Technology For Better Brains: The Rise Of New Treatments Based On Brain Science Innovation

Robert N. Cuyler, Ph.D., Senior Associate, OPEN MINDS
The 2014 OPEN MINDS Planning & Innovation Institute
June 4, 2014 | 4:15pm – 5:30pm
I. Overview Of The Neurotechnology/Brain Science Market

II. Innovation From The Field
- Suzanne McMonigle, Vice President, Marketing, Neuronetics
- Vic Topo, President & Chief Executive Officer, Center For Life Management
- Savannah DeVarney, Vice President, Product, Brain Resource, Inc.
- Henry Mahncke, Ph.D., Chief Executive Officer, Posit Science

III. Questions & Discussion
Overview Of The Neurotechnology/Brain Science Market
# Neurotechnology Glossary

<table>
<thead>
<tr>
<th>Neurotechnology</th>
<th>Neuroplasticity</th>
<th>Cognitive Retraining</th>
<th>Brain Fitness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Broad term used to refer to medical electronics used to interact with the human nervous system</td>
<td>• The brain's ability to reorganize itself by forming new neural connections and allows the nerve cells in the brain to compensate for injury and disease and to adjust their activities in response to new situations or to changes in their environment</td>
<td>• A therapeutic strategy that seeks to improve or restore a person's skills in the areas of paying attention, remembering, organizing, reasoning and understanding, problem-solving, decision making, and higher level cognitive abilities</td>
<td>• Hypothesis that cognitive abilities can be maintained or improved by exercising the brain, analogous to the way physical fitness is improved by exercising the body</td>
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</table>
The Impact Of Genetics & Neurotechnology In Behavioral Health

New scientific discoveries are continuing to change our assumptions about the brain.

Research is demonstrating that not only dementias, but also many mental illnesses, are conditions with etiology in brain structure and biochemistry.

Many treatment interventions—from traditional “talking” therapies to meditation—affect the brain’s physical and chemical nature.

The past decade has seen a revolution in technologies to preserve, enhance, and restore cognitive functioning.

These developments have opened up new service realms for behavioral health professionals and care systems.
Sectors Of The Neurotech Market

Neurotech market

Stimulation-based/neuromodulation therapies
- Invasive
  - Vagus nerve stimulation
- Non-invasive
  - Deep brain stimulation
  - Transcranial magnetic stimulation
  - Light & sound neurotherapies

Exercise-based therapies
- Neurofeedback (EEG, HEG, & rt-FMRI)
- Cognitive retraining
- Brain fitness activities

Exercise-based/neuromodulation therapies
- Exercise-based therapies

Exercise
- Neurofeedback
- Cognitive retraining
- Brain fitness activities

Neurotech market

Invasive Vagus nerve stimulation

Preventative Exercise
- Exercise-based therapies

Exercise
- Neurofeedback
- Cognitive retraining
- Brain fitness activities

Exercise-based therapies

Neurotech market

Stimulation-based/neuromodulation therapies
- Invasive
  - Vagus nerve stimulation
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Exercise-based therapies
- Neurofeedback (EEG, HEG, & rt-FMRI)
- Cognitive retraining
- Brain fitness activities
## The Neurotech Market

The global market for brain health applications software and biometrics

<table>
<thead>
<tr>
<th>Year</th>
<th>Market Size</th>
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<tr>
<td>2005</td>
<td>$210 million</td>
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<tr>
<td>2012</td>
<td>$1 billion</td>
</tr>
<tr>
<td>2020</td>
<td>$6 billion</td>
</tr>
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</table>
Innovation From The Field
Faculty

• Suzanne McMonigle, Vice President, Marketing, Neuronetics
• Vic Topo, President & Chief Executive Officer, Center For Life Management
• Savannah DeVarney, Vice President, Product, Brain Resource, Inc.
• Henry Mahncke, Ph.D., Chief Executive Officer, Posit Science
Become a Leader in the Field of NEUROMODULATION

