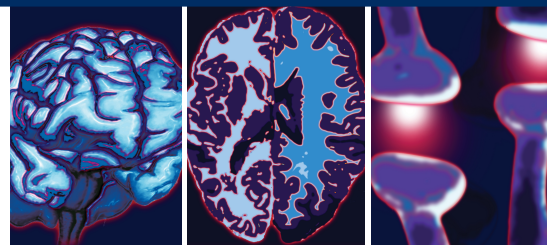


## INTERVIEW



# The challenges and future of adult and pediatric ADHD



**Joseph Biederman\*:** Joseph Biederman is Chief of the Clinical and Research Programs in Pediatric Psychopharmacology and Adult ADHD, and Director of the Alan and Lorraine Bressler Clinical and Research Program for Autism Spectrum Disorders at the Massachusetts General Hospital (MA, USA), as well as a Professor of Psychiatry at the Harvard Medical School (MA, USA). He has been inducted into the Children and Adults with Attention-Deficit/Hyperactivity Disorder 'Hall of Fame'. He has also been selected every year since its inception into 'The Best Doctors in America'. He is on the editorial board for multiple journals

and has served as a grant reviewer in the Child Psychopathology and Treatment Review Committee of the National Institute of Mental Health. Biederman is the author and coauthor of over 700 scientific articles, 650 scientific abstracts and 70 book chapters. In 2000, he pioneered and established the Stanley Foundation Center at the Massachusetts General Hospital, which is dedicated to the treatment of pediatric bipolar disorder. In 2005, he was appointed Chair of the special section on ADHD at the World Psychiatric Association. He has been the recipient of multiple awards, including the Blanche Ittelson Award for Excellence in Child Psychiatric Research; the National Alliance on Mental Illness Exemplary Psychiatrist award; the National Alliance for Research on Schizophrenia and Depression Senior Investigator award; the Charlotte Norbert Rieger Award for Scientific Achievement; the Outstanding Psychiatrist Award for Research; the Excellence in Research Award from the New England Council of Child and Adolescent Psychiatry; the Mentorship Award from the Department of Psychiatry at the Massachusetts General Hospital; the William A Schonfeld Award for outstanding achievement, excellence and dedication throughout his career; and a Distinguished Service Award for dedication to the optimal care of children with psychiatric disorders and devotion to residency education, awarded by the MGH/McLean Child and Adolescent Psychiatry Residency. The Institute for Scientific Information has ranked him the second-highest producer of high-impact papers in psychiatry throughout the world and number one in terms of total citations of his attention deficit disorder/ADHD papers in the past decade.

**Q** What initially drew you to the field of psychiatry & particularly to pediatric & adult ADHD?

I debated long after medical school whether I wanted to go into pediatrics or psychiatry.

I had the good fortune that I had a rotating internship, which allowed me the opportunity to do a little bit of everything. And even though I liked pediatrics very much, I was more drawn to psychiatry. In the end

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“I decided to focus on ADHD ... because, although we had good medicines in use, many patients could not tolerate them so I focused my energy on trying to identify alternative treatments.”

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I decided that I could converge my interest in pediatrics and my interest in psychiatry by going into child psychiatry. When I did my adult psychiatry residency I was lucky to be exposed to the scientific process of research as defined by asking an empirical question and trying to get an answer. I was very involved in neurobiological research, as this was just emerging, looking at the brain as the organ of psychiatric disorders, looking at neurotransmitters and how diseases are not caused by ‘bad mothers’, but by disrupted neurocircuitry, genes and abnormalities that occur in the brain for reasons that are poorly understood. When I started child psychiatry it was very clear to me that the most common problem I faced clinically was ADHD. I decided to focus on ADHD as a chronic neurobiological disease and its pharmacotherapy because, although we had good medicines in use, many patients could not tolerate them so I focused my energy on trying to identify alternative treatments. I published a lot on nonstimulants for ADHD, and some of this work led to development of Strattera<sup>®</sup>, which is the first nonstimulant that came to the US market for the treatment of ADHD.

