	0	1	484	138	0	1	0	0	1	51	42	51	1	1	0	0	0	1
0		0			0	0	1	0	0	1	399	100	1	0	0	0	1	58	56	58	1	1	0	0	1	1
0		1			0	0	1	0	0	1	457	166	0	0	1	0	1	25	25	25	0	0	0	0	0	0
0		0			0	0	1	0	0	0	460	110	1	0	0	1	1	69	68	69	0	0	0	0	0	0
1	15	0	1	17-02-2021	0	0	1	0	0	1	455	110	1	0	0	0	1	75	63	75	1	0	0	1	0	1
1	15	0			0	0	1	0	0	1	542	220	0	0	1	1	1	66	56	66	1	1	0	0	0	1
1		1			0	0	1	0	0	1	464	111	1	0	0	0	1	50	50	50	1	0	0	0	0	0
1	35	1			0	0	1	0	0	1	438	140	0	1	0	0	1	67	49	67	1	1	0	0	0	1
0		0			0	0	1	0	0	1	518	180	0	0	1	0	1	57	55	57	1	1	0	0	0	1
0		0			0	0	1	0	0	1	432	121	0	1	0	0	1	57	54	56	1	0	0	0	0	1
0		0			0	0	1	0	0	1	475	110	1	0	0	0	1	62	55	66	1	0	1	1	0	1
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0		0			0	0	1	0	0	1	478	161	0	0	1	0	1	60	42	60	1	1	0	0	0	1
0		0			0	0	1	0	0	1	365	120	0	1	0	0	1	42	42	42	1	0	0	1	0	1
0		0			0	0	1	0	0	1	486	180	0	0	1	0	1	49	38	48	1	1	0	0	0	1
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0		0			0	0	1	0	0	1	444	120	0	1	0	0	1	46			1	0	0	0	0	0
0		0			0	0	1	0	0	1	413	100	1	0	0	0	1	57			1	0	0	0	0	0
0		0			0	0	1	0	0	1	**445**	120	0	1	0	0	1	52			1	0	0	0	0	0
0		0			0	0	1	0	0	1	429	90	1	0	0	0	1	65			0	0	0	0	0	0
0		1			0	0	1	0	0	1	463	110	1	0	0	0	1	33			1	0	0	0	0	0
0		0			0	0	1	0	0	0	473	120	0	1	0	0	1	54			1	0	0	0	0	0
1	10	0			0	0	1	0	0	1	**435**	120	0	1	0	0	1	41			1	0	0	0	0	0
0		0			0	0	1	0	0	1	347	120	0	1	0	0	1	55			1	0	0	0	0	0
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0		0			0	0	1	0	0	0	370	97	1	0	0	0	1	52			1	0	0	0	0	0
0		1			0	0	1	0	0	0	375	102	1	0	0	0	1	64			1	0	0	0	0	0
0		0			0	0	1	0	0	0	420	120	0	1	0	0	1	49			0	0	0	0	0	0
1		0	1	06-07-2016	0	0	1	0	0	0	360	90	1	0	0	0	1	43			1	0	0	0	0	0
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0		0	0		0	1	0	0	0	0	360	110	1	0	0	0	1	47			1	0	0	0	0	0
1		0	1	21-04-2021	0	1	0	0	0	0	365	122	0	1	0	0	1	67			1	0	0	0	0	0
0		0	1	06-08-2019	0	1	0	0	0	0	420	123	0	1	0	0	1	30			1	0	0	0	0	0

NIDCMP	IDCMP	LVEF	>50	30-50	<30	brugada	sarcoid	CCHD	HCM	SNH	LQT	ARVD	IDIOPATH	CPVT	BBRT	AHCM	RHD	ASD	Myo bri	RCM	ERS	prior AF
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BB	BISO	METOPRO	CARVEDIL	NEBIVOLO	SOTALOL	ATEN	QUNIDINE	CILOSTAZ	MEXILATINE	ACE/ARB	ATORVAS	MRA	DIURETICS	RANOLAZ	ECOSPRIN	OAC	DIGOXIN	CCB (VERA	APAenu	DM	HTN	DLP	CKD	LVID	LVIS	HR	PR	RBBB	LBBB	IVCD	FRAG QRS	DFT	DFT
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1	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	52	31	80	180	0	0	0	0		
1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	69	36		160	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	54	37	55	160	0	0	0	0		
1	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	26	60	120	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	52	37	97	110	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	37	24	72	240	0	0	0	0	1	<!0
1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	43	24	62	160	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	63	44	77	170	1	0	0	0		
1	0	1	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	50	39	60	180	0	0	0	0	1	1
1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	52	31	53	200	0	0	0	0	1	0
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	30	58	180	0	0	0	0	1	15