Suzanne McMonigle Vice President of Marketing, Neuronetics
Neuronetics Overview

- Pioneered therapeutic TMS for use in multiple clinical practice settings and established the TMS neuromodulation market in major depressive disorder
- Market leader in TMS Therapy clinical research, product development and commercialization
- Solely focused on the health of patients and long term success of providers
The Unmet Need: Burden of Major Depression
Major Depression: A Large Patient Population that is Currently Being Underserved


16.1 Million US Adults with MDD

8.2 Million Treated

4.5 Million Poorly Served

• Inadequate response
• Intolerant to side effects
NeuroStar TMS Therapy®
What is TMS? (Transcranial Magnetic Stimulation)¹

- Application of MRI-strength magnetic field pulses to the left pre-frontal cortex
- Magnetic field pulses pass unimpeded 2-3 cm into the cortex
- This induces electric current in the brain

Results in mood regulation

Biologic effects of electrical stimulation:
- Releases neurotransmitters
- Increases cerebral blood flow
- Increases glucose metabolism

---

NeuroStar in Clinical Practice

- Non-invasive
- No anesthesia or sedation
- Outpatient procedure easily performed in physician’s offices
- Approximately 37-minute daily procedure
- 4-6 week treatment course
- Patients return for re-treatments as needed
Major Depressive Disorder

Treatment Landscape

Paxil® (paroxetine) is a trademark of GlaxoSmithKline, Zoloft® (sertraline) is a trademark of Pfizer Inc., Cymbalta® (duloxetine) is a trademark of Eli Lilly and Co., Abilify® (aripiprazole) is a trademark of Otsuka America Pharmaceutical, Inc.

Increasing treatment resistance

Paxil® (paroxetine) is a trademark of GlaxoSmithKline, Zoloft® (sertraline) is a trademark of Pfizer Inc., Cymbalta® (duloxetine) is a trademark of Eli Lilly and Co., Abilify® (aripiprazole) is a trademark of Otsuka America Pharmaceutical, Inc.
NeuroStar TMS Therapy®

Treatment Suites

Center Model

Center Model photos courtesy of Shinjuku TMS facility.
NeuroStar TMS Therapy®
Outcomes Study results: Efficacy in Real World Use

LOCF Analysis of intent-to-treat population

In an NIMH-funded, independent, randomized controlled trial, patients treated with TMS using the NeuroStar TMS System were four times more likely to achieve remission compared to patients receiving sham treatment ($P=0.0173$, odds ratio=4.05).

Carpenter, Depression and Anxiety, 2012
Long Term Results at 12 Months

Clinician and Patient-Assessed Outcomes (N=257)

LOCF Analysis of intent-to-treat population

Clinician and Patient-Assessed Outcomes (N=257)
Long term durability of effect has not been established in a controlled trial. Neuronetics, Inc. (data on file).
NeuroStar TMS Therapy® Avoids Drug Side Effects

Drug Therapy

<table>
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<th>OTHER ADVERSE EVENTS</th>
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<tr>
<td>Nervousness</td>
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<tr>
<td>Increased Appetite</td>
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<tr>
<td>Abnormal Ejaculation</td>
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<tr>
<td>Constipation</td>
</tr>
<tr>
<td>Decreased Appetite</td>
</tr>
<tr>
<td>Impotence</td>
</tr>
<tr>
<td>Headache/Migraine</td>
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<tr>
<td>Decreased Sexual Interet</td>
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<tr>
<td>Treatment Discontinuation Side Effects</td>
</tr>
</tbody>
</table>

From product labeling for currently marketed antidepressant medications; adverse events occurring at an incidence >5% and 2x the rate of placebo treatment.

In clinical trials, fewer than 5% of patients discontinued treatment with NeuroStar TMS Therapy due to adverse events.

