

Antidepressant Response Marker—Revolutionizing Depression Treatment

Introduction

- I. Relapse metaphor—Anecdote
 - A. Imagine falling into a ditch. As you keep trying to climb out, more and more rocks keep piling on top of you.
 - B. The moment you want to give up, you see a crack of light and a rope slides down.
 1. Check the rope and proceed to climb out.
 2. As you near the top, the rope instantly snaps and you fall all the way back down bruised and beaten up.
- II. This ordeal is one faced by patients of Major Depressive Disorder who are struggling through relapse—Background Information
 - A. **DSM-IV**—official coding system for mental disorders.
 1. Depression is a mood disorder which encompasses low mood along with a feeling of helplessness.
 2. In order to treat depression, patients have a combination of drug therapy and talk therapy.
 3. Medications work for some but not all people.
 - a. When this medication does not work, patients who may have seen some sort of improvement experience relapse where their symptoms come back and they spiral back into their depression.
 - B. Why does relapse occur?
 1. Report by the **University of Texas Counseling and Mental Health Center**—July, 24, 2008.
 - a. Doctors are not able to diagnose whether a medication is working or not until 6-8 weeks after the start of treatment. With no real biological test to measure the effectiveness of medication (mostly have to go by what the patient says.)
- III. The ATR—Thesis
 - A. Today the way how depression is treated has the possibility of being drastically improved.
 1. **UCLA medical journal titled Vital Signs**—September 14, 2009.
 - a. Dr. Ian Cook, Dr. Karl Burgoyne, and Dr. James McCracken have created a test called the Antidepressant Treatment Response marker or ATR.
 2. With this new test, treatment times for depression may be cut drastically and help millions of people avoid relapse.
- IV. Roadmap
 - A. Today, we are going to discuss how depression is currently treated by at looking how depression medication works and the effects of relapse. Next, we will learn about the test itself, and finally, we will learn about future implications.

Body

- I. First, we will talk about how depression medication works and effects of relapse.
 - A. **Harvard Medical Journal**—August 31, 2009. How does depression medication work?
 1. Usually, the brain produces serotonin and norepinephrine—which regulates the “feel good” center of the brain—and in turn absorbs these chemicals in order to increase mood.

2. Depression patients on the other hand, can't either produce enough serotonin and norepinephrine or absorb these chemicals when they are produced.
 - a. In this leads to a chemical deficiency which causes feelings of sadness and hopelessness.
 - b. Antidepressants work to either produce s/n or aid the brain in absorbing these chemicals.
- B. Now that we have seen how depression medication works, let us talk about the effects of relapse.
 1. **Dr. Nancy Shy-mel-fine** August 20, 2008—Respected psychiatrist and depression patient.
 - a. In order for depression medication to be effective, it needs to first solve the issue that the patient is having (for example if a patient is having trouble producing s/n a medication that helps with absorbing these chemicals would be useless.) And it must be compatible with the brain chemistry of the patient.
 - b. As I stated earlier, relapse occurs when a medication either does not solve the main issue or match the chemistry of a patient.
 2. Effects of Relapse.
 - a. Relapse is much like experience stated in the anecdote.
 - b. Depression can worsen as a result.
 - Patients have to switch medication which is a month long process that includes symptoms that are faced by drug addicts such as withdrawals.
 - **Personal interview with a panel of depression patients.**
 - ◆ With already low motivation and hopelessness relapse many times is the one thing that ends and hope for recovery.
 - ◆ Fatal consequences.
 3. Treatment is mostly on a trial and error basis and doctors are not able to intervene in order to stop it.
 - a. Relapse starts chemically, and can start at any time.
 - b. Doctors on the other hand, must wait 6-8 weeks before they can actually try and see if a patient is relapsing. By this time it may be too late.
 - c. Even after the 6-8 weeks, the only way a therapist can see if a medication is working is by asking questions such as "how are you feeling?" or "are you going to hurt yourself?"
 4. **Dr. Annie Lee**—Psychiatrist at Kaiser Milpitas.
 - a. "Finding a medication that works for a patient can be very frustrating. Without a real biological way to test if the medication is working, we are completely dependent on what the patient tells us, which sometimes they keep valuable information hiding because they are scared of the consequences."
- II. Now that we have seen how depression medication works and the current state of drug therapy for depression patients, we will now look at how the ATR will improve the treatment process for both the patient and psychiatrist.
 - A. First, let us look at how this test actually works.

1. According to a report published by the **UCLA School of Medicine** dated September 10, 2009.
 - a. The ATR or antidepressant treatment response marker is a painless 15 minute test that uses quantitative electro-encephalography (QEEG) in order to test brain wave patterns to see how the patient is responding to the medication.
2. A study which is called Biomarkers for Rapid Identification of Treatment Effectiveness in Major Depression, or BRITE-MD
 - a. 375 patients with MDD.
 - b. Took baseline brainwave patterns and given normal depression medication with normal dosage.
 - c. Came back in a week, and took QEEG's
 - If there was a change, medication was working.
 - No change, relapse could be higher.

B. Let us discuss the results.

1. In a previously cited September 2009 edition of **Vital Signs**, the study produced a 74% success rate in predicting whether the medication would work or not.
 - a. Success rate may be flawed—**Dr. John Grohol** September 13, 2009 states that it mostly worked on two medications Lexapro and Wellbutrin.
2. Despite only working consistently on two medications, the 74% total success rate with all medication included makes it the most successful attempt to date for a fast and painless bio marker to treat depression.

C. **Personal interview with one of the founders of the test Dr. Ian Cook of UCLA.**

1. The success rate can be improved by looking at the final outcomes and identifying the issues, and finally seeing if a patient should change either what he/she is taking or how he/she is being tested.
2. Too early to state that this test only works on two medications because how early in the process the treatment is.
3. Because of its success rate, this test has caught the eye of the National Institutes of Health who are currently funding two projects in order to further test the ATR.

III. Now that we have looked at this new test and the success rates of it so far, let us now discuss the future implications of this new test.

- A. The two biggest implications that come from this test is the ability to save lives and also save money for our health care system.
1. First, let us talk about saving lives.
 - a. An annual report published by the **National Institutes of Mental Health** dated January 23, 2009.
 - Suicide is 3rd leading cause of death. 65% are because some type of MD.
 - b. With biomarker, treatment times for depression can be cut in half and ability to match a medication with a patient is made possible in sometimes an 8th of the time—quicker recovery means fewer chances of the fatal effects of relapse.
 2. Saving money.
 - a. Faster more effective treatment can lead to lower lost rates of productivity and health care costs.

- b. **Psychology Today**—July 24, 2009. Depression has cost companies in access of 1.4 billion dollars a year in lost productivity.
 - Treatment for depression has tripled in the past year.
- c. **Kaiser Hospital**—week in hospital costs over 15,000 dollars and a 1 mile ambulance ride alone costs 1,000 dollars.
 - Insurance companies pay cost of treatment in full.
 - Some patients do not have insurance—cost passed onto the tax payers.

Conclusion

- I. Restate
 - A. Today we talked about the ATR which can help stop relapse and speed up the treatment of depression.
 - 1. First, we looked at how depression is treated today and the effects of relapse.
 - 2. Next, looked at the ATR test and how it can revolutionize the treatment of millions of patients suffering from major depressive disorder.
 - 3. Finally, looked at future implications.
- II. Tie Back to Anecdote
 - A. Go back to lonely ditch sitting there bruised and frustrated from failing once. With this test, there is a new can stronger rope that can come down can finally pull you out so you can get back to your life.