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The Future of Psychiatry as Clinical Neuroscience Why Not Now?

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In 2012, Thomas Insel,[1] director of the National Institute of Mental Health, wrote an essay entitled The Future of Psychiatry (= Clinical Neuroscience), echoing a familiar trope in our field.[2] The themes he described then are even more relevant today. Technologic advances have enhanced our ability to study the brain, and new findings have reshaped the fundamental way in which we understand psychiatric illness. For example, although depression was once characterized as simply a monoaminergic deficit, new research is expanding our understanding of depression across multiple levels of analysis—from circuits, to neurotransmitters, to synaptic plasticity, to second messenger systems, to epigenetic and genetic differences.[3]

To date, however, these advances seem largely limited to the pages of our leading research journals. We have not yet experienced a paradigm shift in the way most physicians approach patient care or in the way we communicate about our field with each other and with the lay public. Given how much progress has already been made, why does this transition remain a thing of the future? What barriers prevent our field from embracing a new identity today?

Barriers to Integrating a Neuroscience Perspective Into Psychiatry

The largest barrier may be the pervasive belief that neuroscience is not relevant to patient care. It is true that current scientific models leave many questions unanswered. Although we are starting to see the introduction of new, hypothesis-driven treatments, much of this research has not translated into routine clinical interventions.

Resistance to embracing neuroscience may also reflect the complexity of research and the challenge of keeping up with a rapidly developing field. Consider, for example, the

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extraordinary advances in neurogenetics. Today's cutting-edge science may be virtually inconceivable to someone with a 20th-century medical education. Remaining abreast of new findings requires time and energy that is well in excess of what is feasible within continuing education.

If the identity of our field is to evolve, we might expect residency programs to be in the vanguard—they represent the most concentrated locus of psychiatry teaching and serve the express mission of training psychiatrists. It is encouraging that most residency directors appreciate the importance of integrating neuroscience into psychiatry training.[4]However, most programs do not teach neuroscience in a systematic and comprehensive manner. Why not?

At a most basic level, they are not required to. The Accreditation Council for Graduate Medical Education doesnot include the word *neuroscience* even once in the official program requirements. Although the new psychiatry milestones[5] draw attention to the topic, they do little more than pay homage. De facto, neuroscience is not yet deemed by our governing agencies to be of equal importance to the many topics that are formally regulated. In addition, with the sheer number of requirements, there is little space in the curriculum for programs to integrate neuroscience even if they wanted.

For programs that are committed to teaching neuroscience, the challenge is just beginning. The field is vast. What content should be taught, at what level and depth, and who will teach it? Few programs have sufficient faculty expertise. Of those that do, many discover that expertise in content may not correlate with expertise in teaching. Alternatively, if nonexperts teach, what resources are available to assist them?

At the next level, once a curriculum is implemented, how will students respond? Neuroscience is notoriously challenging. It is often intimidating and seems distant from the concrete, practical clinical skills that trainees must master. To complicate matters, classes are often lecture based. Lectures allow large amounts of complex material to be organized and presented. However, for the same reason, lectures may be particularly ill-suited for helping students learn. The volume and complexity are overwhelming.

Last, even if a classroom curriculum was perfectly designed, it would still be a small percentage of training. Most learning takes place at clinical sites under the mentorship of faculty who, for the reasons discussed above, may not incorporate a robust neuroscience perspective into their day-to-day work.

Changing Psychiatry, Today

The diseases that we treat are diseases of the brain. The question that we need to address is not *whether* we integrate neuroscience alongside our other rich traditions but *how* we work as a field to overcome the barriers that currently limit us. Ultimately, the most powerful force will be the improved translation of research into more refined explanatory models of psychiatric pathology and into novel therapeutics. To ensure that our field is ready to embrace new findings as they emerge, we need to begin the process of culture change today by enhancing communication and collaboration between researchers and practitioners.

In this regard, the struggle of residency programs to implement robust neuroscience curricula may be seen as emblematic: if we cannot succeed in changing the conversation within the confines of our most distilled educational setting, how can we effect change more broadly? One lesson may be that it is not possible to address this challenge at an individual (or program) level. Just as cutting-edge research requires a team-based, collaborative approach, so too does cutting-edge education.

We need to begin by facilitating partnerships between the distinct communities of scientists and educators. The more sophisticated and nuanced our science becomes, the more critical it is to have individuals who can translate this work to make it accessible to students at all levels. It is imperative to have skilled educators who can craft classroom experiences that are consistent with the extensive literature on how adults learn. In addition to core content, learning objectives should explicitly address both attitudes toward neuroscience and behavioral skills, such as the ability to incorporate neuroscience data into patient formulations and the ability to communicate effectively with a lay audience.

Because curriculum development is difficult, we need collaboration across institutions and a repository of shared resources. Resources must be easily adaptable, acknowledging that specific content will change overtime. They should be designed to address topics at varying levels of complexity to appeal to different audiences, including medical students and practicing physicians. Critically, materials must include adequate support so that they can be implemented by nonexperts. Broader outreach, including faculty development workshops and continuing medical education, may be essential for engaging a wider audience.

Last, we should work with regulatory organizations to formally incorporate neuroscience into our training and certification processes. Such an approach could include revision of the program requirements and milestones for psychiatry and greater incorporation of neuroscience content into the American Board of Psychiatry and Neurology certification process for psychiatrists.

A Work in Progress

Many departments and organizations have already taken steps to achieve these goals. Diverse online resources are publicly available to assist programs and learners (including www.dana.org, developingchild.harvard.edu, and g2conline.org). Neuroscience curriculum efforts are under way at many individual residency programs.[6,7] In March 2014, the National Neuroscience Curriculum Initiative was formed, in collaboration with the American Association of Directors of Psychiatric Residency Training and the American Psychiatric Association Council on Lifelong Learning and Medical Education (http://www.nncionline.org/).In addition to providing resources and educator training, this collaborative effort aims to engage all stakeholders, including educators, practitioners, and neuroscientists, in this critical conversation about the evolving identity of our field and the future of psychiatry.

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References

1. Insel, T. The future of psychiatry (= Clinical Neuroscience). Apr 20. 2012 http://www.nimh.nih.gov/about/director/2012/the-future-of-psychiatry-clinical-neuroscience.shtml. Accessed August 1, 2014
2. Reynolds CF III, Lewis DA, Detre T, Schatzberg AF, Kupfer DJ. The future of psychiatry as clinical neuroscience. Acad Med. 2009; 84(4):446–450. [PubMed: 19318776]
3. Krishnan V, Nestler EJ. Linking molecules to mood: new insight into the biology of depression. Am J Psychiatry. 2010; 167(11):1305–1320. [PubMed: 20843874]
4. Benjamin S, Travis MJ, Cooper JJ, Dickey CC, Reardon CL. Neuropsychiatry and neuroscience education of psychiatry trainees: attitudes and barriers. Acad Psychiatry. 2014; 38(2):135–140. [PubMed: 24643397]
5. The Psychiatry Milestones Project. A Joint Initiative of The Accreditation Council for Graduate Medical Education and The American Board of Psychiatry and Neurology. http://acgme.org/acgmeweb/Portals/0/PDFs/Milestones/PsychiatryMilestones.pdf. Accessed June 20, 2014
6. Akil M, Etkin A. Transforming neuroscience education in psychiatry. Acad Psychiatry. 2014; 38(2):116–120. [PubMed: 24567033]
7. Ross DA, Rohrbaugh R. Integrating neuroscience in the training of psychiatrists: a patient-centered didactic curriculum based on adult learning principles. Acad Psychiatry. 2014; 38(2):154–162. [PubMed: 24574098]