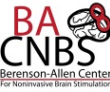


# Improving accessibility to a non-invasive brain stimulation treatment for depression

Allison Wang<sup>2</sup>, Antigoni Sinanis<sup>1</sup>, and Daniel Press<sup>1</sup>

<sup>1</sup>Berenson Allen Center for Non-Invasive Brain Stimulation & <sup>2</sup>Business Transformation at Beth Israel Deaconess Medical Center



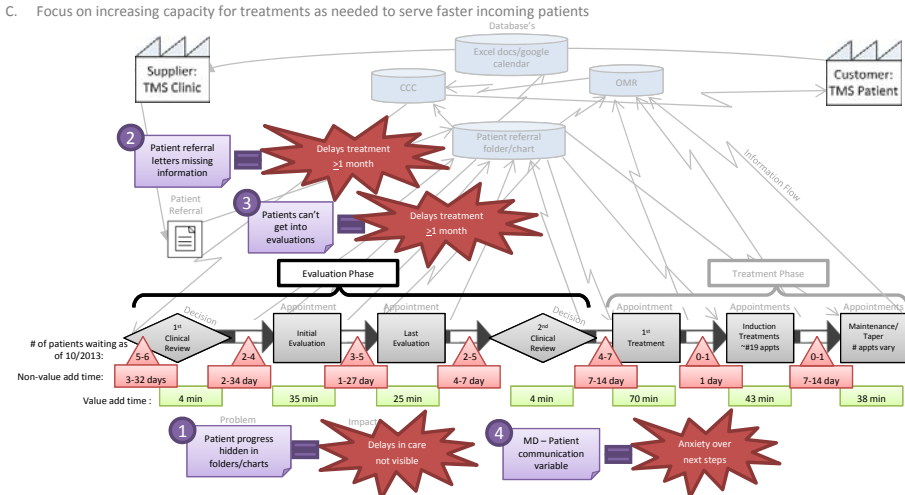
## 1. Reason for Action

The Berenson Allen Center for Non-Invasive Brain Stimulation (BACNBS) is a world leading clinic that uses brain stimulation techniques to treat a number of neuropsychiatric conditions, especially medication resistant depression. The Center has treated over 240 people over the course of 12 years. Transcranial Magnetic Stimulation (TMS) has been offered for 15 years as an off label treatment, but only achieved FDA approval in 2008 and widespread insurance coverage in 2011 leading to a dramatic increase in patient intake. Patients with chronic depression experience delays of up to 17-114 days to start TMS treatment in the BACNBS. One of the challenges was a complex workflow that delayed patients getting treated.

## 2. Current Patient Flow Process – Where are patient delays in process?

### Approach:

- Decrease delays in evaluation phase to get to treatment faster
- Search for bottlenecks created if streamlined
- Focus on increasing capacity for treatments as needed to serve faster incoming patients



**Figure 1.** Represents patient flow process from the point of patient referral received to when the first maintenance/tapering appointment occurs. The process breaks down into two phases: Evaluation and Treatment. The countermeasures primarily focused on the Evaluation phase as it has the largest patient delays. The purple boxes are the key problem contributors with connecting effects represented as red burrs. The major countermeasures and results put in place to combat these problems are highlighted in figures 2-5 with corresponding purple numbers (1-4).

**Goal:** Reduce variation in lead time of a patient getting to treatment by 20%

### The Team:

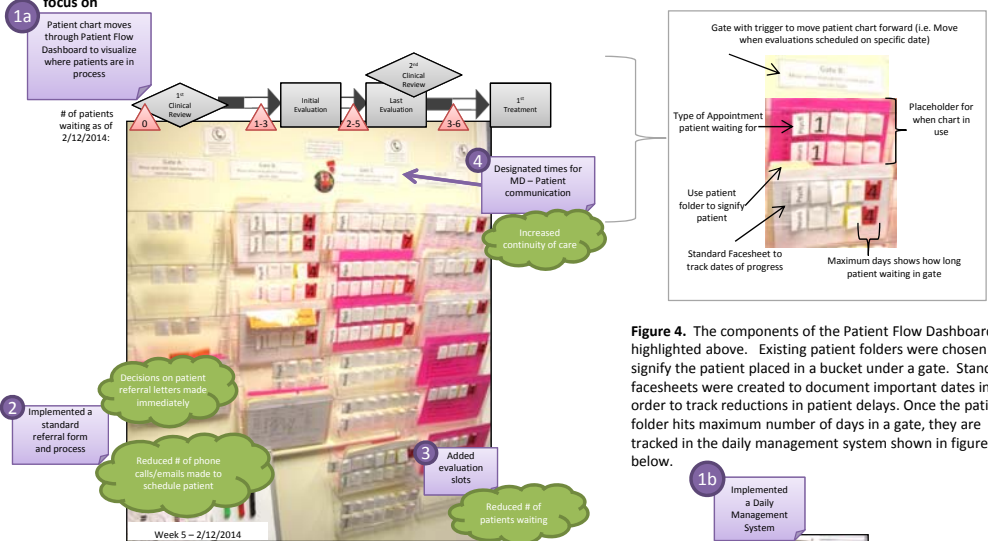
Daniel Press, MD, Clinical Director	Charlene Saint Leger, Administrative Assistant	Andrea Vatulas, Program Manager	Bonnie Baker, Management Engineer, Business Transformation
Antigoni Sinanis, Clinical Coordinator	Zachary Gray, Clinical Research Assistant	Allison Wang, Management Engineer, Business Transformation	Alice Lee, VP, Business Transformation