Neuronetics, Inc. (data on file)
Clinical Utilization Across the U.S.
Top Psychiatry Hospitals Provide NeuroStar TMS Therapy

- Johns Hopkins Hospital, Baltimore, Maryland
- McLean Hospital, Belmont, Massachusetts
- Sheppard and Enoch Pratt Hospital, Baltimore, Maryland
- Mayo Clinic, Rochester, Minnesota
- UCLA, Los Angeles, California

Other notable hospitals and institutions include:
- Stanford Hospital
- Alegent Health
- Berenson-Allen Center for Noninvasive Brain Stimulation (Beth Israel DMC)
- Florida Hospital
- University of Michigan
- Butler Hospital/Brown University
- Medical University of South Carolina
- Rush University
- Walter Reed
- University of Florida
- Loma Linda University
- Boston University
- University of South Florida
- Southern Illinois University
2012 Expanding Patient Access

Prior to 2012
- Blue Cross Blue Shield of New England (NE) - 700K
- NHIC (VT/RI/NH) - 1.8M

Mar 2012
- TUFTS Health Plan (MA/RI/NH) - 4.1M
- Blue Cross Blue Shield of Rhode Island (RI) - 1M

May 2012
- Optima Behavioral Health (MD/DC/VA/WV/NC) - 600K
- Health Net (MHN) (CA/AZ/WA/OR/CT) - 4.9M
- Health New England (MA) - 123K

Aug 2012
- Emblem Health (NY/CT/NJ) - 1M
- Anthem Blue Cross Blue Shield (CA/CO/CT/GA/IN/KY/ME/MO/NH/NV/NY/OH/VA/WI) - 34M

Dec 2012
- Cahaba (GA/AL/TN) - 3M
- Vermont Medicaid (VT) - 182K

Private Carriers
- CMS (Medicare/Medicaid)

Total Patient Access:
- Pre-2012: 4.1M
- Mar 2012: 10.7M
- Aug 2012: 44.7M
- Dec 2012: 50.6M
2013 Expanding Patient Access

- **Jan 50.6M**: PREMERA Blue Cross (WA 1.6M)
- **Apr 60.7M**: KAISER PERMANENTE (OR 550K)
- **Jul 65.5M**: Blue Cross Blue Shield of Massachusetts (MA/NH/ME/RI/CT 3M)
- **NHP Neighborhood Health Plan of Rhode Island (RI 90k)
- **Oct 82.7M**: Blue Care Network (MI 558K)
- **FIRST COAST**: FL/Virgin Islands/PR (4.2)
- **Dec 90.8M**: MVP Health Care (NY/VT/NH 750K)
  - **United Healthcare (UHC)**: (NE states 320K)

Other providers include:

- **Blue Shield of California (CA 3.5M)
- **Novitas (PA/NJ/NY/ME/RI/CT 1.2M)
- **Rocky Mountain (CO 200K)
- **Harvard Pilgrim Health Care (MA/NH/ME/RI/CT 1.2M)
- **Independence BC/BS (PA 3M)
- **BC/BS of Michigan (MI 5M)
- **CareFirst BC/BS (DC/MD/VA 3.4M)
- **BC/BS of S. Carolina (SC 1M)
- **Fallon Community Health Plan (MA 250K)
- **UniCare (MA state employees 225K)
- **NALC National Assoc of Letter Carriers (National 316K)

Private Carriers
- CMS (Medicare/Medicaid)

CMS (Medicare/Medicaid)
2014 Expanding Patient Access

Behavioral Healthcare Carve-Out Organizations

- Managed Health Network (MHN)
  - Carve-out for Healthnet and many other plans
  - May 2012

- Magellan
  - TMS added to Medical Necessity Criteria
  - Dec 2012

- ValueOptions
  - TMS added to Medical Necessity Criteria
  - Nov 2012

Private Carriers
- CMS (Medicare/Medicaid)
Neuronetics in partnership with healthcare providers secured 94M Covered Lives as of Jan. 2014.
## CPT Category I Codes

**Effective January 1, 2012**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>90867</td>
<td>Therapeutic repetitive transcranial magnetic stimulation treatment; initial, including cortical mapping, motor threshold determination, delivery and management</td>
</tr>
<tr>
<td>90868</td>
<td>Subsequent delivery and management, per session</td>
</tr>
<tr>
<td>90869</td>
<td>Subsequent MT re-determination with delivery and management</td>
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</table>
Indication Statement

NeuroStar TMS Therapy is indicated for the treatment of Major Depressive Disorder in adult patients who have failed to receive satisfactory improvement from prior antidepressant medication in the current episode.