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	24		160	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	27		200	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	51	36		220	0	1	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	24		200	0	1	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	26			0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	25		180	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	25		180	0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	23		0	1	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	40	22			0	0	0	0		
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0					0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	30		166	0	0	0	0		
1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	24		218	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	23		242	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	32		180	0	0	0	0		
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	24		160	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	31		180	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	22		210	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	31		140	0	0	0	0		

QRSd	QRSd<120	120-150	>150	QTc	DEATH AG	NON CARI	SCD	CCF	VT STORM	RESUS ARI	VT	AGE	AGE AT 1S	Age at pre	SEX	NYHA 1	NYHA 2	NYHA 3
100	1	0	0	450	46	0	0	1	0	0	0	45	40	45	1	0	1	
110	1	0	0	435	0	0	0	0	0	0	0	64	60	64	0	0	1	
100	1	0	0	377	0	0	0	0	0	0	0	30	26		1	0	1	
110	1	0	0	488	0	0	0	0	0	0	0	60	49	49	1	0	1	
114	1	0	0	458	0	0	0	1	0	0	0	63	63	63	0	0	1	
140	0	1	0	443	0	0	0	0	0	0	0	41	39	41	1	0	0	
149	0	1	0	369	0	0	0	0	0	0	0	68	63	68	1	0	1	
120	0	1	0	417	0	0	0	0	0	0	0	63	47	63	1	0	1	
110	1	0	0	498	0	1	0	0	0	1	0	36	36	36	1	0	1	
100	1	0	0	427	50	1	0	0	0	0	0	46	35	46	1	0	1	
145	0	1	0	440	0	0	0	0	0	0	0	52	44	52	1	0	1	
100	1	0	0	381	0	0	0	0	0	0	0	60	60	60	1	0	1	
170	0	0	1	530	0	0	0	0	0	0	0	54	49	54	1	0	0	
120	0	1	0	533	69	1	0	0	0	0	0	69	67	69	0	0	1	
100	1	0	0	430	0	0	0	0	0	0	0	68	61		1	0	1	
100	1	0	0	458	0	0	0	0	0	0	0	47	42		1	0	1	
100	1	0	0	439	0	0	0	0	0	0	0	51	51		1	0	1	
156	0	0	1	453	0	0	0	0	0	0	0	28	28		1	1	0	
100	1	0	0	445	45	1	0	0	0	0	0	44	43		1	0	0	
84	1	0	0	436	0	0	0	0	0	0	0	60	58	60	1	0	1	
140	0	1	0	446	0	0	0	0	0	0	0	42	41		1	0	0	
94	1	0	0	459	0	0	0	0	0	0	0	49	49	49	1	0	1	
114	1	0	0	469	0	0	0	0	0	0	0	57	55	55	1	0	1	
100	1	0	0	421	0	0	0	0	0	0	0	23	17	23	1	0	1	
110	1	0	0	439	0	0	0	0	0	0	0	48	48	48	0	0	0	
100	1	0	0	482	0	0	0	0	0	0	0	51	38		1	1	0	
80	1	0	0	411	0	0	0	0	0	0	0	72	55	72	1	0	1	
118	1	0	0	419	0	0	0	0	0	0	0	54	40	54	1	0	1	
124	0	1	0	454	0	0	0	0	0	0	0	57	48	60	1	0	1	
100	1	0	0	452	0	0	0	0	0	0	0	64	63	63	1	0	1	
168	1	0	0	497	0	0	0	0	0	0	0	70	65	70	1	0	1	
102	1	0	0	457	0	0	0	0	0	0	0	56	52	56	0	0	1	
100	1	0	0	490	0	0	0	0	0	0	0	61	56	61	1	0	1	
100	1	0	0	444	0	0	0	0	0	0	0	53	49	53	1	0	1	
78	1	0	0	400	0	0	0	0	0	0	0	59	57	59	1	0	1	
110	1	0	0	420	0	0	0	0	0	0	0	62	62	62	1	0	1	
120	0	1	0	440	0	0	0	0	0	0	0	78	57	78	1	0	1	
120	0	1	0	407	0	0	0	0	0	0	0	44	39		1	0	1	
134	0	1	0	407	0	0	0	0	0	0	0	62	54	62	1	1	0	
120	0	1	0	409	0	0	0	0	0	0	0	55	32	55	1	1	0	
130	0	1	0	433	0	0	0	0	0	0	0	59	59	59	1	1	0	
82	1	0	0	408	0	0	0	0	0	0	0	44	44		1	1	0	
140	0	1	0	356	0	0	0	0	0	0		32			1	1	0	
116	1	0	0	441	0	1	0	0	0	0	0	46			1	1	0	
118	1	0	0	375	0	0	0	0	0	0		58			1	1	0	
101	1	0	0	375	0	0	0	0	0	0		47			1	1	0	
97	1	0	0	370	0	0	0	0	0	0		52			1	1	0	
120	0	1	0	420	0	0	0	0	0	0		49			0	1	0	
124	0	1	0	456	0	0	0	0	0	0		39			1	1	0	
80	1	0	0	432	0	0	0	0	0	0		49			1	1	0	
130	0	1	0	410	0	0	0	0	0	0		46			1	1	0	
