

## Implanted Cardiac Defibrillators for Heart Failure Patients with Kidney Disease

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### Description

Although the prevalence and common coexistence of heart failure (HF) and chronic kidney disease (CKD) is increasing, there is a paucity of data from clinical trials and practice guidelines to guide therapy in patients with these diseases. Of particular importance is the association between CKD and increased risk of competing modes of death, other than sudden cardiac death, which can alter the effectiveness of an implanted cardiac defibrillator in patients with these conditions.

### Specific Aims

1. Use primary data from a HF population without an implanted cardiac defibrillator enrolled in the Study of Left Ventricular Dysfunction (SOLVD) trials to estimate how variation in severity of HF and CKD affect the risk of cause-specific mortality (sudden cardiac death, non-arrhythmic cardiac death, and non-cardiac mortality), and estimate the rates of CKD and HF disease progression.
2. Validate and expand estimates from the primary data modeling focusing on risks/benefits of implanted cardiac defibrillator therapy, and rates of cause-specific mortality and CKD/HF disease progression in patients of varying age and HF/CKD severity.
3. Based on the transition probabilities from the primary data modeling and literature review, estimate the lifetime benefits of implanted cardiac defibrillator therapy in patients of varying age and HF/CKD using a Markov model.

### Main Objective

To estimate how variation in severity of heart failure and chronic kidney disease affect the risk of cause-specific mortality and estimate the rates of chronic kidney disease and heart failure disease progression.

### Chronic Conditions Considered

Heart disease  
Chronic kidney disease

### Preventive Services Considered

Not applicable

### Study Design & Population

Primary data from clinical trials, modeling

Heart failure population enrolled in SOLVD trials

### Strategies Addressed from the National MCC Strategic Framework

- 1.A. Identify evidence-supported models
- 3.C. Address multiple chronic conditions in guidelines
- 4.B. Understand the epidemiology of multiple chronic conditions

