Novel Near Infrared Technology Accurately Diagnoses Vascular Disease

**Background**

Diabetic vascular disease continues to inflict a high burden of morbidity. Despite available diagnostic tools, amputation rates for advanced vascular disease have increased in the past several decades. At the same time, patients with lower socioeconomic status suffer late diagnosis and more advanced disease presentation. Black patients suffer disproportionately higher rates of PAD than other demographic groups, with amputation rates for advanced PAD that are 2-4 times higher. (Bevan, 2020) The current ineffective strategy for screening involves in-office testing by physicians using ABI testing, which is underutilized by primary care clinicians, inaccurate in diabetes, and costly for many patients. (Mohler, 2004)

Infrared RX has developed a reliable, non-invasive, and cost-effective diagnostic tool for diagnosing vascular disease. ABI testing is unreliable for 1 in 4 patients.

**Team**


**Need**

Peripheral Arterial Disease (PAD)
- Diabetes, high cholesterol, smoking
- Leg pain when walking
- Detection essential for treatment, but current diagnosis has flaws
- Untreated: amputation, heart attacks, stroke
- High degree of health disparity
- Approximately 6% of the US adult population (40 years or older, or over 7 million people) have PAD. Despite available diagnostic tools, amputation rates for advanced PAD has increased in the past several decades.

**OPPORTUNITY**

- Ability to offer to a broader population
- Accurate diagnosis at the earliest stages
- Ability to monitor progress with therapy
- Ease of use, fast, inexpensive, and reliable

**Solution**

IRX FLOW
- Non-invasive light sensor
- Automated data acquisition platform
- Special training not required
- Ten minutes to test both legs

**Research**

Table: Subject characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>PAD N = 21</th>
<th>No PAD N = 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>70±8.1</td>
<td>70±7.3</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Ankle-Brachial Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right PT</td>
<td>0.85 ± 0.29</td>
<td>-</td>
</tr>
<tr>
<td>Right DT</td>
<td>0.85 ± 0.30</td>
<td>-</td>
</tr>
<tr>
<td>Left PT</td>
<td>0.87 ± 0.25</td>
<td>-</td>
</tr>
<tr>
<td>Left DT</td>
<td>0.76 ± 0.21</td>
<td>-</td>
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<tr>
<td>IRX FLOW</td>
<td>46.4 ± 44.6</td>
<td>16.4±7.0</td>
</tr>
</tbody>
</table>

Graph: Correlation between IRX FLOW and ABI testing. Pearson correlation = 0.75 (p<0.05).

Figure: IRX Logic Model Flow chart illustrates implementation of IRX FLOW device in decreasing disparities.