110	1	0	0	396	0	0	0	0	0	0		40			1	1	0	
90	1	0	0	487	0	0	0	0	0	0		42			1	1	0	
200	0	0	1	532	0	0	0	0	0	0	0	50			1	0	1	
110	1	0	0	487	0	0	0	0	0	0	0	62			0	0	1	
120	0	1	0	456	0	0	0	0	0	0	0	13			0	0	1	
136	0	1	0	465	0	0	0	0	0	0	0	49			0	0	1	
100	1	0	0	404	0	0	0	0	0	0	0	54			1	0	1	
100	1	0	0	470	0	0	0	0	0	0	0	48			1	0	1	
100	1	0	0	480	0	0	0	0	0	0	0	56			1	0	1	
110	1	0	0	421	0	0	0	0	0	0	0	50			1	0	1	
110	1	0	0	470	0	0	0	0	0	0	0	46			1	0	1	
107	1	0	0	445	0	0	0	0	0	0	0	48			1	0	1	
114	1	0	0	440	0	0	0	0	0	0	0	23			1	0	1	
130	0	0	1	439	0	0	0	0	0	0	0	38			1	0	1	
90	1	0	0	392	0	0	0	0	0	0	0	21			0	0	1	
90	1	0	0	461	0	0	0	0	0	0	0	56			1	0	1	
100	1	0	0	468	0	0	0	0	0	0	0	44			1	0	1	
100	1	0	0	420	0	0	0	0	0	0	0	49			1	0	1	
110	1	0	0	417	0	0	0	0	0	0	0	64			1	0	1	
100	1	0	0	410	0	0	0	0	0	0	0	50			1	0	1	
200	0	0	1	526	0	0	0	0	0	0	0	76			1	0	1	
100	1	0	0	465	0	0	0	0	0	0	0	50			1	0	1	
100	1	0	0	404	0	0	0	0	0	0	0	53			1	0	1	
160	0	0	1	432	0	0	0	1	0	0	0	58			1	0	0	
113	1	0	0	441	0	0	0	1	0	0	0	43			1	0	0	
100	**1**	**0**	**0**	**399**	0	0	0	0	0	0	0	52			1	0	1	
190	0	0	1	454								52			1	0	0	
160	0	0	1	461								64			0	0	0	
200	0	0	1	528								55			1	0	0	
180	0	0	1	403								71			1	0	0	
180	0	0	1	514								68			1	0	0	
160	0	0	1	502								65			1	0	0	
160	0	0	1	483								64			1	0	0	
160	0	0	1	531								66			1	0	0	
190	0	0	1	435								52			1	0	0	
200	0	0	1	478								61			1	0	0	
140	**0**	**1**	**0**	528								60			1	0	0	
240	0	0	1	501								57			1	0	0	
160	0	0	1	490								68			1	0	0	
180	0	0	1	421								59			1	0	0	
210	0	0	1	483								60			1	0	0	
160	0	0	1	447								65			1	0	0	
162	0	0	1	412								58			1	0	0	
180	0	0	1	512								58			1	0	0	
110	1	0	0	442								66			1	0	0	
160	0	0	1	445								71			1	0	1	
160	0	0	1	540								47			1	0	0	
150	0	0	1	553								62			0	0	0	
160	0	0	1	514								64			1	0	1	
200	0	0	1	480								62			1	0	1	
170	0	0	1	519								80			1	0	0	

NIDCMP	IDCMP	LVEF	>50	30-50	<30	brugada	sarcoid	ERS	HCM	SNH	LQT	ARVD	IDIOPATH	CPVT	BBRT	AHCM	RHD
1	0	36	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	31	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	66	1	0	0	0	0	0	0	0	0	0	0	1	0	0	
0	1	39	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	29	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	28	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	28	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	40	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	25	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	24	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	34	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	57	1	0	0	0	0	0	0	0	0	0	1	0	0	0	
0	1	15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
1	0	34	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	42	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	27	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	32	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	32	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	40	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	70	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
0	1	39	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	27	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
