

## The History of Debunked Medical Practices

I am a hypochondriac. If worrying was a sport, I would be an olympic gold medalist. With the area of covid, monkeypox, and of course, flu season, to say I'm a wreck would be an understatement. So, naturally, when I started coughing last week, I thought I was dying. I go to the doctors office and I say, "Look doc, I can't have a cough so how are we going to fix this?" He leaned in, looked me dead in the eye and said; "Heroin". I'm intrigued, but also wondering what kind of doctor I'm going to. He explained that heroin is this wonder drug that cures your ailments. Sounds pretty good right? Well, everyone, including doctors, did when heroin first came out due to its ability to cure illness. In reality, people were just high and thought they were cured. The history of debunked medical practices can help us to navigate the future of medicine today. Dale Fisher, Paul Wicks and Zahem-Ud-Din Badam, researchers for the National University Hospital in Singapore, write in their 2016 publication that, "any vision of the future requires an application of the past." So first, I am going to prescribe you the history of heroin. Then, I will hammer in the history of lobotomies. After that, I will shock you with the history of electroconvulsive therapy. Last, we'll take our application of the past and go into the examination room to see how this affects the future.

To start, let's prescribe you some good old heroin history. In the 1870s, CR Alder Wright was the first chemistry researcher to develop a substitute for morphine that was less addictive and more effective according to writer and researcher Alvin Powell in his Harvard article in 2015. It was called diamorphine and is the process of taking semisynthetic parts of morphine, acetylation, and boiling it for several hours. So, basically, researchers boiled morphine, advertised it to replace morphine when really, it was still morphine. Yea, if that's a scientific breakthrough then I could definitely be a scientist. It wasn't until 1895, however, that diamorphine hit the market thanks to Bayer Pharmaceuticals. It quickly became a wonder drug and even was marketed to children to help cure a cold or to soothe them. I know what you're thinking, "how could people possibly think this was good for children when today we won't even let kids have sugar". In this time, though, heroin had not been around long enough for studies to develop about the negative side effects. Narcon is a drug rehabilitation center and specializes in the history of addictive substances. In a study that they conducted, they found that from 1895 to 1913, there were over 200,000 addicts in New York City alone. Today, those suffering from a cough (or those that worry about a cold too much) no longer get to utilize the "wonder drug" but rather get medication that has a mascot that is literally mucus. This leads into the first thing we learn to influence the future which is scientific review. Researchers were so focused on just pushing out a product that they did not look at how it could affect a person over a period of time. In trying to solve an addiction problem, they ended up creating an even bigger one because they did not do the proper research. Thus, scientific review is essential before releasing a product to the public.

Next, let's hammer in some history of lobotomies. Let's set the scene, it's the 1940s and you are an outgoing, occasionally wild, young woman born to a high society family who is worried that you will be a spectacle when they move into the spotlight. So, what is the solution? They have the nerves in your brain severed. Sounds too ridiculous to be true right? Unfortunately, this was the story of Rosemary Kennedy, the oldest sibling of John F Kennedy. Siang Tang (Doctor of Medicine) and Angela Yip (Master of Science) recount in their publication from 2014 that the lobotomy was invented by Antonio Moniz and was first performed in November of 1935 and was originally called leucotomy instead of lobotomy. They continue saying that the procedure was drilling holes into the frontal lobe of patients and then using absolute alcohol to destroy the connection of nerves in the prefrontal cortex. Moniz was playing Bob the builder with that drill rather than being a doctor. In mental illnesses or any "undesirable behavior", the thought was that severing any abnormal connections in the frontal lobe would fix them. In 1948, doctor Walter Freeman "improved" the procedure and unveiled it at the Institute of Living in Hartford, Connecticut. The transorbital lobotomy took an ice pick looking device (called an orbitoclast) and hammering it two inches into the orbit bone in the eye socket and moving it around to sever the nerves. It was then repeated on the other side. This impressed onlookers watching because it left no bleeding or visible scars on the patient. Freeman famously said after the procedure its, "so simple he could teach any fool, even a psychiatrist, to perform it in under 20 minutes." NPR produced a piece in 2016 and stated that the lobotomy was such a hot procedure there were 50,000 being performed from 1948-1952. As lobotomies teach us, a one size fits all method isn't an effective way of thinking. Rather, we should look to pharmacogenomics data. This is detailed by the CDC as looking at a person's genes to see how a treatment or prescription will affect them specifically. As we saw with cases like Rosemary Kennedy, it left patients mentally and physically challenged. Thus, not being something meant for everyone. Instead, everyone should be treated as an individual because shocker, they are individual.

Speaking of shocking, let's shock you with the history of electroconvulsive therapy and what we can learn from it. We've all heard about how seizures are bad and can have harmful effects on the body and mind. No one has really thought, "hey, seizures are a good thing we should encourage as treatment." Except, that's exactly what neuropsychiatrist Ladislav Meduna thought. In 1934, Meduna used an epileptogenic agent, camphor, to induce seizures and repeated this multiple times to cure a person's psychiatric disease. Of course, other medical professionals felt that a drug to induce seizures wasn't good enough. If you were to be in Rome, looking in the hospital room with Italian physicians Ugo Cerletti and Lucio Bini on April 11, 1938, it would look as if they were about to murder someone. Their theory was that by using electric currents to a patient's brain, it would induce a seizure faster. Shocking right! Raheem Soleman MD in his 2020 publication in the American Journal of Psychiatry details that they would hook the patient up to a machine that would send 110 volts of electricity directly into the brain. This would cause a grand mal seizure in half the time the epileptogenic agent took and with less side effects. Well,

besides the side effects of memory loss, confusion, cardiovascular complications, intellectual impairments, and brain damage. But other than that it was fine! This leads into the third thing that we can learn for the future which is consequentialism. A big word with a simple meaning. The Stanford Encyclopedia defines consequentialism as the morality of something being based off of the actions taken to get there. As we see with electroshock therapy, the ends don't always justify the means. As Fisher, Wicks and Badam detail in their article, healthcare is all about human rights and not just at the end but at each step of a treatment.

Let's conclude by reviewing what we have learned. First, scientific review is essential in healthcare to understand the side effects that a prescription/drug might have on individuals. Second, one size fits all does not work in healthcare rather we should look at pharmacogenomics data to tailor make a procedure or prescription. Last, we learned consequentialism from electroshock where each part of the health care process should be human. While I may be a hypochondriac with my cough, when I do need to go to the doctor, I want the best care I can get and that all comes from what we learn from the past to influence the future.