Using AI and NLP to Alleviate Physician Burnout
Context: AI as a New Technology

It is Day 1: We’re very early in this Journey- we’ll be wrong

Other Industries are ahead- we need to learn from them (Financial Services, Online Retail, Digital Marketing, etc.)

New Technology Paths: Enable existing models before creating something entirely new- Internet, Online Magazines, Social Media
PSJH Digital Journeys

STRENGTHEN THE CORE
Make Caregiving Easier

BE OUR COMMUNITIES' HEALTH PARTNER
Better Serve Medicaid

TRANSFORM OUR FUTURE
Personalization and Convenience
Power Behavioral Health
Simplify Care
Enable New Revenue Streams
Innovating at the End of the Value Chain
Enabling The “Sacred Encounter”
Reducing Friction for Providers

<table>
<thead>
<tr>
<th>The Positives</th>
<th>The Friction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powerful Data Collection</td>
<td>Increased Screen Time</td>
</tr>
<tr>
<td>Clinical Decision Support</td>
<td>Untapped Data</td>
</tr>
<tr>
<td>Improved Quality Outcomes</td>
<td>Physician Burnout</td>
</tr>
</tbody>
</table>
Navigation: Increased Access Options Complicates Patient Experience

The Beginning | Expanding Care | Improving Access | Today

Provider

Hospital
PCP

Payer

Urgent Care
Retail Clinics

Payer
Emergency
Retail Clinics

Hospital
PCP

Urgent Care
Express Clinics
Virtual Visits

Payer
At Home
Concierge Medicine

Hospital
Emergency
PCP
How AI Can Help

The Sacred Encounter
Consumer-Facing AI

**Patient Need**
- What insurance plans do you accept?
- Where can I get care for this condition?
- What do these symptoms mean?
- I want a prescription refill.

**Solution**
- Help patients understand the system and their benefits
- Help patients understand their options
- Help diagnose patients before seeing a provider
- All-encompassing assistant to navigate a patient's needs
## Effective AI

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td>Accurate</td>
<td>Especially in Health Care</td>
</tr>
<tr>
<td>Modular</td>
<td>Using Several Technologies for Different Contexts</td>
</tr>
<tr>
<td>Context-Aware</td>
<td>Provides Help in Different Patient/Provider Contexts</td>
</tr>
<tr>
<td>Multi-Channel</td>
<td>Voice, Chat, Smart Speaker</td>
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<tr>
<td>Persistent</td>
<td>No Need to Relearn Prior History or Context</td>
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Vendor Approaches

**Automation: AI as Assistant**
Takes tedious tasks and automates them intelligently, freeing up patients and/or providers to focus on other tasks.

**Engagement: AI as Customer Service**
Offers personalized, thoughtful, and helpful customer service experiences, with no wait or cost to the health system.

**Analysis: AI as Advisor**
Enables clinicians and patients to make better decisions, powered by predictive models and real-time data support.

- **Digital Scribes**
- **Robotic Process Automation**
- **Consumer Chatbots**
- **AI Diagnosis**

**Analysis**
Clinical Decision Support

**Automation**

**Engagement**

**notable**

**saykara**

**Suki**

**buoy**

**GYANT**

**babylon**
**PSJH Current Work:**
Virtual Physician Assistants

<table>
<thead>
<tr>
<th>Solutions</th>
<th>Early Results</th>
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<tbody>
<tr>
<td><strong>saykara</strong></td>
<td></td>
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<tr>
<td>Open-ended virtual physician assistant for broad, complex use cases</td>
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</tbody>
</table>

**Typical Physician Daily Epic Usage**

**AI-Supported Physician Daily Epic Usage**
Grace is a patient-facing AI capable of directing patients to an appropriate venue of care based on their symptoms or condition, as well as answering simple FAQ-style questions. Uses open-source AI.

<table>
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<th>Early Results</th>
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<tbody>
<tr>
<td><strong>Grace</strong></td>
<td><strong>Grace Symptom Checker – Service Line Listing</strong></td>
</tr>
<tr>
<td>Need Help?</td>
<td>Click Rate 2%</td>
</tr>
<tr>
<td></td>
<td>Patient Routing Accuracy 90%</td>
</tr>
<tr>
<td></td>
<td><strong>Grace FAQ – Help Page</strong></td>
</tr>
<tr>
<td></td>
<td>Click Rate 18%</td>
</tr>
<tr>
<td></td>
<td>Answer Accuracy 80%</td>
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Vision for AI and Bots to Support Patients & Providers

- **Before the Visit**: Collect data from patient and mine EMR information to assist the provider and prepare the visit
- **Smarter Care**: Reduce or eliminate unnecessary care that should be algorithmic/self-service
- **Navigate**: Patients to the right care option
- **Top-of-License**: Help direct lower level licensed (or the patients themselves) to conduct low-acuity physical exams where a higher license is not available or not required
- **Seamless Experience**: Partner with technology companies and platforms to modularly access many AI/bots while providing a consistent experience and continuity
What Are AI, ML, Neural Networks, and NLP?

Artificial Intelligence (AI):
System exhibiting intelligent behavior

Machine Learning:
AI + improving over time based on data, without human programming

Neural Networks:
A type of ML using large volumes of labelled data inputs with less need for human help than other classification algorithms

Natural Language Processing:
Understanding human "talk" and "talking back" to us in ways we understand