1	0	33	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	27	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	32	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	38	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	28	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	43	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	41	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	47	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	41	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	67	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	42	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	24	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
0	1	44	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	44	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	34	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	1	46	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	33	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	79	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	68	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	73	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	68	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	67	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	61	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	80	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	78	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
0	0	58	1	0	0	0	0	0	0	0	0	1	0	0	0	0	
0	0	72	1	0	0	0	0	0	0	0	0	1	0	0	0	0	
0	0	26	0	0	1	0	0	0	0	0	0	1	0	0	0	0	
0	0	85	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	80	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	67	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	78	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	74	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	54	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	78	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
0	0	61	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	82	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	77	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	88	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	68	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	65	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	64	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	80	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	82	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	70	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	70	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
0	0	83	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	75	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	73	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	34	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	45	0	1	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	58	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	1	23	0	0	1												
0	1	27	0	0	1												
0	1	27	0	0	1												
0	1	43	0	1	0												
0	1	30	0	0	1												
0	1	26	0	0	1												
0	1	38	0	1	0												
0	1	20	0	0	1												
0	1	19	0	0	1												
0	1	15	0	0	1												
0	1	24	0	0	1												
0	1	30	0	0	1												
0	1	28	0	0	1												
0	1	25	0	0	1												
0	1	26	0	0	1												
0	1	37	0	0	1												
0	1	30	0	0	1												
0	1	30	0	0	1												