NeuroStar TMS Therapy is only available by prescription. For complete prescribing information please visit NeuroStar.com.

The most common side effect is pain or discomfort at or near the treatment site. These events are transient; they occur during the TMS treatment course and do not occur for most patients after the first week of treatment. There is a rare risk of seizure associated with the use of NeuroStar TMS (<0.1% per patient).

NeuroStar TMS Therapy is contraindicated in patients with non-removable conductive metal in or near the head.
TECHNOLOGY FOR BETTER BRAINS: THE RISE OF NEW TREATMENTS BASED ON BRAIN SCIENCE INNOVATION

OPEN MINDS
PLANNING & INNOVATION INSTITUTE

JUNE 4, 2014
NEW HOPE IS ON THE WAY FOR TREATING DEPRESSION: PIONEERING TRANSCRANIAL MAGNETIC STIMULATION (TMS) AT A COMMUNITY MENTAL HEALTH CENTER

Vic Topo, President/CEO
Center for Life Management
Derry, New Hampshire
vtopo@clmnh.org
WHY TMS?

“Hope gives us reason to live, it takes obstacles and transforms them into possibilities. Hope gives us the strength and the courage we need to make the most of life.” ~ John C. Maxwell
TMS PAST, PRESENT & FUTURE

Innovation & Adoption

Current Status

“Believing is Seeing” ~ Wayne Dyer
Partnerships

1967
501 (c) 3

State Designated
CMHC

13 Million
Revenues

Innovation

220
Employees
GETTING STARTED

“The Secret of Getting Ahead Is Getting Started” ~ Mark Twain

2010 → TMS Purchase

2011 → Implementation
HOW MUCH IS THAT DOGGIE IN THE WINDOW

COST OF TMS
COST OF TMS

- Device
- Consumers
- Payors
- No New Options
TMS WORK IN PROGRESS

“If there is no struggle, there is no progress”
~Frederick Douglas

Disruptive Technology
(Neurotech Solutions)

Legacy Technology
(Pharma Solutions)

OPTIONS IS KING!
IMPACT ON CONSUMERS

“Of course the medical profession doesn’t like D.I.Y. anything”. ~Eric Topol M.D.

- Knowledge/Technology Is Power
- Options = Hope
- Proven Efficacy
- Rapid Rise In Insurance Coverage
IMPACT ON PAYORS

- Unproven Efficacy Argument
- Rapid Rise in Insurance Coverage
- New Tech for Mental Disorders
- Cost Savings?
IMPACT ON PROFESSIONALS

“The test of a first rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain ability to function”. ~ F. Scott Fitzgerald

- Knowledge/Action!!
- Cost – “Elephant in Room”
- Pipeline to Mainstream
“LESSONS LEARNED/
“FAILING FORWARD”

“Without reflection we go blindly on our way creating more unintended consequences and failing to achieve anything useful”. ~ Margaret Wheatley
LESSONS LEARNED/
“FAILING FORWARD”

❖ Advocacy is King!

❖ Clinicians Not Own TMS

❖ Revenue Diversification/Profit Secondary

❖ Brain Science/Leadership
“Something we were withholding made us weak until we found it was ourselves”.

~ Robert Frost

- Segment Special Populations
- “Mass Customization” Movement
- TMS as 1st Choice-- Not Complementary
- TMS Nirvana: TMS Option for All Who Qualify!
# TMS Performance Metrics

## March 2011 – April 2014

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>2011</th>
<th>2012</th>
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<th>2014</th>
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<td><strong># of Patients</strong></td>
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<td><strong># of Treatments</strong></td>
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<td><strong>How Patients Heard About Our TMS</strong></td>
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<td><strong>Revenues Generated</strong></td>
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<td>$94,562</td>
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*Achieved Neurostar “Blue Circle” Status in 2013  500+ Treatments

