

## **Dual coil defibrillators still more common than single coil models**

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The number of implantable cardioverter defibrillators (ICDs) that use two coils to shock the heart has decreased in the last five years but are still more common than single coil models, according to a study published in *JACC: Clinical Electrophysiology*. There is emerging evidence that dual coil ICDs are not associated with lower mortality or lower rates of failed ICD shocks than single coil models in treating arrhythmias and are more difficult to extract.

An ICD is a small device placed in the chest or abdomen to treat lifethreatening arrhythmias. The ICD has a lead—or wire—that connects to the bottom right chamber of the heart. This wire has coils, which deliver shocks to help treat life-threatening arrhythmias that can cause sudden cardiac arrest. The first ICDs had two coils (dual <u>coil</u>).

"The thinking was that the two coils generated more energy and would deliver a more efficient shock," said Sean Pokorney, MD, a cardiologist at Duke University in Durham, North Carolina, and lead author of the study.

Improvements in design have allowed modern ICDs to deliver more energy in more efficient ways than the early ICDs, decreasing the potential benefit from a dual versus a single coil lead.

Some patients with ICDs need to have them removed because of infection or because the leads or wires break or stop working. Dual coil ICD leads are more difficult to remove, which has been a factor in the



growing popularity of single coil ICD leads, Pokorney said.

"It's surprising that at the end of 2015, the majority of ICDs were still dual coil," he said.

The new study analyzed data from the National Cardiovascular Data Registry's ICD Registry of 435,772 patients at 1,690 hospitals who underwent ICD lead implantation between April 2010 and December 2015. The researchers found nationally, the use of dual coil leads decreased from 85 percent in early 2010 to 55 percent in 2015. As all leads are either dual coil or single coil, the percentage of single coil leads increased from 15 percent in 2010 to 45 percent in 2015. Hospitals that extracted more ICDs were more likely to use single coil ICDs.

Hospitals that had more ICDs implanted by arrhythmia specialists known as electrophysiologists were also more likely to use single coil models. Electrophysiologists are more likely to be involved in ICD extraction than other cardiologists who implant devices and, therefore, more acutely aware of the challenges that dual coil leads present, Pokorney said.

The researchers divided the hospitals into three groups: low, decreasing or high use of dual coil ICD leads. They found 90 percent of hospitals in the low-use group had ICDs implanted by electrophysiologists, compared with 80 percent in the decreasing use and 46 percent in the high use group. Hospitals in the low or decreasing use groups were also more likely to be sites performing higher volumes of extractions.

Certain types of patients may be at higher risk of arrhythmia complications and might be expected to receive dual coil ICDs in order to receive more effective shocks. These patients include obese patients, African-American patients, those taking the <u>arrhythmia</u> drug amiodarone, patients with end-stage kidney disease on dialysis or those



with advanced heart failure. However, the study found providers do not appear to be selecting dual coil ICD leads based on <u>patients</u>' risk levels.

"The data show that <u>hospital</u>-level factors are driving decision-making around ICDs instead of being more patient-focused," Pokorney said.

The researchers said future studies should examine whether the decreasing trend in use of dual coil ICD lead is associated with improved patient outcomes.

Provided by American College of Cardiology

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