0	1	33	0	0	1												
0	1	18	0	0	1												
0	1	22	0	0	1												
0	1	27	0	0	1												
0	1	43	0	1	0												
0	1	32	0	0	1												
0	1	32	0	0	1												

BB	BISO	METOPRO	CARVEDIL	NEBIVOLO	SOTALOL	ATEN	QUNIDINE	CILOSTAZ	AMIODAR	MEXILATIN	ACE/ARB	ATORVAS	MRA	DIURETICS	RANOLAZ	ECOSPRIN	OAC	DIGOXIN	CO
1	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	1	0	1	
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
1	0	1	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	
1	0	0	1	0	0	0	0	0	1	0	0	1	1	1	0	1	0	0	
1	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	1	
1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0	0	
1	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	
1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	
1	0	1	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	
1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	
1	0	1	0	0	0	0	0	0	1	0	1	0	1	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0	1	
0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	
1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0	0	
1	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	
1	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	1	0	0	
1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	1	0		
1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
1	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	
1	0	1	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		1							0		1	1	1	1		1		0	
1		1							0		0	1	1	1		1		1	
1		1							0		1	1	1	1		1		0	
1		1							0		1	1	0	1		1		1	
1		1							0		1	1	1	1		1		1	
1		1							1		0	1	1	1		1		1	
1		1							0		1	1	0	1		1		0	
1		1							0		1	1	1	1		1		1	
0		0							0		0	1	1	1		1		0	
1		1							1		1	1	1	1		1		1	
1		1							0		1	1	1	1		1		1	
1		1							0		1	1	1	1		1		0	
1		1							0		0	1	1	1		1		0	
1		1							0		1	1	1	1		1		1	
1		1							0		1	1	1	1		1		0	
1		1							0		1	1	1	1		1		1	
1		1							0		1	1	1	1		1		1	
1		1							0		1	1	1	1		1		0	
0		0							0		0	1	1	1		1		0	
1		1							0		1	1	1	1		1		1	
1		1							0		0	1	0	1		1		1	
1		1							0		0	1	1	1		1		1	
1		1							0		0	1	1	1		1		0	
1		1							1		1	1	1	1		1		0	
1		1							1		0	1	1	1		1		0	

RBBB	LBBB	IVCD	FRQG QRS	SHOCK	shock dur	PG CHANG	POST EPS	APPRO	cycle length	zone
0	1	0	0	17-01-2014	5	0		1	300	VF
0	0	1	0		126	0		0		
0	0	0	0		128	1		0		
0	0	0	0		3	0		0		
0	0	0	0	26-11-2011	7	0		1	300	VF
0	0	0	0	01-01-2020	95	0		1	337	VT2
1	0	0	0		105	0		0		
0	0	1	1		105	0		0		
0	0	0	0	06-08-2015	13	0		1	320	VT2
0	1	0	0		24	0		0		
0	0	1	0		60	0		0		
0	0	0	0		71	0		0		
0	1	0	0		71	0		0		
1	0	0	0		10	0		0		
0	1	0	0		45	0		0		
0	0	0	0		45	0		0		
0	0	0	0		48	0		0		
0	1	0	0		45	0		0		
0	1	0	0		17	0		0		
0	0	0	0		36	0		0		
1	0	0	1		38	0		0		
0	0	0	0		36	0		0		
0	0	0	0		35	0		0		
0	0	0	0	01-11-2019	17	0		1	255	VF
1	0	0	0		31	0		0		
0	0	0	0	18-10-2018	2	0		1	275	VT2
1	1	0	0	26-11-2018	3	0		1	259	VT2
0	0	0	1		32	0		0		
0	0	0	0		24	0		0		
0	0	0	0		25	0		0		
0	1	0	0		26	0		0		
0	0	0	0		22	0		0		
0	1	0	0		26	0		0		
0	0	0	0		24	0		0		
0	0	0	0		24	0		0		
0	0	0	1		21	0		0		
0	1	0	0		17	0		0		
0	1	0	0		22	0		0		
0	0	0	0		79	0		0		
0	0	0	0			0		0		
0	1	0	0		79	0		0		
0	0	0	0		76	0		0		
0	0	0	0		132	0		0		
0	0	0	0		37	0		0		
0	0	0	0			0		0		
0	0	0	0		75	0		0		
0	0	0	0		77	0		0		
0	0	0	0	03-09-2015	4	0	1	1	333	VF
0	0	0	0		31	0		0		
0	0	0	0	07-07-2020	96	0		0		
