### Study Population

**Inclusion criteria:** Patients referred for Holter monitoring for the evaluation of paroxysmal AF and to document a response to therapy and potentially diagnose other arrhythmias.

**Patients characteristics:** All patients had paroxysmal AF, their mean age was 64.5 years, 54.7% males, and 93.9% were Caucasians. 48% had hypertension, 8% diabetes, 5.3% CHF, and 4% CAD. 50.7% were receiving B-blockers, 21.3% calcium channel blockers, 32% were on antiarrhythmic medication. 67.1% had symptomatic AF, 21.3% underwent previous cardioversion, and 10.3% prior pulmonary vein isolation.

**Gold standard:** Holter monitoring.

### Treatment/Intervention

- All patients were given a Zio®Patch and instructed to wear the device and press the trigger button when they felt symptoms. They were instructed to wear the patch for as long as possible with the goal of obtaining 14 days of recording. The rhythm data were collected on the device which was then sent back to the manufacturer to analyze the data using proprietary algorithm.
- All patients were also given a 24-hour Holter monitor to wear simultaneously, 25 AF episodes were recorded on both.

### Results

- **Significant arrhythmias were defined as atrial fibrillation or flutter (grouped as one category), other supraventricular tachycardias for >4 beats, sustained ventricular tachycardia >4 beats, junctional rhythm, sinus bradycardia (<50 beats/min), and complete or high grade heart block.**
- **Mean monitoring time for Holter monitor 22.5 ± 1.8 hours**
- **Mean monitoring time for Zio® Patch 10.8 ±2.8 days (range 4-14)**
- **During the first 24 hours, when patients wore both the Zio® Patch and Holter monitor simultaneously, 25 AF episodes were recorded on both.**
- **Estimated AF burden was available for 21/25 patients with detected AF on Holter: 58.4%**
- **Estimated AF burden was available for all 43 patients with detected AF with Zio® Patch:**

<table>
<thead>
<tr>
<th>Clinical classification of AF based on Zio Patch findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HOlTER</strong></td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>Paroxysmal</td>
</tr>
<tr>
<td>Persistent</td>
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</table>

### Reasons for discontinuing use of Zio® Patch:

- **Study completion:** 49 patients (66.2%)
- **Device falling off:** 16 patients (21.6%) after a mean of 7.9 days
- **Patients decision:** 6 patients (8.1%)
- **Battery malfunction, unknown, or need for intervention:** 1 patient for each

### Study Type

- **Aim:** To compare Zio® Patch with a 24-hour Holter monitor.
- **Endpoints:** Correlation between Holter monitor and Zio® Patch for identifying AF events and estimating AF burden.
- **N of patients:** N = 74 consecutive patients.
- **Blinding:** Yes, the investigators reading the Zio® Patch were blinded to the reports of the 24-hour Holter monitor.

### Advantages/limitations

- **Validity /Conclusion:** The pilot study had the advantage of comparing the Zio® Patch to 24-hour Holter monitor. However, it was a small single center study that included patients with symptomatic AF which does not allow studying the device in patients with silent AF. The device was compared to 24-hour Holter monitor and not to other longer-term outpatient ambulatory cardiac rhythm monitors. The results of the study show that the Zio® Patch was able to detect more AF episodes than Holter monitor, and had a comparable ability to quantify AF burden. It was able to identify other arrhythmias due to the longer duration of recording. The author recommended that larger studies are necessary to determine the efficacy of Zio® Patch in overall arrhythmia detection and its cost effectiveness compared to other ambulatory monitors.