

The Effect of Innovations on Health Care



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BrainGate 2 is an invasive medical device that implants electrodes near the cerebellum, allowing thoughts

to turn into text. This device was created to allow quadriplegic patients—patients paralyzed in all four limbs—to communicate more effectively. The device is invasive because it involves the direct implantation of the electrodes near the brain; the surgery involves cutting the brain to place the two microelectrodes near a premotor area of the brain. It is also not a clinically viable system yet, and more work needs to be done to allow for text editing, expanding the character set and maintaining the robustness of the technology. Nevertheless, it has its benefits which include allowing for communication from patients that never thought they would be able to communicate with words again. This type of machine makes us question whether these medical innovations are for the betterment of health care or if they may harm the patients in some way; there are positives and negatives to each medical innovation. For this reason, it is important to understand the necessity of innovation within our society while also taking into account the costs that come with these innovations.

As we look towards innovation in health care, society

identifies that innovation involves change. However, with change comes challenges. Innovation comes with funding, time and trials to ensure that it is not detrimental to one's health and is for the betterment of humankind. For this reason, it is essential to look into the different types of innovation, their benefits and their downsides. According to Time Magazine in 2020, amidst the pandemic we saw a variety of medical innovations come about in the western society. These included a stem-cell cure for diabetes, drone-delivered medical supplies, a handheld ultrasound and a wristband that can read your mind. These innovations are new to health care, but they are not clinically viable yet as more research and testing needs to be conducted. The funding behind these innovations brings great pressures upon health care and on the scientists. The Centers for Medicare and Medicaid Services states that the U.S. health care system spent \$174 billion, 5% of the country's total spending, on medical research and development in 2018. However, according to the Harvard Business Review, this extensive investment in innovations also involves numerous failed efforts and millions of investor dollars lost. The article also mentions that during the managed care revolution, a period of the 1990s that stabilized health insurance premiums and the gross domestic product (GDP)

involving National Health Expenditures, \$40 billion was lost by investors to biotech ventures. This loss resulted in the downfall of many businesses and negatively impacted the economy. This

brings into question whether the right investment is being made for the right innovations or if more spending should be put elsewhere. It would also be important to evaluate whether these innovations are essential for our society by using time and money to determine the value of the research and development.

Health care innovations' benefits involve faster development of treatments and new treatments that allow for better outcomes. According to the Future Healthcare Journal, the researchers talk about how successful innovation involves being usable and desirable. The researchers go on to talk about how the demand for innovations continues to increase as public expectations continue to increase. The front-line workers are under more pressure, and the demand continues to increase as the population lives longer, but with a considerable amount of comorbidities; this also becomes the reason why expectations increase, causing more pressure on the front-line workers. With the population continuously evolving, there is a need for new change to help us adapt to the new challenges that are arising. For this reason, researchers continue to look further into innovations to help get a better outcome, with less cost or effort. According to an article called "Top ten health care innovations" by the Deloitte Center for Health Solutions, there are many innovations that can be incorporated into business models that can revolutionize how patients are being cared for, treatment options and more revenue for the staff and for further research. This will also help the staff learn to embrace change, which is an important aspect of health care. With innovation comes many lessons and commitment to the incessant evolution of health care.

Innovations, though oftentimes essential and helpful for society, can have multiple downsides that need to be considered by the researchers, the government and the people. According to Regina Herzlinger from the Harvard Business Review, the biggest reason why experts go against bringing about new innovations in health care is because they increase the prices that patients have to pay. The fancier the technology, the more research and effort is into the technology and the higher the cost. The patients are the ones who pay that price. Health care is already an expensive essential, so for innovations to raise the cost of care, makes it vital to evaluate the demand for the innovation.

For the new challenges that come with innovation, it becomes difficult for health systems to keep up with the new changes. Innovation becomes more like a disruption, so to adjust and improvise ones

techniques and work practices require time and practice. For the innovation to be used properly in a clinical setting, the health care workers will be taking out time to spend learning the new innovation. And according to BMJ Quality and Safety, as health care workers catch up with the new modality, new innovations have already started going through testing and been put on the market, establishing a cycle of renewal and reinvention. For this reason, it is necessary to evaluate the need for innovations and how these innovations can contribute to health care. It also becomes necessary to understand how to implement the new technology so it can be learned and used properly in a clinical setting.

Putting together innovations takes funding, time and resources. But just like there are regulations for food, there are also regulations for innovations. In the article called "Promoting innovation in healthcare," the researchers discuss how the ambiguity of medical device regulation makes it more difficult for the developers to continue constructing their apps. Additionally, the researchers also stated that many devices provide limited testing capabilities as there are various times where it becomes difficult to find the proper clinical setting or patients for the device to be tested on. For this reason, it may take longer for the device to be put on the market or it may prohibit the device from ever entering the market. Essentially, this prevents development in health care and becomes an obstacle for not only the researchers but also the patients that are in need of the new devices.

According to Dhruv Khullar from Stat News, health care should be focused first on safely providing the basic elements of care to the patients. If the researchers and physicians focus on bringing innovations into health care, the basic elements of care can get washed away and less effort will be put into actually treating the patients. Time spent away from taking care of patients and focusing on technology more can result in fragmented health care practices where health care professionals may spend more time figuring out the technology instead of spending time with patients, or they might use the technology incorrectly. When patients turn to health care, they expect to be treated by the health care workers themselves, not to be relying on different machines to give them care.

Looking at the benefits and downsides of innovation, there are various aspects that need to be addressed when conducting research and development of a health care innovation. And as our world continues to evolve, it remains essential to interpret the necessity of the innovation being developed.