1	0	0	0		34	0		0		
1	0	0	0		46	1		0		
0	0	0	0	16-10-2015	21	0	1	1	290	VF
0	0				66			0		
0	0	0	0		108			0		
0	1	0	0		112	1		0		
1	0	0	0		33			0		
0	0	0	0		36			0		
0	0	0	0		21			0		
0	1	0	0		12			0		
0	0	0	0		10			0		
0	1	0	0		92			0		
0	1	0	0		89			0		
0	0	0	0		84			0		
0	0	0	0	01-12-2015	5	0		1	258	FVT
1	0	0	0		55			0		
0	0	0	0		48			0		
0	0	0	0		39			0		
0	0	0	0		168			0		
0	0	0	0		83			0		
0	0	0	0		99			0		
0	0	0	0		96			0		
0	1	0	0		87			0		
0	1	0	0		49			0		
0	1	0	0	03-04-2019	5	0		0		
0	0	0	0	01-07-2014	1	0		1	255	VF
0	0	0	0					0		
0	1	0						0		
0	1	0						1		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
1	0	0						1	280	
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						1	240	
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	0	0						1	280	
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		
0	1	0						0		

H/N	DATE IMP	LAST VISIT	F/P durati	SHOCK	shock dur	INAPP DUR	CAUSE OF INA	CAUSE	mortal dur	DATE	MORTALI	infection	LEAD DIS	lead chan	INAPP
365299	2013-08-07	16.1.14	15	17-01-2014	5.00	15		1	15	16-11-14	1	0	0	0	
319208	2010-12-16	21.6.21	126		126.00	126			75		0	0	0	0	
252830	2010-06-05	18.2.21	128		128.00	128			128		0	0	0	1	
196640	2013-06-28	27.9.13	12		12.00	12			3		0	0	0	0	
294398	2011-04-28	15.10.16	57	26-11-2011	7.00	57		3	57	15-10-16	1	0	0	0	
345239	2012-02-29	1.5.21	105	01-01-2020	95.00	105		3	105		0	0	0	0	
347484	2012-07-17	30.4.21	105		105.00	105			105		0	0	0	0	
347870	2012-07-24	28.4.21	105		105.00	105			105		0	0	0	0	
381810	2014-07-29	29.7.17	36	06-08-2015	13.00	36		3	36	29-07-2017	1	0	0	0	
393596	03-06-2015	3.6.17	24		24.00	24			24	03-06-2017	1	0	0	0	
390290	23-06-2015	22.4.21	60		60.00	60			60		0	0	0	0	
398868	14-07-2015	21.6.21	71		71.00	71			64		0	0	0	0	
394702	13-07-2015	21.6.21	71		71.00	71			56		0	0	0	0	
423386	28-02-2017	31.12.17	10		10.00	10			10	13-03-2017	1	1	0	0	
312837	09-06-2017	4.3.21	45		45.00	45			45		0	0	0	0	
1106	18-04-2017	19.1.21	45		45.00	45			45		0	0	0	0	
271788	28-06-2017	21.6.21	48		48.00	48			48		0	0	0	0	
433785	06-07-2017	27.4.21	45		45.00	45			45		0	0	0	0	
417821	17-07-2017	1.1.19	17		17.00	17			17	01-01-2019	1	0	0	0	
441803	19-02-2018	4.2.21	36		36.00	36			36		0	0	0	0	
443694	27-02-2018	28.4.21	38		38.00	38					0	0	0	0	
307047	27-03-2018	27.4.21	36		36.00	36					0	0	0	0	
404280	16-04-2018	4.3.21	35		35.00	35					0	0	0	0	
443371	26-06-2018	24.4.21	34	01-11-2019	17.00	34		3			0	0	0	0	
339495	22-06-2018	22.1.21	31		31.00	31					0	0	0	0	
235145	20-08-2018	20.6.21	34	18-10-2018	2.00	34		3			0	0	0	0	
451388	18-08-2018	21.6.21	34	26-11-2018	3.00	34		3			0	0	0	0	
457635	29-10-2018	21.6.21	32		32.00	32					0	0	0	0	
459745	27-11-2018	16.3.21	24		24.00	24					0	0	0	0	
457971	17-12-2018	19.1.21	25		25.00	25					0	0	0	0	
462331	29-12-2018	3.2.21	26		26.00	26					0	0	0	0	
464420	22-03-2019	5.1.21	22		22.00	22					0	0	0	0	
461561	29-01-2019	16.3.21	26		26.00	26					0	0	1	0	
465264	02-04-2019	24.4.21	24		24.00	24					0	0		0	
355636	29-04-2019	24.4.21	24		24.00	24					0	0		0	
465466	05-07-2019	30.4.21	21		21.00	21					0	0		0	
9809515	08-08-2019	28.1.21	17		17.00	17					0	0		0	
388223	27-08-2019	21.6.21	22		22.00	22					0	0		0	
380929	09-09-2014	22.4.21	79		79.00	79					0	0		0	
268837	11-09-2014	**11.9.14**	12		12.00	12					0	0		0	
348656	09-09-2014	30.4.21	79		79.00	79					0	0		0	
