Novel technology for NT-proBNP-assisted remote monitoring of heart failure patients

**THE PROBLEM & OPPORTUNITY**
- CHF affects 26 million people worldwide & 6 million Americans
- 30% of global hospital readmissions are due to CHF
- Costs will grow with aging populations
- NT-proBNP is a blood biomarker used to reliably detect, diagnose, and evaluate the severity of heart failure.
- 2017 ACC guidelines have upgraded NT-proBNP to a Class-1 recommendation for prognostication.

**JANA CARE’S NOVEL TECHNOLOGIES**
- **Aina X1** is both the world’s first fingerstick-compatible & mobile connected NT-proBNP monitoring system designed for the prognosis and monitoring of congestive heart failure.
- Its unique flexibility allows for fingerstick capillary, venous, or plasma blood samples, and requires no sample preparation.
- A wireless cloud connection enables self-calibration and automatic syncing to enable remote, real-time disease management.

**RESULTS FROM ALPHA TESTING**
IRB approved studies demonstrate analytical performance with fingerstick, venous whole blood and plasma samples.

<table>
<thead>
<tr>
<th>Method comparison</th>
<th>Matrix comparison</th>
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<tbody>
<tr>
<td>Equivalent performance against the Roche Cobas e-411 analyzer with 291 whole blood samples.</td>
<td>Equivalent performance with direct fingerstick, venous whole blood, and plasma samples.</td>
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</tbody>
</table>

**SUCCESSFUL FEASIBILITY STUDY FOR HABITS DIGITAL PLATFORM AT MGH**

**Methods and Results:**
- 23 patients with HF were randomized to intervention (smartphone with the Habits Heart® App installed and Bluetooth-linked scale) or control (paper education material) groups (53.6% HF with reduced ejection fraction, 71.4% male, 59.5 years of age).
- 9/12 patients used the App regularly and 1/11 control patients retained patient education material by the end of the 6-week follow up period (p-value=0.003).
- Patients in the intervention group averaged more than one daily session of 5-minute duration and 22 weight entries per patient.
- The longer a patient engaged with the App, the greater the improvement in HF knowledge as assessed by AHFKT-V2 (Spearman ρ=0.59, p=0.04) and quality of life as assessed by KCCQ-12 (ρ=0.63, p=0.03) scores. Correlation between App use and weight change was ρ=0.40 (p=0.19).

**Conclusions:** Preliminary results suggest the Habits Heart® App is a feasible way to engage patients in HF management.

**PARTNERS**

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**Method comparison**
Equivalent performance against the Roche Cobas e-411 analyzer with 291 whole blood samples.

**Precision**
Under 12% CV across the measuring range with whole blood samples.

<table>
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<tr>
<th>Whole blood sample level</th>
<th>Mean Value (pg/mL)</th>
<th>%CV</th>
</tr>
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<tbody>
<tr>
<td>L1</td>
<td>667</td>
<td>7</td>
</tr>
<tr>
<td>L2</td>
<td>1251</td>
<td>7</td>
</tr>
<tr>
<td>L3</td>
<td>3134</td>
<td>11</td>
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