Programming Overview

Rate Adaptive Pacing
A motion-based accelerometer may not always detect when the patient is exercising, potentially resulting in inadequate rate response.

- Riding a bicycle
- Holding a grandchild
- Carrying groceries
- Working in the garden
- Using a walker
- Swimming
- Lifting weights

RightRate™
- RightRate is a physiologic minute ventilation sensor that is highly correlated with breathing.
- The only sensor clinically proven to restore chronotropic competence.¹
- VISIONIST X4 is labeled for up to 13.1 years¹ projected longevity even when RightRate is turned ON.


2. Assumes: 2.0V RA/RV/LV, RA 500Ω, RV/LV 700Ω, No LATITUDE, 0.4ms pulse width, 100% BiV pacing, 15% atrial pacing, 70 ppm LRL.

Step 1
Assess Chronotropic Competence

Step 2
Prepare Calibration and Sensor Baseline

Step 3
Optimize Sensor Trending Data
Heart Rate Score is defined as the height of the tallest atrial histogram bin. A broader range of HR is typically better for the patient. Therefore, a lower HR Score is preferred.

**Heart Rate Score** was an independent predictor of mortality.\(^3\)

**Mortality** improved with DDDR.\(^4\)

**RightRate™ Blended Sensor** was shown to improve Heart Rate Score more than accelerometer alone.\(^5\)

**Impact of Rate Responsive Programming on survival based on Heart Rate Score**

<table>
<thead>
<tr>
<th>HR Score</th>
<th>N</th>
<th>Hazard Ratio ± 95% CI</th>
<th>HR Score</th>
<th>N</th>
<th>Hazard Ratio ± 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;70%</td>
<td>3878</td>
<td>0.96 0.89-1.04</td>
<td>30-70%</td>
<td>4992</td>
<td>0.81 0.71-0.92</td>
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<tr>
<td>&lt;30%</td>
<td>3656</td>
<td>0.86 0.79-0.94</td>
<td>≥70%</td>
<td>3124</td>
<td>0.80 0.73-0.87</td>
</tr>
</tbody>
</table>


**Impact of Rate Responsive Programming on Heart Rate Score**

(among patients with baseline heart rate score of ≥ 70%)

**LATITUDE™ analysis of 6,164 patients**

Patients with baseline Heart Rate Score > 70% significantly improved their Heart Rate Score, with DDDR (from 88±9% to 78±15%; P<0.001).

**Analysis of 501 patients from the LIFE Study**

RightRate blended sensor (MV+XL) resulted in:
- Heart Rate Score reduction of 18%.
- Converted almost twice as many patients to Heart Rate Score < 70% when compared to XL only.

**RightRate™ and Heart Rate Score Clinical Data**

\(^3\) Wilkoff et al., A Device Histogram based Simple Predictor of Mortality Risk in ICD and CRT-D Patients: The Heart Rate Score. Pace 2017.