383787	25-11-2014	2.3.21	76		76.00	76					0	0		0	
263873	06-10-2007	19.6.18	132		132.00	132					0	0		0	
359663	06-06-2013	12.7.16	37		37.00	37			37	01-01-2016	1	0		0	
379787	26-08-2014	30.5.14	12		12.00	12					0	0		0	
364655	23-09-2014	29.12.20	75		75.00	75					0	0		0	
389558	23-12-2014	21.5.21	77		77.00	77					0	0		0	
395793	12-05-2015	25.9.20	64	03-09-2015	4.00	64.00		3			0	0		0	
453455	02-07-2018	9.2.21	31		31.00	31.00					0	0		0	
450234	03-03-2012	28.4.21	109	07-07-2020	109.00	96.00	AF	3			0	0		0	
387116	19-06-2018	28.4.21	34		34.00	34.00					0	0		0	
317633	22-12-2010	21.6.21	126		46.00	126		3			0	0		0	
316402	28-01-2014	28.4.21	72	16-10-2015	21.00	72		3			0	0		0	
231271	25-08-2015	23.2.21	66		66.00	66					0	0		0	
326337	2011	12.7.05	108		108.00	108					0	0		0	
338863	24-01-2012	31.5.21	112		112.00	112					0	0		0	
407253	17-09-2018	21.6.21	33		33.00	33					0	0		0	
450175	02-06-2018	15.6.21	36		36.00	36					0	0		0	
474494	04-09-2019	21.6.21	21		21.00	21					0	0		0	
485561	08-06-2020	**21.6.21**	12		12.00	12					0	0		0	
486188	05-08-2020	**21.6.21**	10		10.00	10					0	0		0	
365200	24-09-2013	21.5.21	92		92.00	92					0	0		0	
367812	17-12-2013	21.5.21	89		89.00	89					0	0		0	
369628	10-12-2013		84		84.00	84					0	0		0	
395328	22-07-2015	21.5.21	58	01-12-2015	5.00	58		3			0	0		0	
419842	04-10-2016	21.5.21	55		55.00	55					0	0		0	
423780	21-11-2017	23.2.21	48		48.00	48					0	0		0	
439545	05-02-2018	20.5.21	39		39.00	39					0	0		0	
270876	20-09-2007	25.5.21	168		168.00	168					0	0		0	
367548	22-07-2014	21.6.21	83		83.00	83					0	0		0	
9509400	03-01-2013	28.4.21	99		99.00	99					0	0		0	
362589	23-07-2013	24.4.21	96		96.00	96					0	0		0	
373143	23-01-2014	12.4.21	87		87.00	87					0	0		0	
9203193	15-05-2017	10.6.21	49		49.00	49					0	0		0	
460845	11-12-2018	29.9.19	9	03-04-2019	9.00	4.00	AF	3		29-09-2019	1	0		0	
377075	04-06-2014	1.12.15	18	01-07-2014	1.00	18		1		1.12.15	1	0		0	
331713	17-03-2015	20-05-2021	74		74.00	74					0	0	0	0	
4-398517	Aug-15	Feb-21	52		52.00	52			52		0				
10-406881	Dec-15	21-10-2016	5	21-05-2016	5.00	5			5	21-10-2016	1				
12-399266	Jan-16	Apr-21	69		69.00	69			69		0				
15-406921	Jan-16	Apr-21	69		69.00	69			69		0				
16-409498	Mar-16	Apr-21	73		73.00	73			73		0				
15-411704	May-16	Jan-20	44		44.00	44			44		0				
331740	Aug-11	Apr-21	116	10-07-2018	83.00	116			116		0				
422605	Jan-19	Feb-21	25		25.00	25			25		0				
424772	Dec-16	Mar-21	52		52.00	52			52		0				
277090	Apr-10	02-02-2015	58		58.00	58			58	02-02-2015	1				
345429	Aug-12	24-11-2019	80		80.00	80			80	24-11-2019	1				
375419	Mar-14	Sep-20	66		66.00	66			66		0				
374001	Apr-14	May-21	85		85.00	85			85		0				
8909191	Sep-14	Nov-20	74	31-07-2019	58.00	74			74		0				
385420	Oct-14	Mar-21	77		77.00	77			77		0				
299217	12-06-2020	20-06-2021	12		12.00	12			12		0				
322631	15-05-2018	15-04-2021	35		35.00	35			35		0				
392005	18-09-2018	03-03-2021	33	05-02-2021	29.00	33			33		0				
374152	12-11-2019	06-05-2021	18		18.00	18			18		0				
427359	16-03-2017	11-05-2021	50		50.00	50			50		0				
432732	24-12-2018	21-05-2021	29		29.00	29			29		0				
442249	28-11-2017	23-04-2021	41		41.00	41			41		0				
444001	18-06-2018	01-10-2020	20		20.00	20			20	01-10-2020	1				
446261	05-06-2018	18-03-2021	21		21.00	21			21		0				
447310	09-03-2018	21-01-2020	22		22.00	22			22		0				