**Only Covered Partial Year.
## CLINICAL OUTCOMES DATA – TMS
### COST EFFECTIVENESS ANALYSIS (ANTIDEPRESSANTS)

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014 (Jan – April)</th>
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<tbody>
<tr>
<td># of Patients Treated</td>
<td>18</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td># of Patients Scored</td>
<td>18</td>
<td>21</td>
<td>17</td>
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<tr>
<td>Avg. PHQ-9 Score (%)</td>
<td>62%</td>
<td>53%</td>
<td>54%</td>
</tr>
<tr>
<td>Avg. PHQ-9 Remission</td>
<td>24%</td>
<td>20%</td>
<td>(Insufficient Data)</td>
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<tr>
<td>Avg. HAM-D Score (%)</td>
<td>47%</td>
<td>26%</td>
<td>56%</td>
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<tr>
<td>Avg. HAM-D Remission</td>
<td>59%</td>
<td>46%</td>
<td>(Insufficient Data)</td>
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<table>
<thead>
<tr>
<th>TMS 6 – WEEK COST</th>
<th>$441.60 (90867) (1 X TREATMENT)</th>
<th>$6,396 (90868) (30 TREATMENTS) (CR)</th>
<th>$6,396 (90869)</th>
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<tbody>
<tr>
<td>Trazodone</td>
<td>$5,475</td>
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<tr>
<td>Escitalopram (Lexapro)</td>
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</tr>
<tr>
<td>Sertraline (Zoloft)</td>
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</tbody>
</table>

**ANTIDEPRESSANTS / TMS COST SAVINGS**

*PHQ-9 Scale and HAM-D Scale Use Consistent With Studies*
The Miracle of the Chinese Bamboo Tree

“In everything you do, keep in mind the miracle of the Chinese bamboo tree. After the seed for this amazing tree is planted, you see nothing for four years except for a tiny shoot coming out of a bulb. During those four years, all the growth is underground in a massive, fibrous root structure that spreads deep and wide in the earth. But then in the fifth year the Chinese bamboo tree grows up to eighty feet”!

From The 7 Habits of Highly Effective Families
By Stephen R. Covey
Building Resilient Employees Through Brain Health

Savannah DeVarney
VP, Product
About Brain Resource

1. Leading supplier of scientifically **validated** brain health assessments and training programs that target both cognition and emotional health.

2. Brain health tools promote high consumer **engagement**, train resilience and kindle the brain for behavior change.

3. Products adopted by corporate & consumer **wellness** companies, employee assistance programs and clinics around the world.
Applying Big Data to Wellbeing and Psychiatry
40%* of a workforce is highly stressed, costing employers 46% more in health costs.

* APA 2009
Build Brain Health. Build Resilience.

MyBrainSolutions

1. **Assess** your brain health & receive personalized recommendations
2. **Train** regularly to improve your brain’s cognitive and emotional skills
3. **Track** your progress with follow up assessments

**Develop resilience:** Respond better, bounce back quicker.
Online and On The Go
e-Catch the Feeling

ROUND: 1/4
SCORE: 1,163

POSITIVE MATCHES: 7/9

GAMES PLAYED: 0

TIME REMAINING: 9 seconds

HAPPY
Training Session

Using Breathing Rate: 5.5 bpm / 418% improvement

Baseline Beats Per Minute  Calmness Training Beats Per Minute

Date: Jun. 24, 2011  Time: 4:00 pm
Published Results: Dose-dependent effect

Just 20 game plays improves brain health scores
Improvements in Brain Health

- The number of Associates who completed a baseline & follow up brain health assessment was 4,128.

* = Significant at alpha = 0.05; ** = Significant at alpha = 0.01; *** = Significant at alpha = .0001

![Percentile Key Table]

<table>
<thead>
<tr>
<th></th>
<th>Clinical</th>
<th>Borderline</th>
<th>Average</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4%</td>
<td>4-16%</td>
<td>16-84%</td>
<td>84-100%</td>
<td></td>
</tr>
</tbody>
</table>
Improvements in Highly Stressed Employees

The number of employees who completed a baseline & follow up brain health assessment was 4,128. The analysis focused on results where baseline stress levels scores are less than the 16th percentile.