## 3. Measure of Improvement

Metric	Baseline (10/13')	Target (↓20%)	Progress (02/14')
Total Lead Time (Referral to Treatment)	17- 114 days	14 - 91 days	Data incomplete
Lead Time (Referral to MD approval/denial to schedule evaluations)	3 - 32 days	2 - 26 days	0 - 13 days
Lead Time (MD approval to schedule evaluations to initial evaluation)	2 - 34 days	2 - 27 days	2 - 27 days
Lead Time (Initial evaluation to last evaluation)	1 - 27 days	1 - 22 days	0 - 33 days
Lead Time (Last evaluation to approval to schedule induction)	4 - 7 days	3 - 5 days	0 - 7 days
Lead Time (MD Approval/denial to schedule induction to 1 <sup>st</sup> treatment)	7 - 14 days	5 - 11 days	Data incomplete

## 4. Countermeasures – Focused on Evaluation Phase

- Decrease delays in evaluation phase to get to treatment faster - Created a Patient Flow Dashboard to visualize bottlenecks and highlight areas to focus on



**Figure 2.** The Patient Flow Dashboard visually depicts where patients are located in the evaluation phase. The board is split into 4 "Gates" each with designated criteria of what has to occur before the patient folder can be moved forward (i.e. MD approval/denial to schedule evaluations). Each gate has a maximum number of days the patient folder should wait in order to highlight patient delays. The board is updated daily and huddled around weekly in order to raise concerns over delays and problem solve in real time to get them to treatment.



Standard referral form has reduced fetching for missing information

**Figure 3.** In congruence with the standard referral process, a standard referral form was created that has contributed to faster MD decisions to get patients to evaluations.

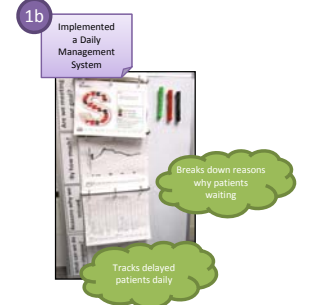
## 5. Monitor both Results & Processes

- Decreases seen from referral to MD approval/denial to schedule evaluations
- Maintain gain and begin to breakdown bottlenecks seen from initial evaluation to last evaluation and last evaluation to approval/denial to schedule induction

## 6. Standardize and Spread Processes

- Identify criteria for patient MD assignment once approval to schedule evaluations received
- Create pathway to predict patients who are denied prior authorization
- Applying new system across potential satellite sites

**Figure 4.** The components of the Patient Flow Dashboard are highlighted above. Existing patient folders were chosen to signify the patient placed in a bucket under a gate. Standard facesheets were created to document important dates in order to track reductions in patient delays. Once the patient folder hits maximum number of days in a gate, they are tracked in the daily management system shown in figure 5 below.



**Figure 5.** Added a Daily Management System to the Patient Flow Dashboard which captures patients waiting over the maximum days to move forward. This visually shows trends in areas where bottlenecks are occurring giving direction for further investigations and improvements.

For more information, contact

Allison Wang – Management Engineer, Business Transformation, Health Care Quality, [awang@bidmc.harvard.edu](mailto:awang@bidmc.harvard.edu)  
 Antigoni Sinanis – Clinical Coordinator, Berenson Allen Center for Non-Invasive Brain Stimulation, [asinanis@bidmc.harvard.edu](mailto:asinanis@bidmc.harvard.edu)  
 Daniel Press, MD – Clinical Director, Berenson Allen Center for Non-Invasive Brain Stimulation, [dpress@bidmc.harvard.edu](mailto:dpress@bidmc.harvard.edu)