**Q What do you view as the highlight of your career in adult & pediatric ADHD?**

The focus on adult ADHD and much of the legitimizations comes from my work. This started by recognizing that very often the experience of my pediatric patients was mirrored in their parents. I began conducting family studies and found that approximately 20% of the parents of my pediatric patients with ADHD themselves had undiagnosed and untreated ADHD, so I began to publish on adult ADHD. I began to publish on the fact that there are compelling similarities, what I term syndromatic continuities, between the pediatric and the adult form of the disorder. Therefore, I was doing two things: following up children with ADHD as they progressed through adolescence and young adult years, and at the same time, reconstructing the life history of adults with ADHD. Through this prospective retrospective approach, I was able to document the extraordinary convergence

between the pediatric and adult disease. This led to many articles documenting that, similar to its pediatric form, adult ADHD is a prevalent and very serious illness. We collaborated with Ronald Kessler (Harvard Medical School, MA, USA) who is the principal investigator of epidemiological studies of psychiatry, particularly in the USA. In the last rendition of his long-standing epidemiological effort he collaborated with us and assessed the epidemiology of ADHD, which led to the paper published in the *American Journal of Psychiatry* by Kessler, myself and Thomas Spencer (Harvard Medical School), my colleague, documenting that almost 5% of adults in this country have ADHD, this makes it not only very prevalent but also very morbid. Imagine the societal impact of developing knowledge about a disease that affects 5% of the population of this country. In fact, that work led to the development of various medicines to specifically treat adults with ADHD. Today we have at least five medicines that are approved for the management of ADHD in the USA and in most western countries, and also in Asia and the Middle East.

**Q In your experience who generally identifies or diagnoses ADHD?**

I think that the most common place for the initial diagnosis is the primary care physician. The patient does not know they have ADHD, therefore, it is the doctor’s responsibility to enquire about these problems and consider this diagnosis. Unfortunately, the situation today is one where physicians only have a few minutes with a patient, they can only deal with life and death issues so it is very difficult to sit down and take a full history, and ADHD requires a lot of history taking. Unlike other medical conditions, there is no test for ADHD, thus, taking a history is what alerts the physician about the condition.

**Q How well do you think primary care physicians are informed in this area?**

I do not think they are very well educated on this. This is compounded by the fact that the mainstay of treatment for ADHD includes controlled substances, such as, stimulants; and primary care physicians,

in general, are not very eager to prescribe controlled substances.

**Q What are some of the main challenges in diagnosing ADHD?**

The main challenge in all of psychiatry is that there is no objective test and the absence of a diagnostic test creates an immediate suspicion that this is not a real problem.

**Q What has been the biggest advance or change in ADHD over the past 10 years?**

The most important advance is the recognition that ADHD is a legitimate illness of neurobiological and genetic origin that affects the brain and not that affected individuals are ‘lazy people’ trying to justify their difficulties in life. The fact that we can treat ADHD effectively is irrelevant if the clinical community, the press or the public fail to recognize that this is a legitimate illness. Children with ADHD have problems that are not formed by bad parenting or bad teachers, but from the malfunctioning of their brain. In my view, the recognition of ADHD as a legitimate neurobiological illness is the most important advancement since it allows people with ADHD to access the clinical environment and receive treatment they deserve to receive. As patients would never have received such treatment were it not for the recognition that this is a legitimate morbid illness that can ruin one’s life, including the ability to make a living and have relationships.

**Q What clinical advance has changed the treatment of ADHD?**

The recognition of pediatric ADHD as an enduring lifelong problem not as a passing condition has been a major clinical advancement; treatment is extremely important but does not work for every case. Treatment requires compliance and adherence; however, adherence in ADHD is very poor: 80% of patients at 1 year follow-up will no longer take a treatment that can completely revolutionize their life. There is a paradox of sorts, as we have a very morbid illness that affects millions of people, and we have effective treatments but patients do not adhere to treatment, which is quite a tragic state of affairs.

**Q What are the main differences when treating children & adults with ADHD? Do you think adherence to treatment is better in one group compared with the other?**

The main difference is that someone brings a child to receive medical care, whereas adults bring themselves. Unfortunately, with regards to adherence, it is very bad in both groups.

**Q How important do you think early intervention is in the treatment of ADHD?**

I believe as a child psychiatrist and a physician, that intervening proximally to the onset of symptoms is good for patients. This approach can be very helpful for patients in allowing them to stabilize their academic and social difficulties, and avoid family strife.