* = Significant at alpha = 0.05; ** = Significant at alpha = 0.01; *** = Significant at alpha = .0001

### Percentile Key

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---

**Feeling**

- Stress Level: 71.9% ***
- Anxiety Level: 29%
- Depression Mood Level: 31.9% ***

**Self Regulation**

- Positivity–Negativity Bias: 47.6% ***
- Resilience: 17.6% ***
- Social Capacity: 22% ***
Improvements in General Functioning

‘Effectiveness Surveys’ ask employees to rate how effectively they are functioning in their day-to-day routines. These surveys are part of each brain health assessment. Employees rate their effectiveness on a scale of 1-10 with 10 being ‘the best they could be’ and 1 being ‘the worst they could be’. The results below were from an analysis focused on individuals who had a starting baseline scores where ≤ 1 SD below the mean. (n=2,020)

- + 40% Managing Stress More Effectively.
- + 28% More awareness of positive feelings.
- + 40% Remembering things more easily.
- + 24% Focusing better on work and personal tasks.
Improvements in Productivity

The graph below illustrates changes in measures of productivity of employees whose baseline scores indicated unproductive behavior (Productivity < 100% and Relative Absenteeism > 0%). Data for these calculation are taken from the World Health Organization Health and Productivity Questionnaire which is embedded within the brain health assessment on MyBrainSolutions.

<table>
<thead>
<tr>
<th>Magnitude of change</th>
<th>Productivity</th>
<th>Absenteeism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Productivity</td>
<td>29.28</td>
<td>-20.32</td>
</tr>
<tr>
<td>N</td>
<td>575</td>
<td>575</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>
85% of were motivated to take further steps to improve health.

39% indicated this was their first benefit used to address their concerns.
Medical Cost Offset

http://www.youtube.com/watch?v=6C6uZfLK5G0
Thank You!
Cognitive Training That Works: Moving From Clinical Efficacy to Real World Cost Effectiveness

June 2014, New Orleans LA
Open Minds Conference
A Brief Introduction to Posit Science

Where We Came From

- Founded in 2003 to bring brain plasticity out of the lab and into the world
- Spun out of UCSF
- Funded by leading venture capital groups, NIH grants, and operations

What We Do

- Invent New Science: Apply brain plasticity to build software-based cognitive training programs that work
- Get Science to People: Build programs that people love, and work with great partners to reach millions of people
- Science to the people!
- Brain fitness as a core part of everyone’s life

Where We’re Going
Moving Brain Training From Scientific Research To Practical Use

- Scientific Invention
  - Basic research in brain plasticity
  - Identification of core mechanisms of action
  - Initial program development

- Clinical Efficacy
  - Large scale RCTs
  - ACTIVE, IMPACT, IHAMS
  - Comparison to placebo and active controls
  - Trials in multiple populations

- Systemic Use
  - In service use models
  - Field trials
  - Cost effectiveness studies and cost reduction opportunities

Focus for today
Getting to Systemic Use With BrainHQ

Nationwide Partners

Local Partners

[Map showing partners across the United States]
ACTIVE Showed Generalization of Gains From A Specific Type of Brain Training

Health-Related Quality of Life

- **Control**: 25.8%
- **Memory**: 28.0%
- **Reasoning**: 26.7%
- **Speed**: 19.5%

Depressive Symptoms

- **Control**: 28.0%
- **Memory**: 22.7%
- **Reasoning**: 24.0%
- **Speed**: 19.6%

Automobile Crash Risk

- **Control**: 3.5%
- **Memory**: 3.0%
- **Reasoning**: 2.3%
- **Speed**: 1.9%

Risk of decline over 2 years:
- **Control**: 25.8%
- **Memory**: 28.0%
- **Reasoning**: 26.7%
- **Speed**: 19.5%

Risk of decline over 1 year:
- **Control**: 28.0%
- **Memory**: 22.7%
- **Reasoning**: 24.0%
- **Speed**: 19.6%

