

# Physicians' knowledge and attitudes in Saudi Arabia regarding implantable cardiac defibrillators

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**Objectives:** To evaluate knowledge and attitude of physicians involved in the management of patients with heart failure regarding implantable cardioverter-defibrillator (ICD).

**Methods:** We conducted personal interviews with physicians involved in treating patients with heart failure. Between October 2015 and February 2016, the study was conducted in hospitals in the Riyadh region where no cardiac electrophysiology service was available. Every participant was met in person and received an oral questionnaire that aimed to assess basic knowledge regarding ICD indications and benefits.

**Results:** Sixty-three physicians were met from 13 hospitals (14 consultants and 49 specialists). Forty-one percent of participants use the recommended cut-off level of left ventricular ejection fraction (LVEF) which is  $\leq 35\%$  as the LVEF criterion for ICD referral in patients with cardiomyopathy. Only 50% of the consultants use  $\leq 35\%$  as the LVEF criterion for ICD referral. Seventy percent of the participants thought that ICD may improve heart failure symptoms. Forty-eight percent of physicians have a defined channel to refer patients to higher centers for ICD implant. There was no statistically significant difference between physicians' knowledge when we categorized them according to three different factors: (1) physician's specialty (cardiology vs. internal medicine); (2) physician's degree (consultant vs. specialist); and (3) physician's location (inside vs. outside Riyadh city).

**Conclusion:** There is a lack of knowledge of current clinical guidelines regarding ICD implantation for patients with heart failure at general hospitals in Saudi Arabia. This finding highlights the need to improve the dissemination of guidelines to practitioners involved in managing patients with heart failure in an effort to improve ICD utilization.

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## 1. Introduction

Cardiovascular disease (CVD) is the leading cause of death in developed countries, with sudden cardiac death (SCD) accounting for ~45% of all cardiovascular deaths [1]. Implantable cardioverter-defibrillators (ICD) are more efficacious in preventing SCD than medical therapy in patients with ischemic and nonischemic cardiomyopathy [2–4]. The most recent guidelines issued by the American College of Cardiology and the American Heart Association (ACC/AHA) [5] recommend the implantation of an ICD for primary prevention of SCD in patients with ischemic and nonischemic cardiomyopathy, a left ventricular ejection fraction (LVEF) of 35% or less.

Research has highlighted the underutilization of ICD implantation [6,7]. Studies done in the United States [8,9], United Kingdom [10], New Zealand [11], and Sweden [12] showed an important awareness gap and a common discordance between referring physicians' knowledge and clinical guidelines of ICD implantation. There are no prior studies in Saudi Arabia to highlight this issue. If there is a lack of such knowledge, underutilization and inequality in the distribution of such life-saving technology among eligible patients may happen. The aim of our study was to evaluate knowledge and attitudes of physicians regarding ICD therapy.

## 2. Materials and methods

### 2.1. Study population

Physicians involved in the study were from different hospitals in Riyadh regions where cardiac electrophysiology service is not available. We did not include hospitals that have such a service because we think they are not the focus of our study question as cardiac devices implant is very common practice in those hospitals. Furthermore, we want to assess accessibility to the referral channels by physicians who do not have cardiac electrophysiology service at their hospitals. Physicians included in the study are those who manage or contribute in the management of patients with heart failure. At each hospital, we met either chief of medical staff or the head of the medical department to identify those physicians. All participants were aware that our survey was performed for research purposes and results might be published. The study was approved by the Research Ethics Committee at King Saud University, Riyadh, Saudi Arabia.

### Abbreviations

ICD	implantable cardioverter-defibrillator
LVEF	left ventricular ejection fraction
SCD	sudden cardiac death

### 2.2. Study survey

All physicians were met in person (Appendix 1). Prospectively, the survey took place from October 2015 to February 2016. None of the physicians had the chance to read our survey before the meeting. The survey was developed according to the latest ACC/AHA guidelines [5]. The first part of the survey included questions aimed to assess physician's knowledge required to identify illegible patients for ICD implant. The second part was a series of questions to ascertain physicians' attitude regarding ICD therapy beneficial effects. The last question was if the physician has a well defined access to refer the illegible patients to a center where cardiac devices are available for implant.

### 2.3. Statistical analysis

Physicians' answers were reviewed and analyzed as being correct or wrong. Descriptive statistics were used to describe the frequency of results. A participant's demographic and attitudes to ICDs were described using frequency analysis. Chi-square test of independence was used in order to test the association between physician's knowledge and demographic factors namely hospital's location, physician's specialty, and physician's degree. A *p* value <0.05 was considered significant.

## 3. Results

A total of 13 out of 15 hospitals were included from different cities in the Riyadh region. Two hospitals were not included because we could

Table 1. Physicians' demographic characteristics.

	Frequency	Percentage
<i>Hospital's Location:</i>		
Inside Riyadh	39	62%
Outside Riyadh	24	38%
<i>Physician's Specialty:</i>		
Cardiologist	16	25%
Internist	47	75%
<i>Physician's Degree:</i>		
Consultant	14	22%
Specialist	49	78%

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