**Q Have changing attitudes towards ADHD facilitated the treatment of ADHD in children?**

Unfortunately, the changing attitudes are slow to occur and the prejudices about ADHD continue. For example, the press in America takes a very prejudicial position vis-à-vis ADHD. There is nothing about child psychiatry, psychiatry or ADHD that the press is fond of. For example, a popular newspaper might find some kind of peculiar history of somebody who has had a tragic outcome after being treated for ADHD and publish it on the front page with devastating impact on the public, poisoning the public’s perception of the disorder. Many adult psychiatry training programs do not adequately train their psychiatrist on the management of ADHD and general physicians tend to have antipathy for the use of controlled substances; the mainstay of treatment for ADHD, and the best way to avoid treatment is to avoid diagnosis.

**Q Looking into some of your recent work, you have published on comorbidities in ADHD. Could you tell us about that?**

One of the clear contributions of my work to the scientific literature is the idea that people with ADHD frequently have other conditions that in themselves are quite

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morbid. One of the main ones has been the interface between ADHD and pediatric bipolar illness. This has created a huge amount of controversy in the field, which I find hard to understand. For example, the clinical community does not have any problem accepting the fact that children may have obsessive–compulsive disorder but for some reason the idea that children can have bipolar illness has generated an enormous amount of conflict, controversy and debate. It is a very important comorbidity because the treatment for ADHD can have adverse effects on the bipolar illness, and treatment of bipolar illness usually does not treat ADHD.

**Q Where are you focusing your future research?**

My current research is focused on further establishing the neural and genetic bases of ADHD and its comorbid disorders. My work has focused on trying to separate the neural circuitry of ADHD using neuroimaging. We recently completed a neuroimaging study documenting the patients that had ADHD in childhood, and had been followed for  $\geq 20$  years into adult life and continued to manifest the disorder, and had a unique pattern of brain circuitry abnormality that is not shared by those that remit. I did something similar in adult ADHD looking at the comorbidity of ADHD and bipolar illness, and I was able to document, in a series of papers, that people with bipolar illness have a unique neuroanatomical signature, irrespective of having or not having ADHD and *vice versa*.

**Q Do you hope this research will have implications in differential diagnosis?**

We hope so. Unfortunately, our neuroimaging findings to date are all from group data so we are not yet able to use this information at the individual level for diagnostic purposes. We certainly hope that in the not too distant future, some of these data will be useful for predictions of treatment response, and for diagnosis, as people with certain neural brain characteristics and genetic causes may respond preferentially to one type of treatment or another, however, we are not yet there.

**Q What are you hoping to achieve with your future research?**

I am hoping that our work will expand the horizons of ADHD by examining new scientific and clinical frontiers, including the relationship between ADHD and post-traumatic stress disorder, traumatic brain injury and other areas. I also plan to continue our basic preclinical work, which is with animal models. For example, we published a very important paper documenting that the effects of medication for ADHD, such as Ritalin<sup>®</sup>, affects opiate receptors in the brain. This is a very important finding because it may suggest ways to deal with the addictive potential of stimulants. We also published work following up human data that show that exposure to maternal smoking during pregnancy is an independent risk factor for ADHD. We were, therefore, able to create an animal model for ADHD, through exposure to nicotine during pregnancy, that tends to be hyperactive, have abnormalities in the brain that we see in humans and responds to therapeutic doses of stimulants. It is a very interesting animal model of ADHD that can allow us to conduct other experiments particularly with novel drugs that are not yet ready to be used in humans.

**Q Do you have any closing statements or anything else you would like to discuss?**

My main message is that ADHD is a very morbid illness and that people with ADHD deserve careful diagnosis and careful consideration of treatments and not prejudicial approaches or accusations. ADHD is a highly genetic brain disorder that can be adequately treated, but only if clinicians are open minded to consider this diagnosis in their assessment of people under their care.

**Disclaimer**

*The opinions expressed in this interview are those of the interviewee and do not necessarily reflect the views of Future Medicine Ltd.*

**Financial & competing interests disclosure**

*J Biederman is currently receiving research support from the American Professional Society of ADHD*

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*and Related Disorders, Department of Defense, ElMindA, Janssen, McNeil, Shire and Vaya PharmalEnzymotec. He received honoraria from the Massachusetts General Hospital Psychiatry Academy for tuition-funded continuing medical education courses. He has a US patent application pending (Provisional Number #61/233,686), through Massachusetts General Hospital corporate licensing, on a method to prevent stimulant abuse. He has also received an honorarium from Cambridge University Press for a chapter publication. J Biederman received*

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