Risk of decline over 6 years:
- **Control**: 3.5%
- **Memory**: 3.0%
- **Reasoning**: 2.3%
- **Speed**: 1.9%

Health-Related Quality of Life:

- **Control**: 35.7% risk reduction, *p* = 0.004
- **Memory**: 30.3% risk reduction, *p* = 0.013

Depressive Symptoms:

- **Control**: 45% risk reduction, *p* < 0.05

Automobile Crash Risk:

- **At Fault Crash Incidence**
  - **Control**: 3.5%
  - **Memory**: 3.0%
  - **Reasoning**: 2.3%
  - **Speed**: 1.9%

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BrainHQ Reduces Predicted Medical Expenditures for Health Insurers

Data Analysis Flow

SF-36 Data From ACTIVE Study

MEPS Panel Data

Predicted Total Medical Expenditures

Results

Control population expenses increase

3.3% cost reduction

Control

$6,756

Posit

$6,576

Annual Predicted Medical Expenditure

$6,900

$6,800

$6,700

$6,600

$6,500

$6,400

$6,300

$6,200

Predicted Total Medical Expenditures

3.3% cost reduction on $7,000 total health care expenditure: $233 savings/insured/year
BrainHQ Reduces Cognitive Claims for Long Term Care Insurers

Participant Flow

Matched Control Group

Offer Program

Take Program

Take, No Use
N = 4,267

Take, Use
N = 1,949

Results

Incidence of Cognitive Claims (percent)

LTC claims are rare

Takers are lower risk than controls

Control
Take, No Use
Take, Use

0.35%
0.19%
0.05%

N = 6,216
N = 4,267
N = 1,949

LTC cognitive claim costs $3,000+ per month: enormous cost savings are possible

74% risk reduction from Posit training
BrainHQ Reduces Auto Crash Claims for Auto Insurers

**Participant Flow**

- **Pre-Training Period**
  - Offer Program
  - Take Program

- **Post-Training Period**
  - Take, No Use
  - Take, Use <10 hrs
  - Take, Use 10+ hrs

<table>
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<tr>
<th>N</th>
<th>Pre-Training Period</th>
<th>Post-Training Period</th>
</tr>
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<tbody>
<tr>
<td>N = 397</td>
<td>Take, No Use</td>
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<tr>
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<td>Take, Use &lt;10 hrs</td>
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**Results**

- Incidence of Auto Insurance Claims (percent)
  - Take, No Use
  - Take, Use <10 hrs
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  - Pre: 2.3%
  - Pre: 3.2%
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  - Take, No Use <10 hrs (N = 397)
  - Take, Use <10 hrs (N = 2,741)
  - Take, Use 10+ hrs (N = 677)

**Results**

- Untrained drivers get riskier
- Posit training stops decline
- Big crash reductions

**Incidence of Auto Insurance Claims (percent)**

- Pre-Training Period
  - Take, No Use: 4.5%
  - Take, Use <10 hrs: 4.0%
  - Take, Use 10+ hrs: 3.0%

- Post-Training Period
  - Take, No Use: 2.3%
  - Take, Use <10 hrs: 3.2%
  - Take, Use 10+ hrs: 1.3%

$1,200 policy, 65% loss ratio, 30% crash incidence reduction: **$235 savings/insured/year**
We Can Do It!

www.BrainHQ.com
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- In service use models
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AARP
AAA
Easter Seals
USAA
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Risk of decline 2 years

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- Take, No Use: N = 397
- Take, Use <10 hrs: N = 2,741
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**Results**

**Incidence of Auto Insurance Claims (percent)**

- Take, No Use: Pre 2.3%, Post 3.0%
- Take, Use <10 hrs: Pre 3.2%, Post 3.0%
- Take, Use 10+ hrs: Pre 0.5%, Post 1.0%

**Insurance**

**Auto**
BrainHQ Reduces Auto Crash Claims for Auto Insurers

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  - Offer Program
  - Take Program

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  - Take, No Use (N = 397)
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Questions & Discussion
The market intelligence to navigate.
The management expertise to succeed.