Audacious advances to discover new treatments for psychiatric brain disorders

In recent years, the pace of the development of novel new treatments for brain disorders in both psychiatry and neurology, including psychiatric disorders, has been the subject of much worry and hand-wringing.¹

Some major pharmaceutical companies have stopped research programs in neuropsychiatry to focus on other, “easier” therapeutic areas where they think the biology is better understood and therefore drug development is more feasible.

However, I am now more optimistic than I have been in many years that we are on the verge of a promising era of pharmacotherapy that will usher in far better prevention, diagnosis, and management of neuropsychiatric disorders, and a better outcome for our patients. Why the optimism? There is a series of converging trends that justify it.

Funding for basic neuroscience research. Governments all over the world have woken up to the fact that brain disorders will account for the largest economic impact unless new treatments are developed. This has spurred multiple initiatives to better understand the underlying neurobiologic mechanisms of the brain in health and disease.²

Renewed enthusiasm for brain disorders from small pharmaceutical and mid-size biotechnology companies. While some of the larger pharmaceutical companies have withdrawn from pursuing new treatments for psychiatric disorders due to the need to satisfy “shareholders,” small and nimble biotechnology companies have stepped up, seeing an opportunity in a field that is not overcrowded and still has an extensive unmet need. These companies are developing truly novel treatments and approaches that can differentiate from current treatments. These include:

- rapid-acting antidepressants
- targeting specific symptom domains of psychiatric disorders, such as cognition, apathy, or anhedonia, that currently have no adequate or effective treatment
- novel therapeutic targets in a range of indications
- nonpharmacologic approaches.

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Disclosure

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Leading companies in this space include Allergan and Blackthorn Therapeutics. These companies and others have publicly discussed their commitment to developing new treatments for psychiatric disorders.

But large pharmaceutical companies should not be discounted. Examples of advances by larger companies include the recent FDA “breakthrough designation” for the development of balovaptan by Roche, a medication with the potential to improve “core social interaction and communication” in patients with autism, and the work Johnson & Johnson is conducting with S-ketamine for depression and acutely suicidal patients.

New scientific breakthroughs in areas such as synthetic biology, gene editing, nanotechnology, pluripotent cells, understanding the impact of the microbiome, and many other fields will dramatically accelerate the pace of scientific progress, allowing new treatment approaches not previously imagined.

New technologies. An array of new technologies—such as biosensors, artificial intelligence and machine learning, augmented and virtual reality, and other digital health tools—will impact every step of the “patient journey.” These will enable earlier detection and diagnosis, ongoing real-time assessment of
symptoms, and more objective assessments, and they will facilitate the delivery of, and assessment of adherence to, treatments such as pharmacotherapy, neuromodulation, video games, apps, or a combination of these modalities.

Until recently, the idea of a video game or augmented reality glasses being viewed as serious and validated treatment modalities would have been considered science fiction. New ways of assessing patients—including voice, typing, activity on smartphones, diurnal rhythm, etc.—have the potential to dramatically improve the information clinicians will have about patient functioning in the real world. Another area where new technologies may eventually have a huge impact is in facilitating the prediction of suicide attempts.3

New digital therapeutics companies. It is no coincidence that the digital therapeutics companies that have been making the news and obtaining FDA approvals, such as Proteus Digital Health, Pear Therapeutics, Akili, and Click Therapeutics, are all addressing brain disorders.

Patient empowerment. With these new tools, the patient can become a true partner in the therapeutic alliance more than ever before. Patients can have an active role in diagnosis and be active participants in many new treatment modalities. There will be many new ways for patients to share their data to improve their care and to advance the science of these tools.

Utilizing blockchain protocols, patients will have more control over how and with whom their data is shared, and even be compensated for it. This may all seem like a medical “brave new world,” and perhaps a long way away. However, I believe these changes are happening at an exponential rate. It is hard to believe that common technological tools such as Google Maps, Gmail, and the smartphone first became available only a few years ago. The merging of biology and technology will have profound effects, and will be recognized as the momentous scientific achievement of the early 21st century.

Unlike clunky technologies such as electronic medical records, which have in fact made the clinician–patient experience worse, I believe that the technologies I describe above will enhance and augment the clinician–patient relationship. As health care practitioners, we need to be open to new technologies and ways of assessing and treating our patients while making sure our clinical insights and experience inform the development of these new technologies.

Let’s buckle up. Life in psychiatry is going to get more interesting than ever!

References