The implantable cardioverter-defibrillator (ICD) has been shown to improve survival from sudden cardiac arrest and to improve overall survival in several populations at high risk for sudden cardiac death. However, there are situations where an ICD may be inappropriate or delayed:

- **Patient awaiting cardiac transplantation**
- **Structural abnormalities and venous dilatation**

Potential to recover from heart failure symptoms and to improve ICD therapy unnecessarily.

Risk stratification can take time while the patient continues to be at high risk and needs a temporary bridge. A wearable cardioverter-defibrillator (WCD) is an external device that may be an acceptable alternative for the prevention of sudden cardiac death when an implantable device is not an option.

Clinical data shows that overall survival with an ICD is over 95% compared to that of an ICD; however, there is still a lack of large-scale trials proving that these devices should be employed routinely in specific high-risk patient populations.

The only WCD available in the US (LifeVest®), it is intended to be used as a temporary solution, to bridge to ICD implantation or to the antithrombotic therapy. Specifically, it is approved for use in cardiac patients with a transient high risk for ventricular fibrillation such as those awaiting cardiac transplantation, those at very high risk after a recent MI or an invasive cardiac procedure, or those requiring temporary removal of an implanted defibrillator for antibiotic therapy.

### Objective

To describe the utilization of WCD and subsequent cardiac procedures in clinical practice.

### Methods

**Study design**
- This was a retrospective, observational, descriptive study.

**Data source**
- This study was conducted using administrative claims data from Humana Inc., a health care company insuring over 3.8 million Medicare Advantage members, 1.2 million group fully insured members, 1.1 million individual fully insured members, and 3.5 million Medicaid Members (2nd quarter 2014 enrollment).

**Inclusion and exclusion criteria**
- Patients who used a WCD were identified using retrospective medical claims between January 2011 and April 2013.
- Patients were required to have continuous enrollment for 240 days post-WCD period.

**Outcomes**
- The primary outcome was the number of patients with no ICD who underwent a cardiac procedure. The secondary outcomes were the type and number of diagnostic and/or interventional procedures performed.

### Results

#### Table 1. Top 10 diagnoses for WCD Use (n=1,199)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non ischemic primary cardiomyopathies</td>
<td>1,104</td>
</tr>
<tr>
<td>Ischemic primary cardiomyopathies</td>
<td>172</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>146</td>
</tr>
<tr>
<td>Mitral and aortic regurgitation</td>
<td>136</td>
</tr>
<tr>
<td>Post-percutaneous transluminal coronary artery stent procedures</td>
<td>127</td>
</tr>
<tr>
<td>Right bundle branch block</td>
<td>126</td>
</tr>
<tr>
<td>Mitral valve repair and replacement</td>
<td>118</td>
</tr>
<tr>
<td>Atrial septal defect</td>
<td>105</td>
</tr>
<tr>
<td>Ventricular septal defect</td>
<td>104</td>
</tr>
</tbody>
</table>

**Figure 1. Study Timeline**

- **Figure 2. Implantation of ICD within 60 Days post-WCD Period (n=1,199)**
  - 52% (n=614) of patients did not have an ICD in the 60 days post-WCD period

**Figure 3. Number of Patients using WCDs by Month (n=1,199)**

- **Figure 4A. Diagnostic Procedures (n=279)**
  - Procedures among patients with no ICD during 60 days post-WCD (240 days follow-up)

**Figure 4B. Intervention Procedures (n=174)**

- Procedures among patients with no ICD during 60 days post-WCD (240 days follow-up)

**Figure 5A. Diagnostic Procedures (n=180)**

- Procedures among patients with no ICD during 60 days post-WCD (240 days follow-up)

**Figure 5B. Intervention Procedures (n=143)**

- Procedures among patients with no ICD during 60 days post-WCD (240 days follow-up)

### Conclusions

- **The top diagnoses for which the WCDs were prescribed included non-ischemic primary cardiomyopathies, atrial fibrillation, and mitral and aortic regurgitation.**

- **Risk stratification can take time while the patient continues to be at high risk and needs a temporary bridge.**

- **A wearable cardioverter-defibrillator (WCD) is an external device that may be an acceptable alternative for the prevention of sudden cardiac death when an implantable device is not an option.**

- **This study was conducted using administrative claims data from Humana Inc., a health care company insuring over 3.8 million Medicare Advantage members, 1.2 million group fully insured members, 1.1 million individual fully insured members, and 3.5 million Medicaid Members (2nd quarter 2014 enrollment).**

- **Inclusion and exclusion criteria:**
  - Patients who used a WCD were identified using retrospective medical claims between January 2011 and April 2013.
  - Patients were required to have continuous enrollment for 240 days post-WCD period.

- **Outcomes:**
  - The primary outcome was the number of patients with no ICD who underwent a cardiac procedure. The secondary outcomes were the type and number of diagnostic and/or interventional procedures performed.
  - Outcomes were stratified by Medicare and Commercial populations.

- **Statistical analysis**
  - Descriptive statistics were used in reporting outcomes.

### References